Data Interpretation

Questions & Solution

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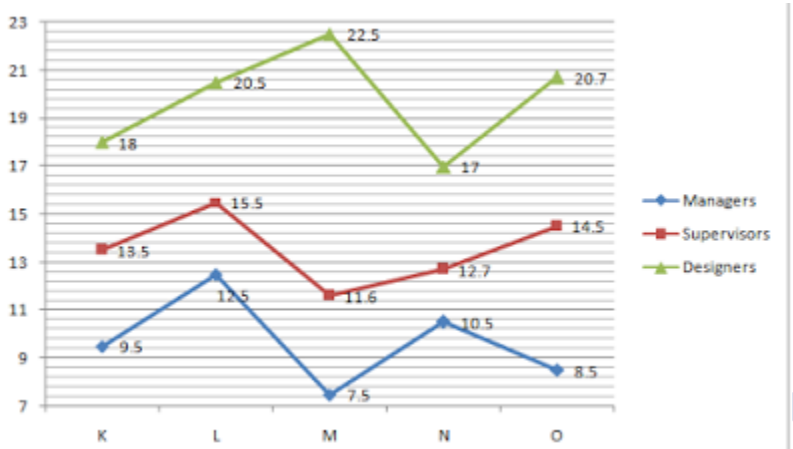
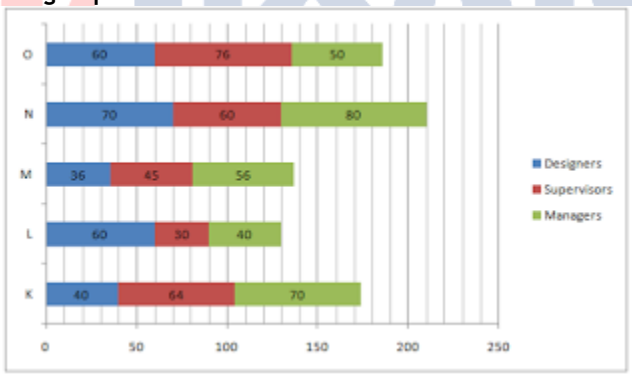
Data Interpretation Questions With Solution

Directions (Q.1-5): Study the following graphs carefully to answer the questions that follow.
Number of employees (in hundred) of three categories in 5 factories



Percentage of females in each group



Q1. The females in Manager post in company M can finish a certain piece of work in 20 days. After they began to work, 20 females left the work after every 5 days. Find the number of days required to complete the work.

(a) $21\frac{3}{17}$days

(b) $21\frac{13}{17}$days

(c) $21\frac{13}{19}$days

(d) $20\frac{13}{17}$days

(e) None of these

Q2. Find the average number of males in Manager post in all factories together.

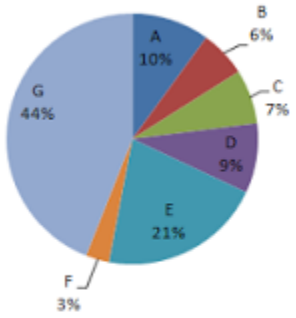
(a) 305
(b) 325
(c) 450
(d) 400
(e) None of these

Q3. By what percent the males in the Designer post in factories M and N together are more or less than the females on Supervisor post in factories K and L together?
(a) 45.8%
(b) 46.7%
(c) 42.3%
(d) 44.2%
(e) 40.2%

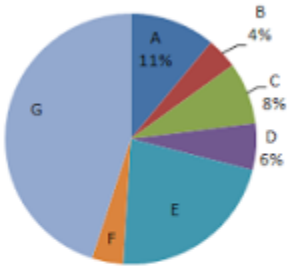
Q4. The average age of male designers in factory N is 74 years. Two-fifth of them have average age of 76 years, 50% of remaining have average age 4 years less that of all male designers. Find the average age of remaining male designers.
(a) 74 year 5 month
(b) 72 year 4 month
(c) 75 year 4 month
(d) 75 year 6 month
(e) None of these

Q5. Find the ratio of total female designers in factories M and N together and female Managers in factory L.
(a) 3 : 2
(b) 4 : 1
(c) 3 : 1
(d) 2 : 1
(e) None of these

Directions (6 - 10): Study the following pie chart and answer the following questions.
Percentage distribution of Income of 7 firms in year 2010 and 2013 is given below in pie chart. Percentage distribution of some firms is not given. You have to calculate these values if required to answer the questions.



2010



2013

Note: Ratio of total Income of all 7 firms in 2010 to 2013 is 5 : 7.

Q6. If expenditure of B in 2010 is 80% of its income and expenditure of E in 2013 is 60% of its income and income of E in 2013 is 100/3% more than the income of E in 2010 then saving of B in 2010 is what percent of saving of E in 2013.
(a) 75/7%
(b) 38/9%
(c) 100/3%
(d) 50/3%
(e) None of these

Q7. If difference between the total income of all firms in 2010 and total income of all firms in 2013 is 'D', then what is the ratio of average income of firm A, B and E together in 2010 to the average of income of firm B, C and D together in 2013.
(a) 203 : 201
(b) 133 : 123
(c) 185 : 126
(d) 119 : 143
(e) None of these

Q8. If income of firm E in 2013 is 400/7% of income of E in 2010 and ratio between percentage distribution of income of firm F and G is 11 : 8 in 2013 then what is the percentage distribution of income of firm F in 2013?
(a) 45/23%
(b) 133/7%
(c) 253/7%
(d) 255/103%
(e) 253/133%

Q9. Income of firm A, B and E together in 2010 is what % more or less than income of firm C, D and E together if the income of firm E in 2013 is 50% more than income of firm A in 2010? (approximately)
(a) 7%
(b) 5%
(c) 5.1%
(d) 8%
(e) 48%

Q10. If income of firm A and B together in 2013 is 120% of income of firm A and B together in 2012 then income of firm A and B together increase/decrease by what percent in 2012 with respect to 2010.
(a) 30%
(b) 23%
(c) 20%
(d) 9%
(e)12%

Directions(Q.11-15): Study the pie chart and line graph to answer the following questions.
Percentage profit or loss for following dry fruits is based on the sum of cost price and transportation cost.

Name of Product	CP	SP	Cost of transportation	Profit	Loss	Profit or loss %(on total c.p.)
Pista	900		300			
Prune		800	0		300	
Groundnut	2000		500	250		
Apricot		5000	0			5% loss
Raisins	6000		400			7% Profit

Q11. The percentage profit on Pista is 5%. What will be its selling price?
(a) 1000
(b) 1250
(c) 1260
(d) 1200
(e) 1160

Q12. The selling price of Groundnut is what percent of the cost price of Prune?
(a) 200%
(b) 250%
(c) 280%
(d) 255%
(e) 240%

Q13. What is the ratio of the loss on Apricot to that on Prune?
(a) 49 : 58
(b) 50 : 57
(c) 50 : 59
(d) 40 : 47
(e) None of these

Q14. What is the difference between the selling price of Raisins and that of Groundnut?
(a) 4098
(b) 4100
(c) 4000
(d) 4198
(e) 3998

Q15.If the loss on Pista is 10% then its selling price is what percentage less than the selling price of Raisins?
(a) 89%
(b) 92%
(c) 94%
(d) 84%
(e) 88%

Solutions...

S1. Ans.(b)
Sol.

Number of females $= \frac{56}{100} \times 750 = 420$

$\therefore 420 \times 20 = 420 \times 5 + 400 \times 5 + 380 \times 5 + 360 \times 5 + 340 \times x$

$\Rightarrow 340 + x = 600$

$\Rightarrow x = 1\frac{13}{17}$

$\therefore$ Total required days $= 5 + 5 + 5 + 5 + 1\frac{13}{17} = 21\frac{13}{17}$ days.

S2. Ans.(d)
Sol.

Required average $= \frac{1}{5}\left(\frac{30}{100} \times 950 + \frac{60}{100} \times 1250 + \frac{44}{100} \times 750 + \frac{20}{100} \times 1050 + \frac{50}{100} \times 850\right)$

$= \frac{1}{5} \times 2000$

$= 400$

S3. Ans.(b)
Sol.
Designer males = $\frac{64}{100} \times 2250 + \frac{30}{100} \times 1700 = 1950$
Female supervisors = $\frac{64}{100} \times 1350 + \frac{30}{100} \times 1550 = 1329$
∴Required percentage = $\frac{621}{1329} \times 100 \approx 46.7\%$

S4. Ans.(c)
Sol.
Number of male designers = $\frac{30}{100} \times 1700 = 510$
$\therefore 510 \times 74 = 204 \times 76 + 153 \times 70 + 153 \times x$
or, $153x = 11526$
or, $x = 75$ yr. 4 months.

S5. Ans.(b)
Sol.
Required ratio = $\frac{\frac{86}{100} \times 2250 + \frac{70}{100} \times 1700}{\frac{40}{100} \times 1250} = \frac{2000}{500} = 4 : 1$

S6. Ans.(a)
Sol.
Let total income in 2010 and 2013 is $5x$ and $7x$
Saving of B in 2010 = $\frac{20}{100} \times \frac{5x}{100} \times 6 = \frac{6x}{100}$
Income of E in 2013 = $\frac{4}{3} \times \frac{5x}{100} \times 21 = \frac{7x}{5}$
Saving of E in 2013 = $\frac{2}{5} \times \frac{7x}{5} = \frac{14x}{25}$
Required %= $\frac{\frac{6x}{100}}{\frac{14x}{25}} \times 100 = \frac{75}{7}\%$

S7. Ans.(c)
Sol.
Given $7-5 \rightarrow D$

$$\therefore 1 \rightarrow \frac{D}{2}$$

Total income of all firm in 2010 $= \frac{5}{2}D$

Total income of all firm in 2013 $= \frac{7}{2}D$

Average of income of firm A, B and E in 2010 $= \frac{5D \times 37}{2 \times 100 \times 3}$

Average of income of firm B, C and D together in 2013 $= \frac{7D \times 18}{2 \times 100 \times 3}$

Required ratio = 185 : 126

S8. Ans.(c)
Sol.

Income of firm E in 2013 $= \frac{4}{7} \times \frac{5x}{100} \times 21 = \frac{3x}{5}$

% income of E in 2013 $= \frac{\frac{3x}{5}}{7x} \times 100 = \frac{60}{7}\%$

% income of firm F and G together $= \left[100 - \left(11 + 4 + 8 + 6 + \frac{60}{7}\right)\right] = \frac{437}{7}\%$

% income of firm F in 2013 $= \frac{437}{7} \times \frac{11}{19}$

$$= \frac{253}{7}\%$$

S9. Ans.(a)
Sol.

Income of A, B and E together in 2010 $= 37 \times \frac{5x}{100} = \frac{185}{100}x$

Income of E in 2013 $= \frac{3}{2} \times \frac{5x}{100} \times 10$

$$= \frac{3}{4}x$$

Income of C, D and E together in 2013 $= \frac{7x}{100} \times 14 + \frac{3}{4}x$

$$= \frac{173}{100}x$$

Required % $= \frac{\left(\frac{185}{100}x - \frac{173}{100}x\right)}{\frac{173}{100}x} \times 100$

$$= \frac{12}{173} \times 100$$

$\approx 7\%$

S10. Ans.(d)
Sol.
Income of firm A and B in 2013 $= \frac{7x}{100} \times 15$

$$= \frac{105}{100}x$$

Income of firm A and B in 2012 $= \frac{105}{100} \times \frac{100}{120}x$

$$= \frac{7x}{8}$$

Income of firm A and B in 2010 $= \frac{5x}{100} \times 14$

$$= \frac{70}{100}x$$

$$= \frac{7}{10}x$$

Required % $= \frac{\frac{7}{8}x - \frac{7}{10}x}{\frac{7}{10}x} \times 100 = 25\%$ increase

S11.Ans(c)
Sol. CP of Pista = Rs 900
Transportation cost = Rs. 300
∴ Total CP = 900 + 300 = 1200
Given Profit percent = 5%
$\therefore SP = 1200 \times \frac{105}{100}$ = Rs. 1260

S12. Ans.(b)
Sol.
SP of Groundnuts = (CP + Transportation cost + Profit) = 2000 + 500 + 250 = 2750
$\therefore CP\ of\ PRUNE = SP + Loss$ = 800 + 300 = 1100
Required percentage = $\frac{2750}{1100}$ x 100 = 250 % of the CP of PRUNE

S13. Ans(b) Loss on Apricot = $5000 \times \frac{100}{95} - 5000 = 5000\left[\frac{5}{95}\right]$
Loss on PRUNE = Rs. 300
$\therefore Required\ Ratio = \frac{5000 \times 5}{95 \times 300} = 50 : 57$

S14. Ans(a)
Ans.
SP of Raisins = CP + Cost of Transportation + Profit
= 6000 + 400 + 7% of (6000 + 400) = 107% of 6400 = Rs. 6848
Selling Price of Groundnut = 2000 + 500 + 250 = 2750
$\therefore Desired\ Difference = 6848 - 2750 = 4098$

S15. Ans(d)
Sol.
CP of Pista = 900 + 300 = 1200
Given Loss % = 10% ∴ $10\%\ of\ 1200 = 120$

$\therefore SP\ of\ Pista = 1200 - 120 = 1080$

& $SP\ of\ Raisins = 107\%\ of\ 6400 = 6848$

Required Percentage = $\frac{6848-1080}{6848} \times 100 = \frac{5768}{6848} \times 100 \approx 84\%$

Directions (Q.1- 5): There are five students who appeared for RBI Grade B exam. Paper consists of 100 questions with 1 mark for each correct answer and 0.25 marks for each wrong answer.

	Questions attempted	Right Questions	Wrong Questions	Marks obtained
Aditya	78	-	-	70.5
Puskar	92	76	-	-
Anshuman	98	-	36	-
Alka	-	30	-	27.25
Avanish	56	-	-	53.50

Q1. Difference between total right number of questions of all students together and total wrong no. of questions of all students together is
(a) 141
(b) 161
(c) 223
(d) 156
(e) None of these

Q2. Marks obtained by Aditya and Puskar together is what % of the marks obtained by Anshuman, Avanish and Alka together ? (rounded off to 2 decimal places)
(a) 106.54%
(b) 91.16%
(c) 95.20%
(d) 96.71%
(e) 101.71%

Q3. If the penalty of the wrong answer is 0.33 then marks obtained by Aditya, Anshuman and Puskar together is
(a) 192.21
(b) 224.19
(c) 190.86
(d) 219.14
(e) 194.22

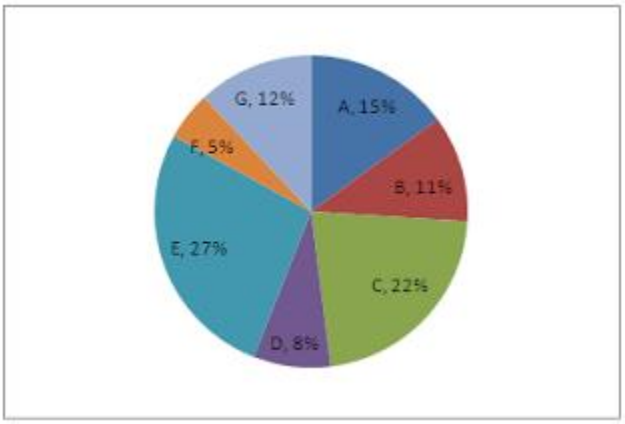
Q4. If the passing % marks in the exam is 50 marks than at least how many questions has to be answered right by Puskar? (He attempted 92 questions)
(a) 58
(b) 56
(c) 59
(d) 55
(e) 60

Q5. What is the percent of marks obtained by all of them together?
(a) 59.03%
(b) 53.15%
(c) 52.53%
(d) 45.05%

(e) 55.25%

Directions (Q.6-10): Seven companies A, B, C, D, E, F and G are engaged in the production of two items I and II. Comparative data about the production of these items by the companies is given in the following graph and table. Study them carefully and answer the questions given below.

Percentage of the total production produced by the seven companies



Cost of the total production (both items together) by seven companies = Rs 25 crores
Ratio of production between items I and II and the percent profit earned for the two items

Company	Ratio of Production		Per cent profit earned	
	Item I	Item II	Item I	Item II
A	2	3	25	20
B	3	2	32	35
C	4	1	20	22
D	3	5	15	25
E	5	3	28	30
F	1	4	35	25
G	1	2	30.	24

Q6. What is the total cost of the production of item I by companies A and C together in Rs crore?
(a) 9.25
(b) 5.9
(c) 4.1625
(d) 4.9
(e) None of these

Q7. What is the amount of profit earned by company D on item II?
(a) Rs 3.125cr
(b) Rs 31.25 cr
(c) Rs 3.125 lakhs
(d) Rs 31.25 lakhs
(e) None of these

Q8.Cost of production of item I by company F is what per cent of the cost of production of item II by company D?
(a) 16%
(b) 33.33%
(c) 66.67%
(d) 20%
(e) None of these

Q9.What is the ratio of the cost of production of item I by company A to the cost of production of item I by company D?
(a) 3 : 5
(b) 1 : 2
(c) 2 : 1
(d) 2 : 3
(e) None of these

Q10. What is the total of the profit earned by company B on the production of item I and the profit earned by company A on production of item II?
(a) Rs 9.78 cr
(b) Rs 97.8 lakhs
(c) Rs 52.8 lakhs
(d) Rs 5.28 cr
(e) None of these

Directions (Q.11-15): Study the following data related to seven friends carefully to answer the questions that follow.

Parul, Niharika, Anshu, Pooja, Jyoti, Aditi and Komal are seven friends living along a straight road in same manner as given starting with Parul.
Pooja lives 150 km away from Parul, and takes 1 hr 40 min to reach to Aditi. It takes Parul 5 hours to reach to Aditi who lives 250 km away from her. When Anshu and Komal move toward each other at 70 k/hr and 50 km/hr respectively, they meet after 1 hr 35 min. Anshu takes only 240/7 min to reach to Pooja. Niharika being 240 km away from Komal crosses Jyoti after 5 hr 40 min and meet Komal after 8 hours from start. Jyoti and Aditi meet after 24 minutes if they start moving simultaneously towards each other with speed in 3 : 2 ratio.
Note: Speed of all remains constant.

Q11. On a weekend, all friends decided to meet at Parul's house at 9 : 00 pm sharp. At what time should Jyoti leave her house to get at location in time if she spends 10 minutes waiting for Niharika at Niharika's house ?
(a) 2 : 10 pm
(b) 2 : 45 pm
(c) 1 : 10 pm
(d) 1 : 30 pm
(e) None of these

Q12. Niharika and her boyfriend together left their office at 6 : 30 pm and move towards their home with same speed as Niharika. Office is 120km away from Jyoti's house in opposite direction of Niharika's house. Find the distance of house of Niharika's boyfriend from her house if she dropped himat his home at 7 : 05 pm.
(a) 280 km
(b) 265.5 km
(c) 252 km
(d) 272.5 km
(e) None of these

Q13. Find the ratio of distance between residence of Parul and Komal and that of Anshu and Jyoti.
(a) 2 : 5
(b) 5 : 2
(c) 3 : 1
(d) 7 : 3
(e) None of these

Q14. All friends decided to meet at Pooja's house, with the condition that they have to move towards Pooja house with the speed of the next friend they meet in the way starting with Parul and Komal living at opposite ends. Find the difference in the time when the two groups reach at destination. (rounded off up to two decimal points)
(a) 0.52 hr
(b) 2.31 hr
(c) 1.23 hr

(d) 2.51 hr
(e) 1.82 hr

Q15. By what percent speed of Anshu is more or less than that of Komal ?
(a) 32%
(b) 45%
(c) 30%
(d) 40%
(e) None of these

Solutions

S1. Ans.(c)
Sol.
Required difference = (72 + 76 + 62 + 30 + 54) – (6 + 16 + 36 + 11 + 2)
= 294 – 71 = 223

S2. Ans.(a)
Sol.
$\text{Required } \% = \frac{70.5+72}{53+27.25+53.50} \times 100$
$= 106.54\%$

S3. Ans.(c)
Sol.
Required marks = (72+76+62)–0.33(6+16+36) = 190.86

S4. Ans.(c)
Sol.
By options
Let right Questions = 59
$\therefore \text{marks} = 92 - \frac{1}{4}(92 - 59) = 50.75$

S5. Ans.(e)
Sol.
$\text{Required } \% = \frac{70.5+72+53+27.25+53.50}{500} \times 100 = 55.25\%$

S6. Ans.(b)
Sol.
Total cost of production by company A = $\frac{15}{100} \times 25 = 3.75$ crores
= 3.75 crores
Total cost ofproduction by Company C = $\frac{22}{100} \times 25 = 5.5$ crores
Cost of production of item I by Company A = $\frac{2}{5} \times 3.75 = 1.5$ crores
Cost of production of item I by Company C = $\frac{4}{5} \times 5.5 = 4.4$ crores
∴ Required total cost = 1.5 + 4.4 = 5.9 crores

S7. Ans.(d)
Sol.
Required profit earned = $\frac{25}{100} \times \frac{5}{8} \times \frac{8}{100} \times 25 = 0.3125$ crores
= 31.25 lakhs

S8. Ans.(d)
Sol.
Required % = $\frac{\frac{5}{100} \times \frac{1}{5} \times 25}{\frac{8}{100} \times \frac{5}{8} \times 25} \times 100$

$= \frac{0.25}{1.25} \times 100 = 20\%$

S9. Ans.(c)
Sol.
Required Ratio = $\frac{\frac{15}{100} \times \frac{2}{5} \times 25}{\frac{8}{100} \times \frac{5}{8} \times 25}$

$= \frac{30}{500} \times \frac{800}{24}$
$= \frac{5 \times 8}{5 \times 4}$
$= 2 : 1$

S10. Ans.(b)
Sol.
Required total profit = $(\frac{32}{100} \times \frac{3}{5} \times \frac{11}{100} \times 25) + (\frac{20}{100} \times \frac{3}{5} \times \frac{15}{100} \times 25)$
= 0.528 + 0.45
= 0.978 crores
= 97.8 lakhs

Solution Direction (11-15)

From the data,

Friends	speed (km/hr)	Distance (km) with reference to Parul
Parul	50	0
Niharika	30	60
Anshu	70	110
Pooja	60	150
Jyoti	30	230
Aditi	20	250
Komal	50	300

S11. Ans.(c)
Sol.
Time taken by Jyoti = $\frac{230}{30}$ = 7 hr 40 min
∴ Total time taken = 7 hr 50 min
i.e. she must left her house at 1 : 10 pm

S12. Ans.(d)
Sol.
Distance of office from Niharika house = 170 + 120 = 290 km
Distance travelled by them in 35 minutes = $30 \times \frac{35}{60}$ = 17.5 km
∴ Distance of her boyfriend's house from her house = 290 – 17.5 = 272.5 km

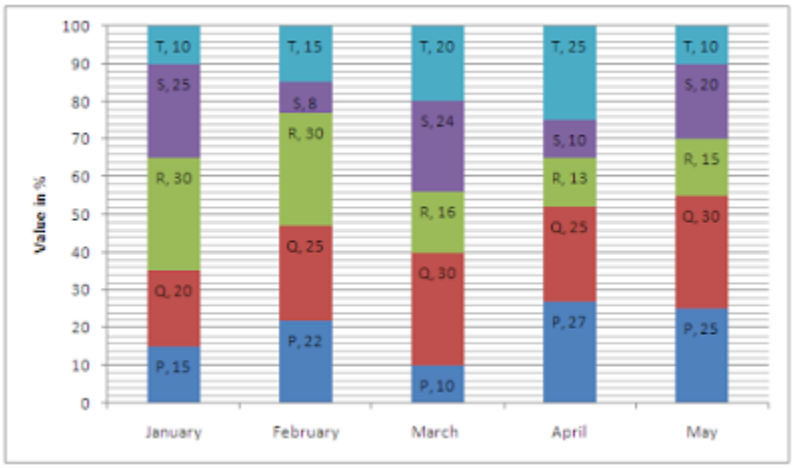
S13. Ans.(b)
Sol.
Required ratio = $\frac{300}{230-110}$ = 5 : 2

S14. Ans.(c)
Sol.
Group I (Parul, Niharika and Anshu)
Total time taken = $\frac{60}{50}+\frac{50}{30}+\frac{40}{70}=\frac{361}{105}$ hr
Group II (Jyoti, Aditi, Komal)
Total time taken = $\frac{50}{50}+\frac{20}{20}+\frac{80}{30}=\frac{14}{3}$ hr
∴ Required time = $\frac{14}{3}-\frac{361}{105}=\frac{490-361}{105}=\frac{129}{105}$ hr. ≈ 1.23 hr

S15. Ans.(d)
Sol.

$$\text{Required percent} = \frac{70-50}{50} \times 100 = 40\%$$

Directions (Q.1-5): The following graph shows the percentage of discount offered on the total discount given in any month for 5 various products P, Q, R, S and T in a given month by a shopkeeper



Condition 1: Total value of discount offered on all products increases by 10% every month.
Condition 2: Difference between the discount of R in January and discount of S in April is Rs. 333.8.

Q1. If total discount per month would have been increased by 20% instead of 10% as given above and condition 2 remains the same for new rate then, difference in value of discount of R in January and T in February according to new rate (approximately)
(a) 315
(b) 330
(c) 305
(d) 405
(e) 415

Q2. What is the cost price of article T in February if ratio of cost price of T in February and cost price of S in May are in the ratio 6 : 5 and profit of S in May is Rs 343. (Approximately)
(a) 2400
(b) 2500
(c) 2000
(d) 1800
(e) 1500

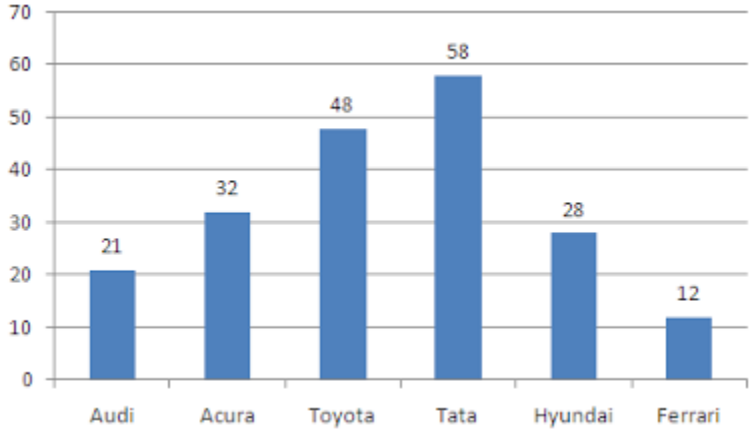
Q3. Cost price of Q in April is what percent more or less than the cost price of R in January if profit of Q in April is 280 and profit of R in January is 20% more than the discount of T in March. (approximately)
(a) 98%
(b) 92%
(c) 109%
(d) 113%
(e) 102%

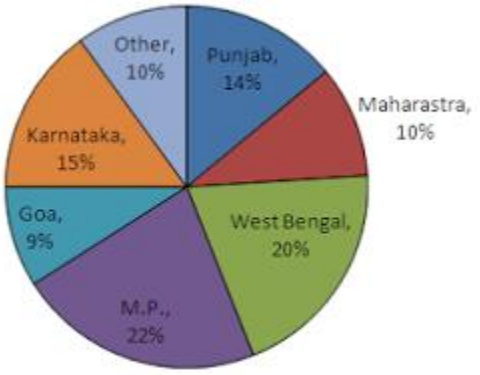
Q4. If there are 82 articles of R are sold in March and Profit percent per article of R in March is 25/4% more of the percent value of discount of R in March then find the total profit in selling all articles. (approximately)

(a) 22500
(b) 17500
(c) 19250
(d) 24200
(e) 26300

Q5. If shopkeeper had 10 units of Q type products in February in which 2 articles are spoiled then he should sell the remaining articles at what price so that there is overall gain of 20% if there is a profit of 125/7% on selling a unit of Q type product initially. (approximately)
(a) 2100
(b) 1800
(c) 1500
(d) 1400
(e) None of these

Directions (Q.6-10): The bar graph shows the sales of six different car-manufacturers in 2015 (in thousands of units) in India. The pie-chart shows the break-up of sales of Brand TATA in 2013 in different states of India.
Note→ All manufactured cars are sold in these given 7 states.





State wise sale of Brand Tata in 2015

Q6. What is the difference between the sales of Tata in West Bengal and that in Goa?
(a) 50600
(b) 6380
(c) 6567
(d) 6220
(e) None of these

Q7. By what percent should the sales of brand Tata is increased so that it sales volume in Punjab becomes 15000, while the volume of sales in all other state remains the some (approximately)
(a) 10%
(b) 9%
(c) 7%
(d) 13%
(e) 12%

Q8. If in 2016, the total sale of Brand Tata increase by 12%, while its sale in Maharashtra is increased by 34% and in M.P. by 22%, what is the approximate sales increase in the rest of the states.
(a) 7000
(b) 6500
(c) 8000
(d) 10,000
(e) 12500

Q9. Total sale of Audi, Acura and Toyota in 2015 is what percent of the total sales of tata in all states together in that year, 2015. (approximately)
(a) 100%
(b) 113%
(c) 190%
(d) 175%
(e) 150%

Q10. If total sale of all brands together increases by 20% in 2016 and sale of Tata in West Bengal increase by 10% keeping % percentage distribution of Tata in these seven states same as previously then, what is the total sale of all cars in 2016 of all brands except brand Tata.
(a) 1,75,000
(b) 1,50,000
(c) 2,00,000
(d) 1,00,000
(e) None of these

Directions (11-15): Study the following data related to the performance of 6 batsmen in a tournament.

Batsman	No. of matches played	Average runs scored	Total balls faced	Strike rate
Ankit	8	—	—	129.6
Bikas	20	81	—	—
Cheeru	—	38	400	114
Dheeru	—	—	—	72
Eeshan	28	55	1280	—
Farhan	—	—	—	66

Note:
i) Strike rate $= \frac{\text{Total runs scored}}{\text{Total balls faced}} \times 100$
ii) All given batsmen bat in all the given matches played by them.

Q11. The respective ratio between the total number of balls faced by Dheeru and that of Farhan in the tournament is 3 : 4. The total number of runs scored by Farhan in the tournament is what percent more than the total runs scored by Dheeru in the tournament?

(a) $33\frac{1}{3}\%$
(b) $22\frac{2}{9}\%$
(c) $22\frac{1}{9}\%$
(d) 22%
(e) None of these

Q12. If the runs scored by Eeshan in Last 3 matches of the tournament are not considered, his average runs scored in the tournament decreased by 9. If the runs scored Eeshan in 26th and 27th match are below 128 and no two scores among these 3 scores are equal, then what are the minimum possible runs scored by Eeshan in the 28th match?
(a) 133
(b) 135
(c) 137
(d) 140
(e) None of these

Q13. In the tournament, the total number of balls faced by Ankit is 74 less than the total number of runs scored by him. What is the average run scored by Ankit in the tournament?
(a) 42.5
(b) 40
(c) 41.8
(d) 40.5
(e) None of these

Q14. In the tournament Cheeru and Dheeru played same number of matches. Dheeru scored 24 runs more than that scored by Farhanwhen Farhan faced equal number of balls which was faced by Cheeru. Find the difference in the total runs scored and total ball faced by Dheeru.
(a) 118
(b) 112
(c) 122
(d) 108
(e) None of these

Q15. If the average number of the match played by all players is 19, and the maximum possible runs scored by Farhan is 3 times the match played by him when he faced a total number of balls less than 151, then find the minimum possible matches played by Dheeru.
(a) 12
(b) 10
(c) 13
(d) 8
(e) None of these

Solutions

Solutions (1-5):

Let total discount in January = x

Then total discount in April = $1.331x$

According to question

$$\frac{30}{100}x - \frac{10}{100} \times 1.331x = 333.8$$

$$3x - 1.331x = 3338$$

x = 2000 (Total discount in January)

Total discount in February = 2200

Total discount in March = 2420

Total discount in April = 2662

Total discount in May = 2928.2

S1. Ans.(a)

Sol.

According to new condition

$$\frac{30}{100}x - \frac{10}{100} \times 1.728x = 333.8$$

New $x \approx 2624$

Required difference = $\frac{30}{100} \times 2624 - \frac{15}{100} \times \frac{120}{100} \times 2624$

$= 787.2 - 472.32$

≈ 315

S2. Ans.(a)

Sol.

Marked price of S in May = 2928

Selling price of S in May = $2928 - \frac{20}{100} \times 2928$

$= 2928 - 585$

$= 2343$

Cost price of S in May = $2343 - 343 = 2000$

Cost price of T in February = $\frac{2000}{5} \times 6 = 2400$

S3. Ans.(c)

Sol.

Cost price of Q in April = $2662 - \frac{25}{100} \times 2662 - 80 \approx 1716$

Profit of R in January = $\frac{120}{100} \times \frac{20}{100} \times 2420 \approx 580$

Cost price of R in January = $2000 - \frac{30}{100} \times 2000 - 580 \approx 820$

Required percentage = $\frac{896}{820} \times 100 \approx 109\%$

S4. Ans.(d)
Sol.
Profit percent of R in March = $(100\% + \frac{25}{4}\%)\,16\% = (1 + \frac{1}{16})\,16\% = 17\%$
Let cost price of R in March = x
Then

$$\frac{117}{100}x = 2420 - \frac{16}{100} \times 2420$$

$$x \approx 1737$$

Required value ≈ 82 (295)
≈ 24200

S5. Ans.(a)
Sol.
Cost price of Q in February = $(2200 - \frac{25}{100} \times 2200) \times (1 + \frac{5}{28}) = 1400$
Total cost price of 10 products = 14000
Required total selling price = $\frac{120}{100} \times 14000 = 16800$
New selling price per product = $\frac{16800}{8} = 2100$

S6. Ans.(b)
Sol. Total sale of Total cars in West Bengal
$= \frac{58}{100} \times 20 = 11.6$ thousands
= 11600
Total sale of Tata car in Goa = $58 \times \frac{9}{100} = 5220$
Required difference = 11600 – 5220
= 6380

S7. Ans.(e)
Sol. Sales of tata cars in Punjab = $\frac{58}{100} \times 14 = 8.12$ thousands
= 8120
Increase in volume = 15000 – 8120
= 6880
Percentage increase = $\frac{6880}{58000} \times 100$
≈ 12%

S8. Ans.(c)
Sol. Total sale of tata in 2016 $= \frac{112}{100} \times 58{,}000$
$= \frac{56 \times 29}{25} \times 1000$
$= 64960$
New total sale in Maharashtra $= \frac{134}{100} \times \frac{10}{100} \times 58000$
$= 7772$
New total sale in M.P. $= \frac{122}{100} \times \frac{22}{100} \times 58000$
≈ 15567
Total new sale in these states = 23339
Previous overall sale in all state except M.P. and Maharashtra
$= \frac{58}{100} \times 58{,}000$
$= 33640$
Required increase in sale in other states
$= (64960 - 23339) - 33640$
$= 7981$
≈ 8000

S9. Ans.(d)
Sol. Required % $= \frac{101}{58} \times 100$
$\approx 175\%$

S10. Ans.(a)
Sol. Net total sale $= \frac{120}{100} \times 199000 = 238800$
New sale of Tata in West Bengal $= \frac{110}{100} \times \frac{20}{100} \times 58000 = 12760$
New total sale of Tata $= \frac{12760}{20} \times 100$
$= 63800$
Required total sale = 238800 – 63800
=1,75,000

S11. Ans.(b)
Sol.
Runs scored by Dheeru $= \frac{72 \times 3x}{100} = 2.16x$
Runs scored by Farhan $= \frac{66 \times 4x}{100} = 2.64x$
$\therefore$ Required percentage $= \frac{0.48x}{2.16x} \times 100 = 22\frac{2}{9}\%$

S12. Ans.(c)
Sol.
Total runs scored by Eeshan = 28 × 55 = 1540
If last 3 matches are not considered, then his total runs = 25 × 46 = 1150
Maximum possible runs in 26th and 27th match is 126 and 127.
∴ Minimum possible run in 28th match = 1540 – 1150 – 126 – 127 = 137

S13. Ans.(d)
Sol.
Let total runs scored by x
∴ total balls faced = $x - 74$
So, $129.6 = \frac{x}{x-74} \times 100$
$\Rightarrow 29.6x = 9590.4$
$\Rightarrow x = 324$
∴ Required average runs scored = $\frac{324}{8} = 40.5$

S14. Ans.(b)
Sol.
Total runs scored by Cheeru = $\frac{114\times400}{100} = 456$
∴ Total matches played = $\frac{456}{38} = 12$
Runs scored by Farhan = $\frac{66\times400}{100} = 264$
So, Total balls faced by Dheeru = $\frac{264+24}{72} \times 100 = 400$
So, required difference = 400 – 288 = 112

S15. Ans.(c)
Sol.
Number of matches played by Dheeru & Farhan together = 19 × 6 – (8 + 20 + 12 + 28)
= 46
Max. Possible runs of Farhan = $\frac{66\times150}{100} = 99$
∴ Matches played by him = $\frac{99}{3} = 33$
So, required min. no. of matches played by Dheeru = 46 – 33 = 13

Directions (Q1 - 5): The table given below shows the monthly salary of six employees working in a leading manufacturing firm.

Years→ Employees↓	2011	2012	2013	2014	2015	2016
Richali	19200	20500	23400	25000	26600	28200
Piyush	28500	30100	31800	33000	34900	36000
Ritesh	22600	24000	26400	28100	29800	31000
Aditi	23000	24500	26100	27000	29300	31200
Krishna	24800	26000	27900	29100	30800	33000
Raksha	31500	35800	36600	40200	44000	45800

Q1. What is the difference between average monthly income of Aditi all over the years and monthly income of Raksha in 2015?

(a) Rs. 17250
(b) Rs. 18150
(c) Rs. 17510
(d) Rs. 17150
(e) None of these

S1. Ans.(d)

Sol.

Average monthly income of Aditi = $\frac{1}{6} \times 161100 = 26850$ Rs.

$\therefore$ Required difference = 44000 – 26850 = Rs. 17150

Q2. Monthly salary of Ritesh in 2016 contributes for what percent in total monthly salary of Richali, Piyush and Krishna together in 2016? (approximately)

(a) 30%
(b) 32%
(c) 38%
(d) 42%
(e) 28%

S2. Ans.(b)

Sol.

Required percentage = $\frac{31000}{97200} \times 100 \approx 32\%$

Q3. Find the ratio of annual salary of Aditi in 2012 and Raksha in 2014 together to that of Piyush in 2013 and Richali in 2011 together?

(a) 6 :7
(b) 7 : 6
(c) 5 : 4
(d) 3 : 2
(e) None of these

S3. Ans.(e)

Sol.

Required ratio = $\frac{(24500+40200)\times12}{(31800+19200)\times12} = \frac{647}{510}$

Q4. Monthly salary of Piyush and Krishna together in 2013 is by what percent more or less than that of Aditi and Raksha together in 2015? (approximately)

(a) 19% more
(b) 16% less
(c) 19% less
(d) 16% more
(e) 29% less

S4. Ans.(c)

Sol.

Monthly salary of Piyush and Krishan = 31800 + 27900 = 59700

Monthly salary of Adity and Raksha = 29300 + 44000 = 73300

$\therefore$ Required percentage = $\frac{13600}{73300} \times 100 \approx 19\%$ less.

Q5. In 2015, Raksha donated 5% of her monthly salary, she then lent out 20% of remaining salary on CI at 5% for 3 years. Find the interest (approx.) earned by her after 3 years?

(a) Rs. 1381

(b) Rs. 1318
(c) Rs. 1418
(d) Rs. 1315
(e) Rs. 1300

S5. Ans.(b)

Sol.

20% of amount left after donation $= \frac{1}{5} \times \frac{95}{100} \times 44000$

$= Rs. 8360$

$\therefore$ C.I. after 3 years $= 8360\left[\left(1+\frac{5}{100}\right)^3 - 1\right]$

$= 8360 \times 0.1576$

$\approx Rs. 1318$

Directions (Q6 to 10): A team of 5 players participated in a tournament and played four matches (1 to 4). The following table gives partial information about their individual scores and the total runs scored by the team in each match.

Each column has two values missing. These are the runs scored by the two lowest scorers in that match. None of the two missing values is more than 10% of the total runs scored in that match.

		Match-1	Match-2	Match-3	Match-4
Runs scored by player	Ajinkya		100		53
	Pandya	88	65		52
	Cheteswar			110	
	Dhawan	72	75	20	56
	Virat	60		78	
Total		270	300	240	200

Q6. What is the maximum possible percentage contribution of Ajinkya in the total runs scored in the four matches (approximately)?
(a) 20%
(b) 22%
(c) 17%
(d) 23%
(e) Cannot be determined

S6. Ans. (a)
Sol. Maximum possible runs scored by Ajinkya in Match-1 = 27
Maximum possible runs scored by Ajinkya in Match-3 = 19 (less than 20)
Maximum possible percentage contribution:

$$\frac{27+100+19+53}{270+300+240+200} \times 100\% = \frac{199}{1010} \times 100\% = 19.7\%$$

$= 20\%$ approx..

Q7. What is the maximum possible percentage contribution of Virat in the total runs scored in the four matches?
(a) 18%
(b) 19.9%
(c) 18.6%
(d) 20.2%
(e) Cannot be determined

S7. Ans. (c)
Sol.
Maximum possible runs scored by Virat in Match-2 = 30
Maximum possible runs scored by Virat in Match-4 = 20
Maximum possible percentage contribution:

$$\frac{60+30+78+20}{270+300+240+200}\times 100\%$$

$$=\frac{188}{1010}\times 100\% = 18.6\%$$

Q8. If the absolute difference between the total runs scored by Ajinkya and Cheteshwar in the Four matches is minimum possible then what is the ratio of Ajinkya and Cheteshwar's total runs scored by them in the four matches.
(a) 187:189
(b) 189:187
(c) 183:187
(d) 189:188
(e) Cannot be determined

S8. Ans. (b)
Sol.
Maximum possible total runs scored by Cheteshwar in the four matches
= 27 + 30 + 110 + 20 = 187.
total runs scored by Ajinkya in the four matches is in the range of 189 to 199
Hence,
In such a case minimum possible
total runs scored by Ajinkya in the four matches = 23 + 100 + 13 + 53 = 189
Difference = 189 – 187 = 2 (minimum possible)
So Required ratio is 189: 187

Q9.If the absolute difference between the total runs scored by Ajinkya and Cheteshwar in the four matches is minimum possible then what is the absolute difference between total runs scored by Pandya and Virat in the four matches?
(a) 32
(b) 37
(c) 35
(d) 27
(e) Cannot be determined

S9. Ans. (b)
Sol.
Maximum possible total runs scored by Cheteshwar in the four matches
= 27 + 30 + 110 + 20 = 187.
In such a case minimum possible total runs scored by Ajinkya in the four matches
= 23 + 100 + 13 + 53 = 189.
Difference = 189 – 187 = 2 (minimum possible)

Subsequently total runs scored by Pandya in the four matches
= 88 + 65 + 19 + 52 = 224.
Also, total runs scored by Virat in the four matches
= 60 + 30 + 78 + 19 = 187
Absolute difference = 224 – 187 = 37

Q10. The players are ranked 1 to 5 on the basis of the total runs scored by them in the four matches, with the highest scorer getting Rank 1. If it is known that no two players scored the same number of total runs, how many players are there whose ranks can be exactly determined?
(a) 0
(b) 1
(c) 3
(d) 5
(e) Cannot be determined

S10 . Ans.(c)
Sol.
Individual ranges for total score:
Ajinkya-> 189-199
Pandya-> 218-224
Cheteshwar-> 182-187
Dhawan-> 223
Virat-> 187-188
Least total will be of Cheteshwar (Rank 5)
2nd least will be Virat (Rank 4)
Rank 3 must be of Ajinkya
It is not possible to determine the exact ranks of Pandya and Dhawan

Directions (Q11-15): The table below shows production of five types of Trucks by a company in the years 2009 to 2014. Study the table and answer questions.

Production of trucks by a company

Year → Type ↓	2009	2010	2011	2012	2013	2014	Total
Minivan	8	20	16	17	21	6	88
Pickup	16	10	14	12	12	14	18
Canopy	21	17	16	15	13	8	90
Panel	4	6	10	16	20	31	87
Cab	25	18	19	30	14	27	133
Total	74	71	75	90	80	86	476

Q11. In which year the production of trucks of all types taken together was approximately equal to the average of the total production during the period?
(a) 2009
(b) 2011
(c) 2013
(d) 2014
(e) None of these

S11. Ans.(c)
Sol. Average of the total production during the period = $\frac{476}{6} \approx 80$ which is equal to the total production in 2013.

Q12. In which year, the total production of trucks of types of Minivan and Pickup together was equal to the total production of trucks of types Canopy and Panel together.
(a) 2010
(b) 2011
(c) 2014
(d) 2013
(e) None of these

S12. Ans.(d)
Sol. Answer will be 2013.

Q13. During the period 2009-14, in which type of trucks was a continuous increase in production?
(a) Minivan
(b) Pickup
(c) Canopy
(d) Panel
(e) None of these

S13. Ans.(d)
Sol. Answer is Panel

Q14. The production of which type of trucks was 25% of the total production of all types of trucks during 2013?
(a)Panel
(b) Canopy
(c) Pickup
(d)Minivan
(e) None of these

S14. Ans.(a)
Sol. 25% of 80 = 20 = production of Panel's car in 2013.

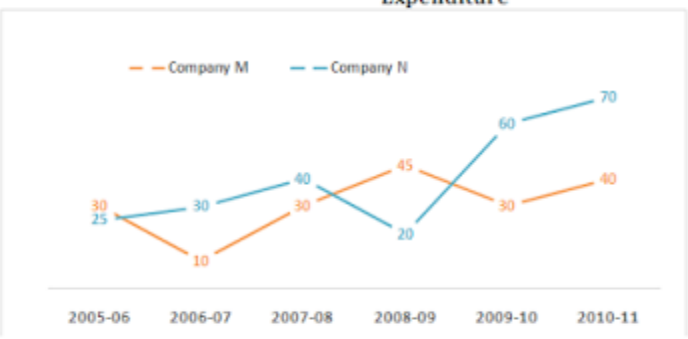
Q15. The per cent increase in total production of all types of trucks in 2012 to that in 2011 was?
(a) 15
(b) 20
(c) 25
(d) 30
(e) None of these

S15. Ans.(b)
Sol. Required percent increase $= \frac{90-75}{75} \times 100 = 20\%$

Directions (1-5): Study the following graph to answer the given questions.

Percent profit earned by two companies over the given years

$$\% \text{ profit} = \frac{\text{Income} - \text{Expenditure}}{\text{Expenditure}} \times 100$$



Q1. For Company M, its income in 2009-10 was equal to its expenditure in 2010-11, what was the ratio of its respective incomes in these two years?
(a) 4:5
(b) 3:4
(c) 5:7
(d) Cannot be determined
(e) None of these

S1. Ans.(c)

Sol. $I_{M\,2009\text{-}10} = E_{M\,2010\text{-}11} = \frac{I_{M\,2010\text{-}11}}{1.4}$

$$I_{M\,2009-10} : I_{M\,2010-11} = \frac{10}{14} = 5:7.$$

Q2. If the income of Company M in 2006-07was equal to the expenditure of Company N in 2009-10 what was the ratio of their respective profits?

(a) 13:15
(b) 15:26
(c) 13:26
(d) Cannot be determined
(e) None of these

S2. Ans.(e)

Sol. Suppose in the year 2006-07 expenditure of Company M = Rs. a

Then profit earned by Company M in this year = Rs. (10% of a)

Hence, income of Company M = Rs. (110% of a)

Again, expenditure of Company N in 2009-10= $Rs.\frac{a\times 110}{100}$

Hence, profit earned by Company N in 2009-10

$$= Rs.\frac{a\times 110}{100}\times\frac{60}{100}$$

Thus, required ratio

$$= \frac{\frac{10}{100}\times a}{\frac{a\times 110}{100}\times\frac{60}{100}} = \frac{10}{66} = 5:33.$$

Q3. What was the difference in the expenditures of the two companies in 2007-08?

(a) 10
(b) 100
(c) 1000
(d) Cannot be determined
(e) None of these

S3. Ans.(d)

Sol. The given graph depicts only the percent profit earned by the two companies over the given years. Hence, these information are insufficient to answer the question.

Q4. In 2010-11 the income of Company N was Rs. 119 crores. What was its expenditure in that year?

(a) Rs. 76.8 crore
(b) Rs. 64 crore
(c) Rs. 70 crore
(d) Cannot be determined
(e) None of these

S4. Ans.(c)

Sol. In 2010-11, profit earned by Company N was 70%

Therefore, 170% of expenditure Rs. 119 crore

Thus, required expenditure $= \frac{119}{170}\times 100$ = Rs. 70 Crores

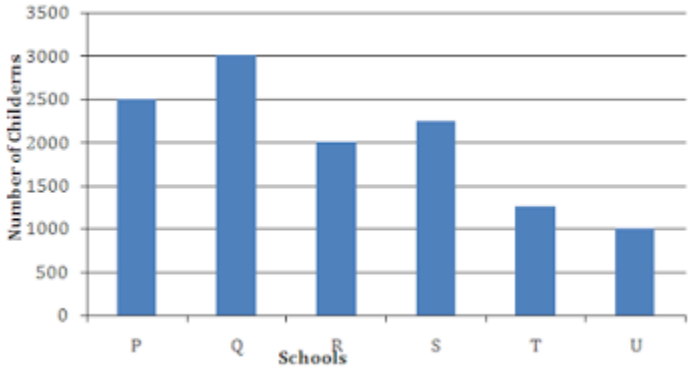
Q5. For Company N, in which year is the percent of increase in percent profit over that of previous year the highest?

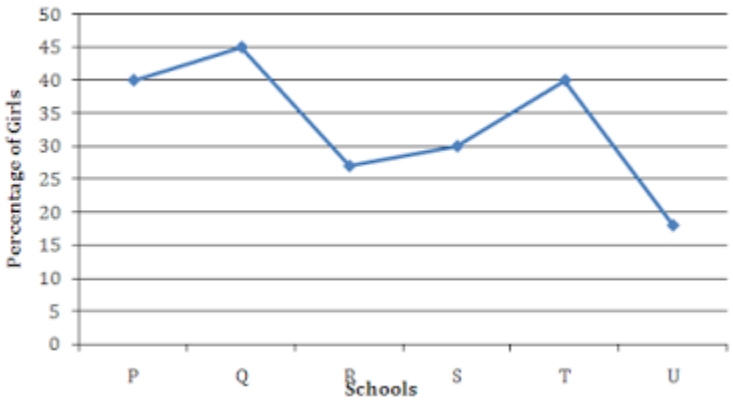
(a) 2011-12
(b) 2007-08
(c) 2010-11
(d) Cannot be determined
(e) None of these

S5. Ans.(c)
Sol. Percent of increase in percent profit over that of the previous year for the given years is as follows:
Year
2006-07: $\frac{(30-25)}{25} \times 100 = 20\%$
2007-08: $\frac{(40-30)}{30} \times 100 = 33.33\%$
2008-09: $= \frac{(20-40)}{40} \times 100 = -50\%$
2009-10: $\frac{(60-20)}{20} \times 100 = 200\%$
2010-11: $\frac{(70-60)}{60} \times 100 = 16.66\%$

Directions (Q6-10): Study the graphs carefully to answer the questions that follow.

Total number of children in 6 different schools and the percentage of girls in them





Q6. What is the total percentage of boys in schools R and U together? (rounded off to two digits after decimal)
(a) 78.55
(b) 72.45
(c) 76.28
(d) 75.83
(e) None of these

S6. Ans.(d)

Sol. Number of boys in school R and U together

$= \frac{2000 \times 72.5}{100} + \frac{1000 \times 82.5}{100}$

$= 1450 + 825 = 2275$

$\therefore$ Required percentage $= \frac{2275}{3000} \times 100 = 75.83\%$

Q7. What is the total number of boys in school T?

(a) 500
(b) 600
(c) 750
(d) 850
(e) None of these

S7. Ans.(c)

Sol. Number of boys in school T $= \frac{1250 \times 60}{100} = 750$

Q8. The total number of students in school R, is approximately what per cent of the total number of students in school S?

(a) 89
(b) 75
(c) 78
(d) 82
(e) 94

S8. Ans.(a)

Sol. Total number of students in school R = 2000

Total number of students in school S = 2250

$\therefore$ Required percentage $= \frac{2000}{2250} \times 100 \approx 89$

Q9. What is the average number of boys in schools P and Q together?

(a) 1425
(b) 1575
(c) 1450
(d) 1625
(e) None of these

S9. Ans.(b)

Sol. Required average $= \frac{1}{2}\left(\frac{2500 \times 60}{100} + \frac{3000 \times 55}{100}\right)$

$= \frac{1}{2}(1500 + 1650) = \frac{1}{2} \times 3150 = 1575$

Q10. What is the respective ratio of the number of girls in schools P to the number of girls in school Q?

(a) 27 : 20
(b) 17 : 21
(c) 20 : 27
(d) 21 : 17
(e) None of these

S10. Ans.(c)

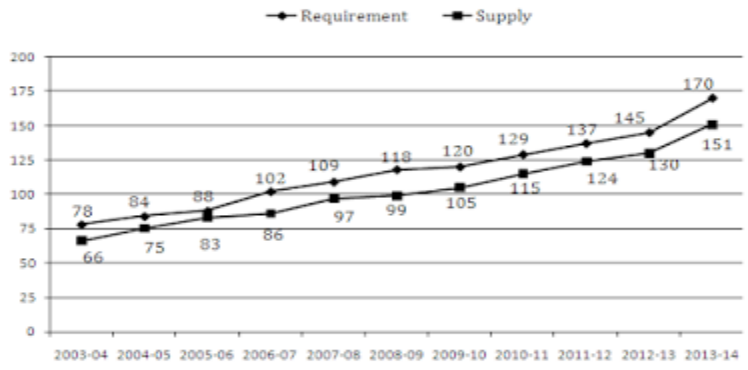
Sol. Required ratio = $\frac{2500 \times 40}{100} : \frac{3000 \times 45}{100}$

$= 25 \times 40 : 30 \times 45$

$= 100 : 135 = 20 : 27$

Directions (11-15): Study the graph and answer the following questions.

Power Supply Position in UP (in billion KWH)



Q11. What was the approximate percentage increase in supply of power between 2009-10 and 2013-14?
(a) 56%
(b) 145%
(c) 43%
(d) 85%
(e) None of these

S11. Ans.(c)

Sol. In 2009-10 is 105 while in 2013-14 is 151.

So percentage increases is $\frac{151-105}{105} \times 100 = \frac{46}{105} \times 100 = 43\%$

Q12. The cumulative shortfall between requirement and supply from 2009 to the end of 2014 was (in billion)
(a) 56
(b) 85
(c) 45
(d) 76
(e) None of these

S12. Ans.(d)

Sol. Total requirement = 120 + 129 + 137 + 145 + 170 = 701

Total supply = 105 + 115 + 124 + 130 + 151 = 625

Difference = 701 - 625 = 76

Q13. The requirement of power in 2013-14 was approximately how many times the availability of supply in 2007-08?
(a) 2.6
(b) 1.75

(c) 2.75
(d) 2.0
(e) None of these

S13. Ans.(b)

Sol. $170 = 97 \times x$

$So, x = \frac{170}{97} = 1.75$

Q14. The percentage of growth in power requirement from 2008-09 to 2013-14 was less than the percentage of growth in power requirement from 2003-04 to 2008-09 by what figure?
(a) 3
(b) 4
(c) 15
(d) 7
(e) None of these

S14. Ans.(d)

Sol. In 2008-09 to 2013-14 ,% Growth $= \frac{170-118}{118} \times 100 \approx 44\%$

In 2003-04 to 2008-09 growth$= \frac{118-78}{78} = \frac{40}{78} \times 100 \approx 51\%$

So, more $\approx 51 - 44 = 7\%$

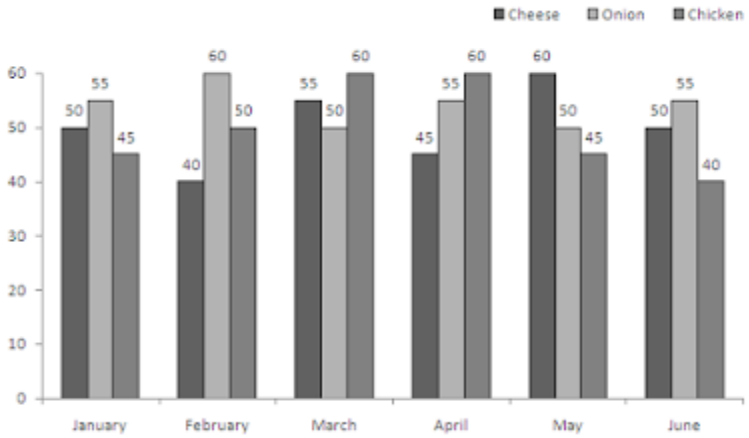
Q15. Between 2008-09 and 2012-13, the power generation has generally logged behind power demand by how many years?
(a) 1
(b) 2
(c) 3
(d) 4
(e) None of these

S15. Ans.(c)

Sol. In 2008-09 demand was 118 which completed in 2012-13 means 3 years.

Directions (1-5): Dominos prepares Pizzas of three different types – Cheese, Onion and Chicken. The production of the three types over a period of six Months has been expressed in the bar-graph provided below. Study the graph and answer the questions based on it.

Order of three different types of Dominos Pizzas over the Months (in lakh orders)



Q1. For which of the following Months the percentage of rise/fall in Order from the previous Month is the maximum for the Onion flavor?
(a) February
(b) March
(c) April
(d) May
(e) June

S1. Ans.(b)
Sol. The percentage rise/fall in Order from the previous Month for Onion type during various Months are:
In February = $[\frac{(60-55)}{55} \times 100]\% = 9.09\%$ (increase)
In March = $[\frac{(60-50)}{60} \times 100]\% = 16.67\%$ (decrease)
In April = $[\frac{(55-50)}{55} \times 100]\% = 10\%$ (increase)
In May = $[\frac{(55-50)}{55} \times 100]\% = 9.09\%$ (decrease)
In June = $[\frac{(55-50)}{50} \times 100]\% = 10\%$ (increase)
∴ Maximum change is decrease of 16.67% during March.

Q2. For which type was the average annual Order maximum in the given period?
(a) Cheese only
(b) Onion only
(c) Chicken only
(d) Cheese and Onion
(e) Cheese and Chicken

S2. Ans.(b)
Sol. Average annual Orders over the given period for various types are:
For Cheese type = $[\frac{1}{6} \times (50 + 40 + 55 + 45 + 60 + 50)]$ lakh orders = 50 lakh orders.
For Onion type = $[\frac{1}{6} \times (55 + 60 + 50 + 55 + 50 + 55)]$ lakh orders
= 54.17 lakh orders.
For Chicken type = $[\frac{1}{6} \times (45 + 50 + 60 + 60 + 45 + 40)]$ lakh orders = 50 lakh orders.
∴ Maximum average Order is for Onion type.

Q3. The total Order of Chicken type in March and April is what percentage of the total Order of Cheese type in January and February?
(a) 96.67%
(b) 102.25%
(c) 115.57%
(d) 120%
(e) 133.33%

S3. Ans.(e)
Sol. Required percentage = $[\frac{(60 + 60)}{(50 + 40)} \times 100]\% = (\frac{120}{90} \times 100)\% = 133.33\%$.

Q4. What is the difference between the average Order of Cheese type in January, February and March and the average Order of Onion type in April, May and June?
(a) 50,000 orders
(b) 80,000 orders
(c) 2,40,000orders
(d) 3,30,000orders
(e) 5,00,000orders

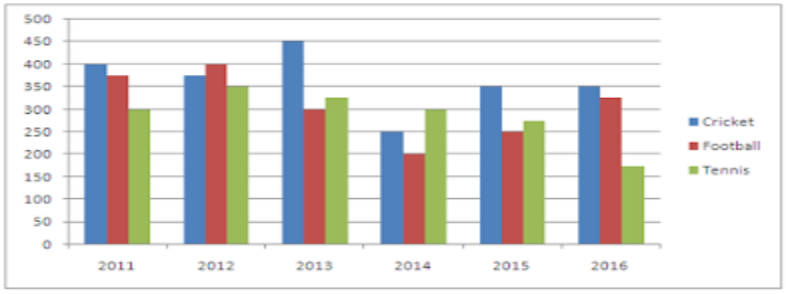
S4. Ans.(e)
Sol. Average Order of Cheese type in January, February and March = $[\frac{1}{3} \times (50 + 40 + 55)]$
= $(\frac{145}{3})$ lakh orders.
Average Order of Onion type in April, May and June = $[\frac{1}{3} \times (55 + 50 + 55)]$
= $(\frac{160}{3})$ lakh orders.
∴ Difference = $(\frac{160}{3} - \frac{145}{3}) = \frac{15}{3}$ = 5 lakh orders = 5,00,000 orders.

Q5. What was the approximate decline in the Order of Chicken type in June as compared to the Order in April?

(a) 50%
(b) 42%
(c) 33%
(d) 25%
(e) 22.5%

S5. Ans.(c)
Sol. Percentage decline in the Order of type Chicken in June as compared to the Order in April = $[\frac{(60-40)}{60} \times 100]\% = (\frac{20}{60} \times 100)\% = 33.33\% \approx 33\%$.

Directions (Q6 -10): Study the following Graph carefully and answer the questions given below:
Preferences of People in Playing Different Games Over the Years (in Hundred)



Q6. In the year 2016, the people preferring to play Tennis is what percent of the people prefer to play Cricket, Football and Tennis together in that year?
(a) 22.76%
(b) 20.58%
(c) 42. 24%
(d) 25%
(e) None of these

S6. Ans.(b)
Sol.

$$\text{Desired}\% = \frac{175}{350+325+175} \times 100 = \frac{175}{850} \times 100 = 20.58\%$$

Q7. How many people have preferred to play Cricket in all the years together?
(a) 217500
(b) 224500
(c) 247500
(d) 175600
(e) None of these

S7. Ans.(a)
Sol.
Total people playing cricket over all years = 2,17,500

Q8. What is the respective ratio of the number of people prefer to play cricket in 2011, 2013 and 2015 to the number of people prefer to play Tennis in the year 2013, 2015 and 2016?
(a) 2 : 1
(b) 45 : 33
(c) 44 : 31
(d) 48 : 31
(e) None of these

S8. Ans.(d)
Sol.

$$\text{Ratio} = \frac{400 + 450 + 350}{325 + 275 + 175} = \frac{1200}{775} = 48 : 31$$

Q9. From 2011 to 2016, the total number of people who preferred to play Football was what percent more or less than the total number of people who preferred to play Tennis during the same period?
(a) 5.24%
(b) 6.24%
(c) 7.24%
(d) 8.24%
(e) 10%

S9. Ans.(c)
Sol.

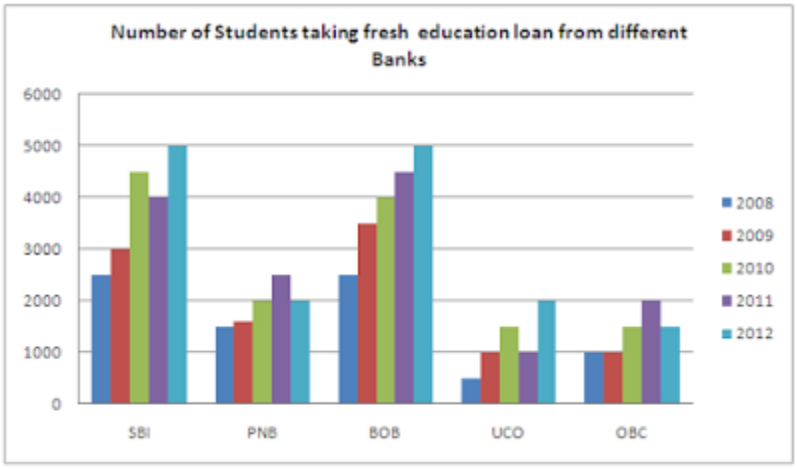
$$\text{Desired \%} = \frac{1850 - 1725}{1725} \times 100 = \frac{125}{1725} \times 100 = 7.24\%$$

Q10. The no. of people prefer to play tennis in 2016 is what percent fewer than the number of people preferring to play tennis in 2015?
(a) $23\frac{4}{11}\%$
(b) $36\frac{4}{11}\%$
(c) $42\frac{7}{13}\%$
(d) $33\frac{9}{13}\%$
(e) None of these

S10. Ans.(b)
Sol.

$$\text{Desired \%} = \frac{275 - 175}{275} \times 100 = \frac{400}{11} = 36\frac{4}{11}\%$$

Directions (11 – 15): Read the given bar graph and answer the following questions.



Q11. Approximately how many students taking a loan from UCO in 2009 and PNB in 2010 were defaulters if 23% from UCO in 2009 and 20% from PNB in 2010 have defaulted?
(a) 630
(b) 650
(c) 600
(d) 750
(e) 840

S11. Ans.(a)
Sol.
Students taking loan from UCO in 2009 = 1000
Defaulters (UCO) = 23% of 1000 = 230
Person taking loan from PNB in 2010 = 2000
Defaulters (PNB) = 20% of 2000 = 400
Total desired defaulters = 230 + 400 = 630

Q12. In 2007, no of defaulters in SBI was 5%. However each year no of defaulters increases by 10% in number. What will be the difference between the number of defaulters of SBI in the Month 2009 and 2012?
(a) 1500
(b) 2000
(c) 1325
(d) 1456
(e) Cannot be determined

S12. Ans.(e)
Sol.
Cannot be determined because no. of students taking a loan from SBI in 2007 is unknown.

Q13. In which of the following years, the difference in no. of students taking the loan from Bank BOB from the previous year is highest?
(a) 2008
(b) 2009
(c) 2010
(d) 2012
(e) None of these

S13. Ans.(b)

Sol.

From graph, it is clear that in 2009, difference between no. of students taking a loan is highest as compared to previous year.

Q14. If on average, Rs. 175000 per students education loan sanctioned by OBC bank all over the years. What will be total amount sanctioned by OBC in all given years?

(a) 1055600000
(b) 1055800000
(c) 1620000000
(d) 1050000000
(e) None of the above

S14. Ans.(e)

Sol.

No. of students taking education loan from OBC bank all over the year = 1000 + 1000 + 1500 + 2000 + 1500= 7000

Total loan amount sanctioned over the years = 7000 × 1,75,000

= Rs. 1,22,50,00,000

Q15. What is the ratio of Number of students taking Education Loans from SBI and BOB together in all the Years and the total no of students taking Education loans in 2010 and 2011 together?

(a) 8 : 5
(b) 5 : 7
(c) 7 : 5
(d) 9 : 7
(e) None of these

S15. Ans.(c)

Sol.

SBI : 2500 + 3000 + 4500 + 4000 + 5000 = 19000

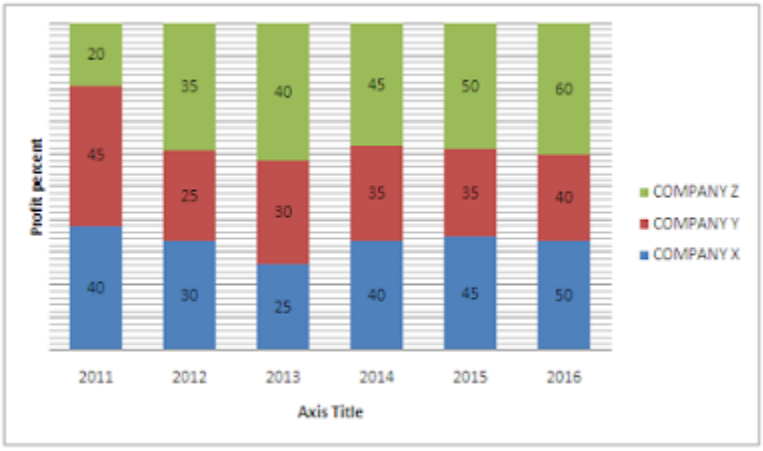
BOB : 2500 + 3500 + 4000 + 4500 + 5000 = 19500

Total no. of students taking loan in 2010 = 13500

Total no. of students taking loan in 2011 = 14000

Desired ratio $= \frac{19000+19500}{13500+14000} = \frac{38500}{27500} = \frac{7}{5}$

Directions (Q.1 - 5): Study the graph carefully to answer the questions that follow.



Q1. If profit for company Y in 2012 is 2000 and expenditure in 2013 for company Y is 50,000, then what is the total revenue in 2013 for Y? Give that total revenue = expenditure + profit.
(a) 52600
(b) 54200
(c) 53280
(d) 55800
(e) None of these

Q2. If profit in year 2015 for company Z is 3000 and profit of company X in 2013 is equal to profit of company Z in 2014 then what is the profit of company X in 2013
(a) 1500
(b) 4000
(c) 3500
(d) 2000
(e) 2500

Q3. What is the average percentage increase in profit for company Y over all the years.
(a) 49%
(b) 32%
(c) 23%
(d) 38%
(e) 35%

Q4. What was the approximate percent increase in percent increase of profit of company X in the year 2014 from its previous year
(a) 60%
(b) 65%
(c) 55%
(d) 50%
(e) 70%

Q5. If profit earned by company Y in 2014 is 27,000 and by company Z in 2014 is 43500 then what is the total profit earned by them in year 2013?
(a) 25,000
(b) 35,000
(c) 40,000
(d) 50,000
(e) None of these

Solutions (1-5):

S1. Ans.(a)
Sol. Profit in 2013 = $2000 \times \frac{130}{100}$
$= 2600$
Total revenue = 50,000 + 2600
= 52600

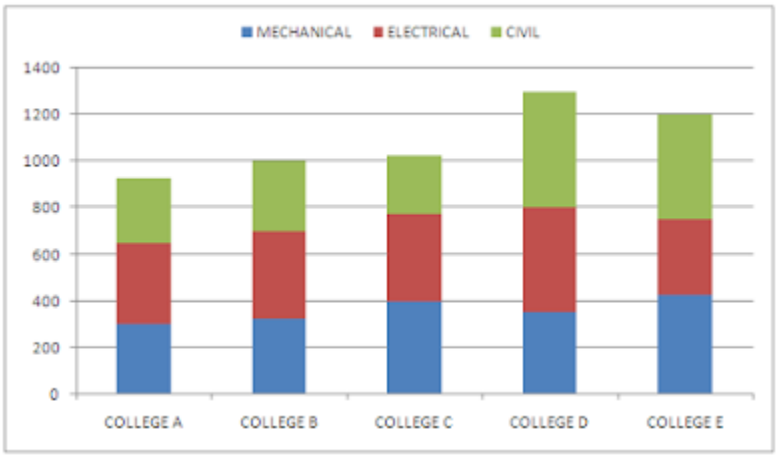
S2. Ans.(d)
Sol. Profit of company X in 2013 = $\frac{3000 \times 100}{150}$
$= 2000$

S3. Ans.(e)
Sol. Required average = $\frac{45+25+30+35+35+40}{6}$
$= \frac{210}{6}$
$= 35\%$

S4. Ans.(a)
Sol. Required percentage = $\frac{40-25}{25} \times 100$
$= \frac{15}{25} \times 100$
$= 60\%$

S5. Ans.(d)
Sol. Profit earned by Y in 2013 = $\frac{27000 \times 100}{135}$
$= 20,000$
Profit earned by Z in 2013 = $\frac{43500 \times 100}{145}$
$= 30,000$
Total profit = 50,000

Directions (Q6 – 10): Study the following graph carefully and answer the questions given below
Number of students enrolled in mechanical, electrical and civil branches of five different colleges in the year 2016



Q6. Ratio of number of male to female students in electrical discipline from college B is 16 : 9 and total professors from same college and same branch is 100/9% of total female students from the same branch and same college then, find total number of professor in electrical branch from college B.
(a) 18
(b) 15
(c) 20
(d) 22
(e) 25

Q7. If number of male student in civil branch from college D and male students in mechanical branch from college A are equal then what is the percentage of female students in mechanical branch of college A ? Give that ratio of male to female students in civil branch from college D is 13 : 12

(a) $33\frac{1}{3}\%$

(b) $16\frac{2}{3}\%$

(c) $13\frac{1}{3}\%$

(d) $\frac{22}{7}\%$

(e) None of these

Q8. If 20% of students in civil branch from college E are transferred to civil branch of college C then find the ratio of students in civil from college C to the total students from college E now.

(a) 34/111
(b) 23/222
(c) 23/111
(d) 34/113
(e) None of these

Q9. Average of students in electrical branch from all colleges are what percent less/more than the average students in Civil branch from all colleges together? (Approximately)

(a) 12%
(b) 8%
(c) 4%
(d) 7%
(e) 6%

Q10. If 20% of total students from College D are failed in yearly exam, 75% of total students are passed from college E in yearly exams then what will be total students in college D and E together in year 2017 if 400 more students are enrolled in 2017 from both colleges D and E together (consider both colleges were opened in 2016 and enrollment is cancelled when a student fails in exam)

(a) 2340
(b) 2900
(c) 2440
(d) 2800
(e) None of these

Solutions (6-10):

S6. Ans.(b)
Sol.
Total number of professors = $\frac{1}{9} \times \frac{9}{25} \times 375 = 15$

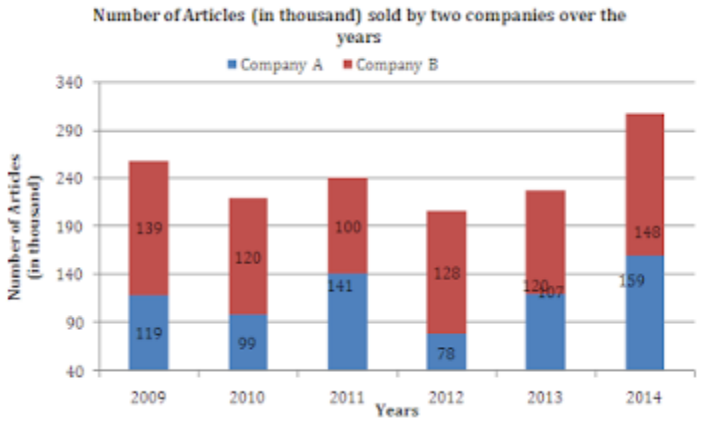
S7. Ans.(c)
Sol.
Number of male students in Mechanical branch from college A = $\frac{13}{25} \times 500 = 260$
Required percentage = $\frac{300-260}{300} \times 100$
$= \frac{40}{3}\%$
$= 13\frac{1}{3}\%$

S8. Ans.(a)
Sol.
20% students from civil branch in college E = $\frac{20}{100} \times 450 = 90$
Total students of civil branch in college C = 250 + 90 = 340
Required ratio = $\frac{340}{1110}$
$= \frac{34}{111}$

S9. Ans.(e)
Sol.
Total students in Electrical branch in all college = 350 + 375 + 375 + 450 + 325
= 1875
Total students in civil branch from all colleges = 275 + 300 + 250 + 500 + 450
= 1775
Required percentage = $\frac{375-355}{355} \times 100$
= 5.6%
~ 6% more

S10. Ans.(a)
Sol.
Total students in college D and E together in 2017who are enrolled
= $1300 \times \frac{80}{100} + 1200 \times \frac{75}{100} + 400$
=2340

Directions (Q11-15): Study the following line graph and answer the questions based on it.



Q11. What is the ratio of number of articles sold by company A in year 2010, 2012 and 2014 together to the number of articles sold by company B is 2011, 2013 and 2014?
(a) 336/375
(b) 436/453
(c) 353/553
(d) 342/451
(e) None of these

Q12. If 24% of articles sold by company A in 2013 and 22% of articles sold by company A in 2014 are defective. Then defective articles sold by A in 2013 and 2014 are what percent less than articles sold by company B in 2010 and 2012 together? (Approx)
(a) 70%
(b) 74%
(c) 80%
(d) 72%
(e) None of these

Q13. What is the approximate difference between the average of articles sold by company A and B in over the given period?
(a) 4320
(b) 3320
(c) 4333
(d) 3333

(e) None of these

Q14. Number of articles sold by company A in 2009, 2011 and 2013 together is approximately what percent more than the average of article's sold by company B in year 2012, 2013 and 2014?
(a) 190%
(b) 200%
(c) 197%
(d) 180%
(e) None of these

Q15. If number of articles sold by company B in 2015 is 78% more than the difference between articles sold by company A and Company B in 2014 then find the approximately increase are decrease in the articles sold by company B in 2015 from previous year
(a) 77% increase
(b) 87% decrease
(c) 77% decrease
(d) 92% decrease
(e) None of these

Solutions (11-15):

S11. Ans.(a)
Sol.
Number of articles sold by company A in
2010, 2012 and 2014 = 99000 + 78000 + 159000
= 336000
Number of articles sold by company B in 2010, 2013 and 2014
= 120000 + 107000 + 148000
= 375000
Required ratio= 336/375

S12. Ans.(d)
Sol.
Defective articles in 2013 by A = $\frac{24}{100} \times 1,20,000$
= 28800
Defective article in 2014 by A = $\frac{22}{100} \times 159,000$
= 34980
Articles sold by company B in 2010 & 2012 = 120000 + 128000
Required % = $\frac{248000 - 63780}{248000} \times 100$
≈ 72%

S13. Ans.(c)

Sol.

Average of articles sold by company A $= \frac{119000+99000+141000+78000+120000+159000}{6}$

$= \frac{1000(119+99+141+78+120+159)}{6}$

≈ 119333

Average of articles sold by company B

$= \frac{1000(139+120+100+128+107+148)}{6}$

≈ 123666

Required difference = 123666 − 119333

= 4333

S14. Ans.(c)

Sol.

Number of articles sold by company A in 2009, 2011, and 2013 = 1000(119 + 141 + 120)

= 380000

Average of articles sold by company B in 2012, 2013 and 2014

$= \frac{(128+107+148)\times 1000}{3}$

$= \frac{383000}{3} = 127666.66$

≈ 127666

Required percentage $= \frac{252334}{127666} \times 100$

= 197%

S15. Ans.(b)

Sol.

Difference of articles sold by company A & B in 2014

= (159 − 148)1000

= 11000

Articles sold by company B in 2015 $= \frac{178}{100} \times 11000$

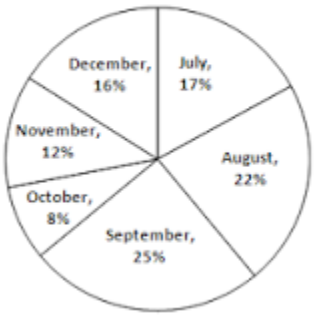
= 19580

Decrease in percentage of B from 2014 to 2015 $= \frac{148000-19580}{148000} \times 100 \approx 87\%$

Directions (Q1-5: Study the following pie-chart and table carefully and answer the questions given below:

Percentage-wise distribution of the number of mobile phones sold by a shopkeeper during six months

Total number of mobile phones sold = 45000



The ratio between the numbers of mobile phones sold of Company A and Company B during six months

Month	Ratio
July	8 : 7
August	4 : 5
September	3 : 2
October	7 : 5
November	7 : 8
December	7 : 9

Q1. What is the ratio of the number of mobile phones sold of Company B during July to those sold during December of the same company?
(a) 119: 145
(b) 116: 135
(c) 119: 135
(d) 119: 130
(e) None of these

S1. Ans.(c)
Sol.

Total number of mobiles sold in the month of July = $45000 \times \frac{17}{100} = 7650$

Mobile phones sold by Company B in the month of July = $7650 \times \frac{7}{15} = 3570$

Total numbers of mobile phones sold in the month of December = $45000 \times \frac{16}{100} = 7200$

Mobile phones sold by Company B in the month of December = $7200 \times \frac{9}{16} = 4050$

$\therefore$ Required ratio = $\frac{3570}{4050} = \frac{357}{405} = \frac{119}{135} = 119 : 135$

Q2. If 35% of the mobile phones sold by Company A during November were sold at a discount, how many mobile phones of Company A during that month were sold without a discount?
(a) 882
(b) 1635
(c) 1638
(d) 885
(e) None of these

S2. Ans.(c)
Sol.

Number of mobile phones sold in the month of November = $45000 \times \frac{12}{100} = 5400$

Number of mobile phones sold by Company A in the month of November = $5400 \times \frac{7}{15} = 2520$

$\therefore$ Number of mobile phones sold without discount in the month of November by Company A

= $2520 \times \frac{65}{100} = 2520 \times 0.65 = 1638$

Q3. If the shopkeeper earned a profit of Rs. 433 on each mobile phone sold of Company B during October, what was his total profit earned on the mobile phones of that company during the same month?
(a) Rs. 6,49,900
(b) Rs. 6,45,900
(c) Rs. 6,49,400
(d)Rs. 6,49,500
(e) None of these

S3. Ans. (d)
Sol.

Number of mobile phones sold in the month of October = $45000 \times \frac{8}{100} = 3600$

∴ Number of mobile phones sold by Company B in the month of October = $3600 \times \frac{5}{12} = 1500$

∴ Total profit earned by Company B in the month of October = 1500 × 433 = 649500

Q4. The number of mobile phones sold of Company A during July is approximately what percent of the number of mobile phones sold of Company A during December?
(a) 110
(b) 140
(c) 150
(d) 105
(e) 130

S4. Ans.(e)
Sol.

Number of mobile phones sold in the month of July = $45000 \times \frac{17}{100} = 7650$

Number of mobile phones sold by Company A in the month of July = $7650 \times \frac{8}{15} = 4080$

Number of mobile phones sold in the month of December = $45000 \times \frac{16}{100} = 7200$

Number of mobile phones sold by Company A in the month of December = $7200 \times \frac{7}{16} = 3150$

∴ Required % = $\frac{4080}{3150} \times 100 = 129.52 \approx 130$

Q5. What is the total number of mobile phones sold of Company B during August and September together?
(a) 10000
(b) 15000
(c) 10500
(d) 9500
(e) None of these

S5. Ans.(a)
Sol.

Number of mobile phones sold in the month of August = $\frac{22}{100} \times 45000 = 9900$

Number of mobile phones sold in the month of September = $\frac{25}{100} \times 45000 = \frac{1}{4} \times 45000 = 11250$

Number of mobile phones sold by Company B in the month of August = $9900 \times \frac{5}{9} = 5500$

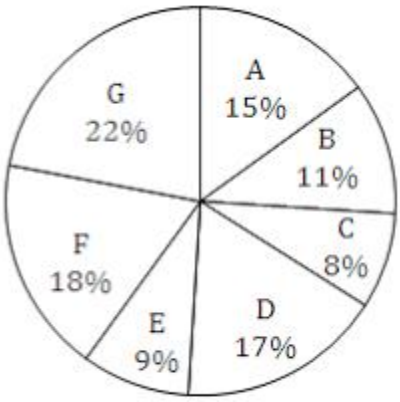
Number of mobile phones sold by Company B in September = $11250 \times \frac{2}{5} = 4500$

Total number of mobile phones sold in August and September by Company B = 5500 + 4500
= 10000

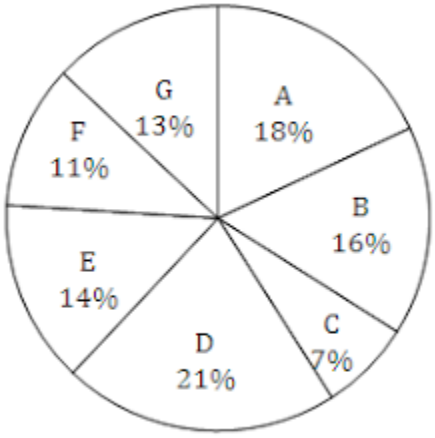
Directions (Q6-10): These questions based on the following graphs:

Classification of appeared candidates in a competitive test from different states and qualified candidates from those states.

Appeared candidates = 45000.



Qualified candidates = 9000



Q6. What is the ratio of the number of appeared candidates from states C and E together to that of the appeared candidates from states A and F together?
(a) 17: 33
(b) 11 : 13
(c) 13 : 27
(d) 17 : 27
(e) None of these

S6. Ans.(a)

Sol. Required ratio = $\frac{8+9}{15+18}$ = 17:33.

Q7. In which state, the percentage of qualifies candidates with respect to that of appeared candidates is minimum?
(a) C
(b) F
(c) D
(d) E
(e) G

S7. Ans.(e)
Sol. Here, do not find the ratio of number of qualified candidates that of the appeared. Simply check the ratio of % qualified candidates with respect to the appeared is the least for which state. Ans = G.

Q8. What is the difference between the number of qualified candidates of states D and those of G?
(a) 690
(b) 670
(c) 780
(d) 720
(e) None of these

S8. Ans.(d)
Sol. Required difference = (21 - 13)% of 9000 = 720.

Q9. What is the percentage of qualified candidates with respect to appeared candidates from states B and C taken together? (rounded to two decimal places)
(a) 23.11
(b) 24.21
(c) 21.24
(d) 23
(e) None of these

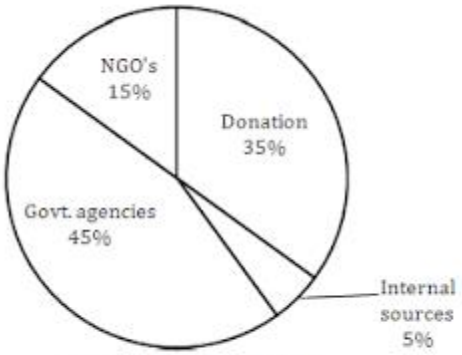
S9. Ans.(b)
Sol. Required % = $\frac{(16+7)\% \text{ of } 9000}{(11+8)\% \text{ of } 45000} \times 100 = 24.21\%$

Q10. What is the ratio between the number of candidates qualified from states B and D together to the number of candidates appeared from states 'C', respectively?
(a) 8 : 37
(b) 11 : 12
(c) 37 : 40
(d) 7 : 37
(e) None of these

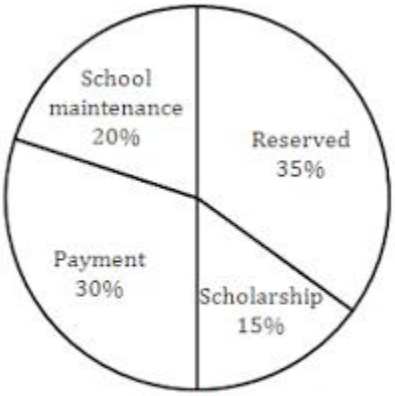
S10. Ans.(c)
Sol. Required ratio = $\frac{(16+21)\% \text{ of } 9000}{8\% \text{ of } 45000} = 37 : 40$

Directions (11-15): Study the following pie-charts carefully and answer the questions given below it.

The entire fund that school gets from different sources in equal to Rs. 500 lakh



Sources of funds in school



Uses of funds by school

Q11. What is the difference between the funds acquired by the school from NGO's and internal sources?
(a) Rs. 50 lakh
(b) Rs. 45 lakh
(c) Rs. 75 lakh
(d) Rs. 25 lakh
(e) None of these

S11. Ans.(a)
Sol. Required difference = (Percentage of fund acquired from NGO-Percentage of fund acquired from internal sources) of 500 lakh
= (15 - 5)% of 500 lakh = $\frac{500 \times 10}{100}$lakh = Rs. 50 lakh

Q12. If the school managed school maintenance from the government agencies fund only, then how much fund from government agencies would still left for other use?
(a) Rs. 120 lakh
(b) Rs. 150 lakh
(c) Rs. 110 lakh
(d)Rs. 95 lakh
(e) None of these

S12. Ans.(e)
Sol. Fund from government agencies
$= \frac{500 \times 45}{100}$ = Rs. 225 lakh
Expenses in school maintenance
$= \frac{500 \times 20}{100}$ = Rs. 100 lakh
∴ Remaining found = (225 - 100) lakh
= Rs. 125 lakh

Q13. If scholarship has to be paid out of the donation fund, then what is the approximate per cent of donation fund used for his purpose?
(a) 43%
(b) 53%
(c) 37%
(d) 45%
(e) 32%

S13. Ans.(a)
Sol. Fund from donation = $\frac{500 \times 35}{100}$ = Rs. 175 lakh
Scholarship amount = $\frac{15 \times 500}{100}$ = Rs. 75 lakh
∴ Required percentage = $\frac{75}{175} \times 100 = 42.85\%$
= 43% (approx.)

Q14. What is the total amount used by the school for payment?
(a) Rs. 100 lakh
(b) Rs. 110 lakh
(c) Rs. 150 lakh
(d) Rs. 140 lakh
(e) None of these

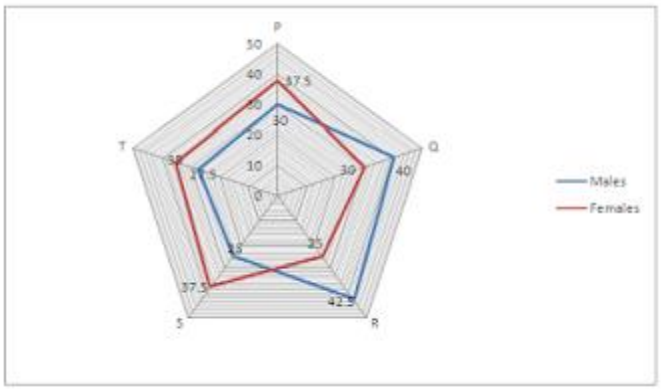
S14. Ans.(c)
Sol. Total amount used by the school for payment
$= \frac{500 \times 30}{100}$ = Rs. 150 lakh

Q15. What amount of the fund is acquired by the school from government agencies?
(a) Rs. 220 lakh
(b) Rs. 310 lakh
(c) Rs. 255 lakh
(d) Rs. 225 lakh
(e) None of these

S15. Ans.(d)
Sol. Fund acquired from government agencies
$= \frac{500 \times 45}{100}$ = Rs. 225 lakh

Directions (Q1 – 5): Study the following Radar graph carefully and answer the questions given below.

The number of students studying in different universities in a year (Numbers in Lac).



Q1. What is the average number of females in all the universities together?
(a) 3300000
(b) 350000
(c) 320000
(d) 3200000
(e) None of these

S1.Ans. (a)
Sol.
Required No.= $\frac{37.5+30+25+37.5+35}{5} = \frac{165}{5}$lakhs= 3300000

Q2. What is the total number of students (males and females together) in University P and R together?
(a) 1300000
(b) 1350000
(c) 1400000
(d) 14500000
(e) None of these

S2. Ans. (e)
Sol.
Required No.(30 + 37.5 + 42.5 + 25)
= 135 lakhs = 13500000

Q3. What is the respective ratio of the number of females from University P and Q together to the number of males in the Universities R and T together?
(a) 27: 32
(b) 27: 28
(c) 25: 28
(d) 28: 27
(e) None of these

S3. Ans.(b)
Sol.
Required Ratio = (37.5 + 30) : (42.5 + 27.5)
= 27 : 28

Q4. The number of males in University Q is what per cent of the total number of students (males and females together) in University S?

(a) 68
(b) 62
(c) 66
(d) 64
(e) None of these

S4. Ans. (d)

Sol. Required % = $\frac{40}{25+37.5} \times 100$

= 64%

Q5. If the total number of males in University T increases by 50%, what would be the total number of students (males and females together) in that university?
(a) 7526000
(b) 76250000
(c) 7625000
(d) 75260000
(e) None of these

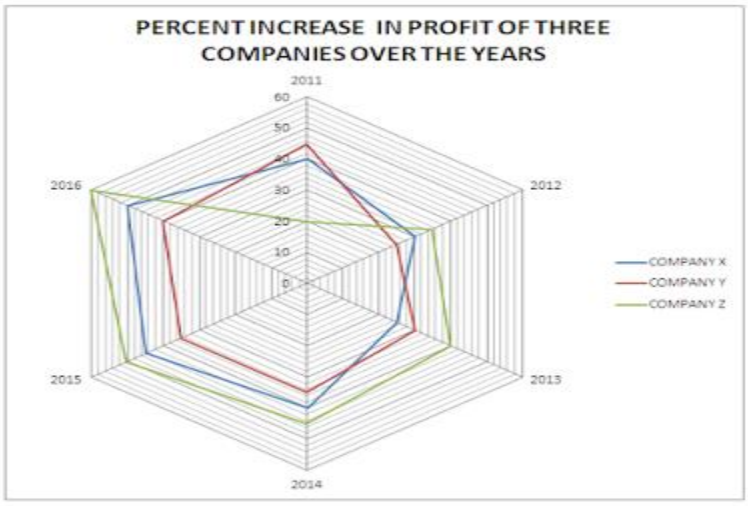
S5. Ans. (c)

Sol. Required no.= $(27.5 \times \frac{150}{100}) + 35$

= 76.25 lakhs

= 7,62,5000

Directions (Q.6-10): Study the graph carefully to answer the questions that follow.



Q6. If profit for company Y in 2012 is 2000 and expenditure in 2013 for company Y is 50,000, then what is the total revenue in 2013 for Y? Give that total revenue = expenditure + profit.
(a) 52600
(b) 54200
(c) 53280
(d) 55800
(e) None of these

S6. Ans.(a)

Sol. Profit in 2013 $= 2000 \times \frac{130}{100}$

$= 2600$

Total revenue $= 50{,}000 + 2600$

$= 52600$

Q7. If profit in the year 2015 for company Z is 3000 and profit of company X in 2013 is equal to profit of company Z in 2014 then what is the profit of company X in 2013

(a) 1500
(b) 4000
(c) 3500
(d) 2000
(e) 2500

S7. Ans.(d)

Sol. Profit of company X in 2013 $= \frac{3000 \times 100}{150}$

$= 2000$

Q8. What is the average percentage increase in profit for company Y over all the years?

(a) 49%
(b) 32%
(c) 23%
(d) 38%
(e) 35%

S8. Ans.(e)

Sol. Required average $= \frac{45+25+30+35+35+40}{6}$

$= \frac{210}{6}$

$= 35\%$

Q9. What was the approximate percent increase in percent increase of profit of company X in the year 2014 from its previous year

(a) 60%
(b) 65%
(c) 55%
(d) 50%
(e) 70%

S9. Ans.(a)

Sol. Required percentage $= \frac{40-25}{25} \times 100$

$= \frac{15}{25} \times 100$

$= 60\%$

Q10. If profit earned by company Y in 2014 is 27,000 and by company Z in 2014 is 43500 then what is the total profit earned by them in the year 2013?

(a) 25,000
(b) 35,000
(c) 40,000
(d) 50,000

(e) None of these

S10. Ans.(d)

Sol. Profit earned by Y in 2013 $= \frac{27000 \times 100}{135}$

$= 20,000$

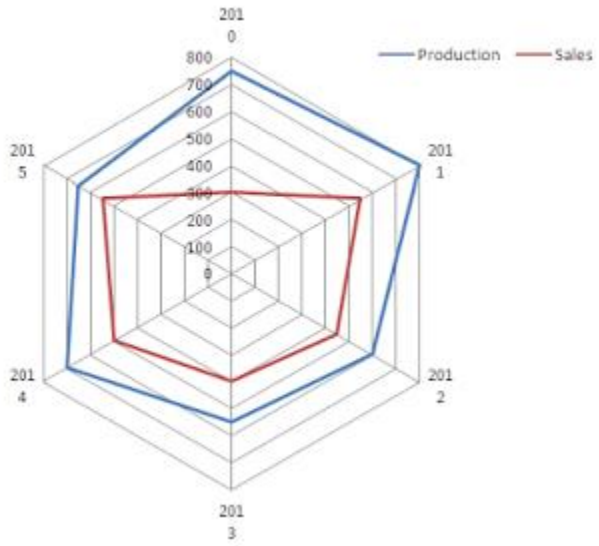
Profit earned by Z in 2013 $= \frac{43500 \times 100}{145}$

$= 30,000$

Total profit $= 50,000$

Directions (11-15): Study the following graph carefully and answer the following question.

The graph below represents the production (in tonnes) and sales (in tonnes) of a company X from 2010-2015



Q11. If the production of company X and another company Y is in the ratio 14 : 13 in year 2014 then production of company Y in 2014 is what percent more or less than production of company X in 2010.

(a) $13\frac{1}{3}\%$

(b) $33\frac{1}{3}\%$

(c) $66\frac{2}{3}\%$

(d) $16\frac{2}{3}\%$

(e) None of these

S11. Ans.(a)

Sol.

Production of company Y in 2014 $= \frac{700}{14} \times 13 = 650$

Required percentage $= \frac{100}{750} \times 100$

$= \frac{40}{3}\%$

$13\frac{1}{3}\%$less

Q12.If the production of company X in 2016 is 120% of its production in 2015 then what is the ratio of sales company X in 2010 to the production of company X in 2016.

(a) 7/9
(b) 13/20
(c) 20/13
(d) 5/13
(e) 7/13

S12. Ans.(d)

Sol.

Production of company X in 2016 $= \frac{120}{100} \times 650 = 780$

Required ratio $= \frac{300}{780}$

$= \frac{5}{13}$

Q13. If production cost is Rs. 1,500 per tonne and sale is at the rate of Rs. 2,800 per tonne over all years then what is the ratio of profit or loss of company X in 2013 to the profit or loss in year 2014. (Profit = Income through sales – Production cost)

(a) 59/70
(b) 20/23
(c) 53/94
(d) 27/38
(e) None of these

S13. Ans.(a)

Sol.

Cost of production in 2013 = 1500 × 550

= Rs. 8,25,000

Total Income through sales = 2800 × 400 = Rs. 11, 20,000

Profit in 2013 = 11,20,000 – 8,25,000

= Rs. 2,95,000

Cost of production in 2014 = Rs. 1500 × 700

= Rs. 10,50,000

Total Income through sales = Rs. 2800 × 500

= Rs. 14,00,000

Profit in 2014 = 3,50,000

Required ratio $= \frac{295}{350} = \frac{59}{70}$

Q14. If production cost in the year 2013 is 150 per tonne and production cost increases by 10% every year after 2013 then what is the average production cost of company X over all years after the year 2013?
(a) 12,20,239
(b) 1,16,737.5
(c) 2,22,467
(d) 1,33,647
(e) None of these

S14. Ans.(b)
Sol.
Total production cost in 2014 and 2015 = 165 × 700 + 181.5 × 650
= 1,15,500 + 1,17,975
= 2,33,475
Required average = $\frac{2,33,475}{2}$ = 1,16,737.5

Q15. If 35% of the production of company X in 2010 is added to the sale of company X in 2012 then the total sale of company X in 2012 is what percent of the total sale of company X over all the years now? (approximately)
(a) 14%
(b) 18%
(c) 35%
(d) 28%
(e) 24%

S15. Ans.(e)
Sol.
Total sale of company X in 2012 = $450 + \frac{35}{100} \times 750 = 712.5$
Required percentage = $\frac{712.5}{300+550+450+400+500+550+262.5} \times 100$
$= \frac{712.5}{3012.5} \times 100 = 23.65\% \sim 24\%$

Directions (Q1 - 5): In the following table, the Investment and profit of three Companies in different countries is given.

	Investment (in mn $.)			Profit (in mn $.)		
State	TCS	Infosys	Accenture	TCS	Infosys	Accenture
Singapore	15000	—	25000	—	8000	12500
UK	—	7000	8000	—	—	14000
UAE	4000	5000	4500	—	—	—
Qatar	9000	10000	—	4500	6000	—
Malaysia	—	—	17000	20000	30000	40000

Note: Some values are missing. You have to calculate these values as per data given in the questions: -

Q1. If TCS invested his amount in SINGAPORE state for 9 years and Accenture invested his amount in the same country for 10 years then find the total profit made by all of them from SINGAPORE ?
(a) mn $ 29250
(b) mn $ 24250
(c) mn $ 27250
(d) mn $ 31200
(e) None of these

S1. Ans.(c)
Sol.

$$\frac{15000 \times 9}{25000 \times 10} = \frac{x}{12500}$$

$$\frac{27}{50} = \frac{x}{12500}$$

$x =$ \$ 6750 mn

∴Required profit = 6750 + 8000 + 12500

= \$ 27250 mn

Q2. If the total profit earned from UK by all of them is mn \$ 32375. and each invested for 9 years then find the ratio of investment of TCS in UK to the profit of Infosys from SINGAPORE ?

(a) 16 : 7
(b) 7 : 16
(c) 8 : 13
(d) 13 : 8
(e) None of these

S2. Ans.(b)
Sol.

$$\frac{7000}{8000} = \frac{P_{infosys}}{14000}$$

$P_{Infosys} =$ \$ 12250mn

$P_{tcs} = 32375 - 12250 - 14000$

$P_{tcs} =$ \$ 6125mn

Let Investment of TCS in UK = x

$$\therefore \frac{x}{7000} = \frac{6125}{12250}$$

$x =$ \$ 3500mn

Required Ratio = (3500) : (8000)

= 7 : 16

Q3. If TCS, Infosys and Accenture invested in UAE for 5 years, 8 years and 6 years respectively then profit earned by Accenture from UAE is what % of the profit earned by TCS and Infosys together from the same Country, if total profit earned by all of them from UAE state is 8700 mn \$.

(a) 45%
(b) 50%
(c) 55%
(d) 40%
(e) None of these

S3. Ans.(a)
Sol.

	TCS	:	Infosys	:	Accenture
Profit :	(4000 × 5)	:	(5000 × 8)	:	(4500 × 6)
	20	:	40	:	27

$\therefore P_{tcs} = \frac{20}{87} \times 8700$
$= \$\ 2000$ mn
$P_{infosys} = \frac{40}{87} \times 8700 = \$\ 4000$mn
$P_{accenture} = \$\ 2700$mn
Required $\% = \frac{2700}{6000} \times 100 = 45\%$

Trick :

Required value = $\frac{27}{40+20} * 100 = 45\%$

Q4. In Malaysia state total Investment of TCS and Infosys is 85000 mn $, while TCS and Infosys invested their amount for 4 years and 6 years respectively in the same country, then find the number of years that accenture invested his amount ?
(a) 8 years
(b) 9 years
(c) 20 years
(d) Can't be determined
(e) None of these

S4. Ans.(c)
Sol.

$$\frac{x \times 4}{(85{,}000 - x)6} = \frac{20{,}000}{30{,}000}$$
$$\frac{2x}{3(85{,}000 - x)} = \frac{2}{3}$$
$6x = 2 \times 3 \times 85000 - 6x$
$12x = 6 \times 85000$
$x = \$\ 42500$ mn
$I_{tcs} = \$\ 42500$mn
$\therefore I_{infosys} = \$\ 42500$mn
Let Required years $= y$

$$\therefore \frac{42500 \times 6}{17{,}000 \times y} = \frac{30{,}000}{40{,}000}$$
$y = 20$ years

Q5. Average Investment made by all of them in Qatar is $ 10,000 mn .and average profit earned by all of them from the same state is $ 6000 mn , then profit earned by Accenture in the same country is what percent more/less than the amount invested by Accenture in the same state?

(a) $35\frac{1}{3}\%$
(b) $37\frac{6}{7}\%$
(c) $32\frac{7}{11}\%$
(d) $33\frac{7}{11}\%$
(e) $31\frac{9}{11}\%$

S5. Ans.(e)
Sol.

$$I_{accenture} = 30000 - 9000 - 10000$$

$= \$\,11000$ mn

$$P_{accenture} = 18000 - 4500 - 6000$$

$= \$\,7500$ mn

$$\text{Required } \% = \frac{11000-7500}{11000} \times 100$$

$$= 31\frac{9}{11}\%$$

Directions (Q. 6-10): A person purchased 5 Gadgets from a shop and sold them online. Given below is the data showing cost price, selling price and profit/loss percentage.

	C.P. (in Rs.)	Profit/Loss%	S.P. (in Rs.)
Smartphone	32445	—	40556.25
Laptop	—	Profit-15%	40940
Tablet	22150	Loss-12%	—
Digital camera	28295	—	31140
Smart Watch	—	Profit-25%	7075

Q6. Cost price of Laptop is what percent of selling price of Tablet? (approximate)
(a) 138%
(b) 182%
(c) 142%
(d) 154%
(e) 186%

S6. Ans.(b)
Sol. Let cost price of Laptop = x

$$x \times \frac{(100+15)}{100} = 40940$$

$$x = 35600$$

$$\text{Selling price of Tablet} = 22150 \times \frac{(100-12)}{100} = 19492$$

$$\text{Required percentage} = \frac{35600}{19492} \times 100 \approx 182\%$$

Q7. If there has been a profit of 12% on Tablet instead of 12% loss. Then the new S.P. is how much more than the original S.P.?
(a) 5216
(b) 5396
(c) 5336
(d) 5316
(e) None of these

S7. Ans.(d)
Sol. Original S.P.$= 22150 \times \frac{88}{100} = 19492$

New S.P.$= 22150 \times \frac{(100+12)}{100} = 24808$

Difference = 5316

Q8. Profit percentage on Digital camera is what percent more/less than profit percentage on Laptop?
(a) 50% more

(b) 33.34% less
(c) 33.67% more
(d) 50% less
(e) 150% less

S8. Ans.(b)

Sol. Percentage profit on Digital camera = $\frac{31140-28295}{28295} \times 100 = 10.05\%$

Profit percentage on Laptop = 15%

Required percentage = $\frac{(15-10)}{15} \times 100 = \frac{100}{3} = 33.34\%$ less

Q9. What is the ratio between profit percentage of Smart Watch to profit percentage of Smartphone?
(a) 5 : 3
(b) 3 : 2
(c) 3 : 5
(d) 2 : 5
(e) None of these

S9. Ans.(e)

Sol. Profit percentage on Smartphone = $\frac{40556.25-32445}{32445} \times 100 = 25\%$

Profit percentage on Smart Watch= 25%

Required Ratio = 1 : 1

Q10. What is the overall profit/loss percentage? (approximate)
(a) 22.12% profit
(b) 12.12% profit
(c) 14.14% profit
(d) 33.12% loss
(e) 15.15% loss

S10. Ans.(b)

Sol. Overall cost price of all items together = 32445 + 35600 + 22150 + 28295 + 5660 = 124150

Overall selling price of all items together = 40556.25 + 40940 + 19492 + 31140 + 7075 = 139203.25

Profit percentage = $\frac{139203.25-124150}{124150} \times 100 \approx 12.12\%$ profit

Directions (11-15): Study the table and answer the given questions.

Data related to the number of employees in five different companies in December 2012

Company	Total number of Employees	Out of total number of employees		
		Percentage Of Science graduates	Percentage of Commerce graduates	Percentage ofArts graduates
M	1050	32%	–	–
N	700	–	31%	40%
O	–	30%	30%	–
P	–	–	40%	20%
Q	–	35%	50%	–

Note: (I) Employees of the given companies can be categorised only in three types: Science graduates, Commerce graduates and Arts graduates
(II) A few values are missing in the table (indicated –). A candidate is expected to calculate the missing value, if it is required to answer the given question, on the basis of the given data and information.

Q11. What is the difference between the number of Arts graduate employees and Science graduate employees in Company N?
(a) 87
(b) 89
(c) 77
(d) 81
(e) 73

S11. Ans.(c)
Sol. Total number of employees in company N = 700
Percentage of Science graduate employees = [100 – (31+40)] = 29%
Now, percentage difference between Arts graduate and science graduate employees = (40-29)% = 11%
11% of 700 = 77
Therefore, difference = 77

Q12. The average number of Arts graduate employees and commerce graduate employees in Company Q was 312. What was the total number of employees in Company Q?
(a) 920
(b) 960
(c) 1120
(d) 1040
(e) 1080

S12. Ans.(b)
Sol. The percentage of Arts graduate employees in Company Q = 100-35-50 = 15%
Now, The percentage of Arts graduate employees and Commerce and Arts = 50+15 = 65%
Average = 312
Therefore, the total number of employees in commerce and Arts = 2*312
Let the total employees in Company Q be x
Then, 65% of x = 2*312
X = 960

Q13. If the ratio of the number of Commerce graduate employees to that of Arts graduate employees in Company M was 10 : 7, what was the number of Arts graduate employees in M?
(a) 294
(b) 266
(c) 280
(d) 308
(e) 322

S13. Ans.(a)
Sol. The percentage of commerce graduate and Arts graduate employees in company M = 100-32 = 68%
Now, the percentage of Arts graduate employees = $\frac{68*7}{17}$ = 28%
the percentage of Commerce graduate employees = $\frac{68*10}{17}$ = 40%
The number of arts graduate employees in company M = $\frac{1050*28}{100}$ = 294

Q14. The total number of employees in Company N increased by 20% from December 2012 to December 2013. If 20% of the total number of employees in Company N in December 2013 were Science graduates, what was the number of Science graduate employees in company N in December 2013?
(a) 224
(b) 266
(c) 294
(d) 252
(e) 168

S14. Ans.(e)

Sol. The number of employees in company N in December 2012 = 700

The number of employees in company N in December 2013 = $\frac{700\times120}{100}$ = 840

Number of Science graduate employees in company N in December 2013 = $\frac{20\times840}{100}$ = 168

Q15. The total number of employees in Company P was 3 times the total number of employees in Company O. If the difference between the number of Arts graduate employees in Company P and that in Company O was 180, what was the total number of employees in Company O?

(a) 1200
(b) 1440
(c) 720
(d) 900
(e) 1080

S15. Ans.(d)

Sol. The percentage of Arts graduate employees in company O = 100-30-30 = 40%

The percentage difference between Arts graduate employees in company O and P = 40-20 = 20%

Now, let the number of employees in company O be x

Then, x*20% = 180

X = 900

Directions (Q1-4): Answer the questions based on the following information.

Venkat, a stockbroker, invested a part of his money in the stock of four companies…. A, B, C, D. Each of these companies belonged to different industries, viz, Cement, Information Technology (IT), Auto and Steel, in no particular order. At the time of investment, the price of each stock was Rs. 100. Venkat purchased only one stock of each of these companies. He was expecting returns of 20%, 10%, 30% and 40% from the stock of companies A, B, C and D, respectively.

Returns are defined as the change in the value of the stock after one year, expressed as a percentage of the initial value. During the year, two of these companies announced extraordinarily good results. One of these two companies belonged to the Cement or the IT industry, while the other one belonged to either the Steel or the Auto industry. As a result, the returns on the stocks of these two companies were higher than the initially expected returns. For the company belonging to the cement or the IT industry with extraordinarily good results, the results were twice that of the initially expected returns. For the company belonging to the Steel or the Auto industry, the returns on the announcement of extraordinarily good results were only one and a half times that of the initially expected returns. For the remaining two companies, which did not announce extraordinarily good results, the returns realized during the year were the same as initially expected.

Q1. If Company C belonged to the Cement or the IT industry and did announce extraordinarily good results, then which of these statement(s) would necessarily be true?

I. Venkat earned not more than 36.25% return on average.
II. Venkat earned not less than 33.75% return on average
III. If Venkat earned 33.75% return on average, Company A announced extraordinarily good results.
IV. If Venkat earned 33.75% return on average Company B belonged either to Auto or to Steel Industry.

(a) I and II only
(b) II and IV only
(c) II and III only
(d) III and IV only
(e) None of these

S1. Ans.(b)

Sol. Given C... Cement or IT industry

C's return is $30 \times 2 = 60\%$

Among the other values we see that the possible arrangement can be

$10 \times 1.5 + 20 + 40 + 60, 10 + 20 \times 1.5 + 40 + 60, 40 + 20 + 40 \times 1.5 + 60$

The average returns will be in each case

$\frac{10 \times 1.5 + 20 + 40 + 60}{4} (33.75\%)$

$\frac{10 + 20 \times 1.5 + 40 + 60}{4} (35\%)$

$\frac{40 + 20 + 40 \times 1.5 + 60}{4} (45\%)$

Considering 33.75% as the valid value, then B belongs to the Auto industry.

Hence, (II) and (IV) are correct. Therefore, options (b) is the correct choice.

Q2. In Venkat earned a 38.75% return on average during the year, then which of these statement(s) would necessarily be true?

I. Company C belonged either to Auto or to Steel Industry.
II. Company D belonged either to Auto or to Steel Industry.
III. Company A announced extraordinarily good results.
IV. Company B did not announce extraordinarily good results.
(a) I and II only
(b) II and III only
(c) I and IV only
(d) II and IV only
(e) None of these

S2. Ans.(c)

Sol. Total return is $38.75 \times 4 = 155$

The possible arrangement is

$20 + 10 + 30 \times 1.5 + 40 \times 2$

Hence, A = 20, B = 10, C = 30 (Steel or Auto)

D = 40 (Cement or IT)

Hence, statements (I) and (IV) are correct.

Q3. If Venkat earned a 35% return on average during the year, then which of these statements would necessarily be true?

I. Company A belonged either to Auto or to Steel Industry.
II. Company B did not announce extraordinarily good results.
III. Company A announced extraordinarily good results.
IV. Company D did not announce extraordinarily good results.
(a) I and II only
(b) II and III only
(c) III and IV only
(d) II and IV only
(e) None of these

S3. Ans.(b)
Sol. If the average return is 35%, then the total return is 35 × 4 = 140. The possible arrangement of 140 being 40 × 1.5 + 30 + 20 × 2 + 10.
A = 20 × 2 (Cement or IT)
B = 10
C = 30
D = 40 (1.5) (Steel or Auto)
From the data given in the question we see that A has to be Cement or IT.
D is Steel or Auto.
Hence, statements (II) and (III) are correct.

Q4. What is the minimum average return Venkat would have earned during the year?
(a) 30%
(b) 125/4%
(c) 65/2%
(d) Cannot be determined
(e) None of these

S4. Ans.(a)
Sol. Taking the minimum value of the expected returns as 10. We have to see which of the two values of 10 and 20 multiplied by 2 and 1.5 and vice-versa yields the minimum value.
Hence, comparing the minimum value between 20 × 2 + 10 × 1.5 and 20 × 1.5 + 10 × 2, the 2nd one is minimum.
Hence, the minimum average return is $\frac{20 + 1.5 + 10 + 2 + 30 + 40}{4} = 30\%$

Directions (Q5-10): Answer the questions based on the following information.

Help Distress (HD) is an NGO involved in providing assistance to people suffering from natural disasters. Currently, it has 37 volunteers. They are involved in three projects: Tsunami Relief (TR) in Tamil Nadu, Flood Relief (FR) in Maharashtra and Earthquake Relief (ER) In Gujarat. Each volunteer working with Help Distress has to be involved in at least one relief work project.
I. A maximum number of volunteers are involved in the FR project. Among them, the number of volunteers involved in FR project alone is equal to the volunteers having additional involvement in the ER project
II. The number of volunteers involved in the ER project alone is double the number of volunteers involved in all the three projects.
III. 17 volunteers are involved in the TR project.
IV. The number of volunteers involved in the TR project alone is one less than the number of volunteers involved in ER project alone.
V. Ten volunteers involved in the TR project are also involved in at least one more project.

Q5. How many Volunteers are working in ER project alone?
(a) 4
(b) 8
(c) 12
(d) 7
(e) None of these

Q6. How many volunteers are working in all three projects initially?
(a) 4
(b) 8
(c) 12
(d) 7
(e) None of these

Q7. After the withdrawal of volunteers, as indicated in Question 4, some new volunteers joined the NGO. Each one of the them was allotted only one project in manner such that, the number of volunteers working in one project alone for each of the three projects became identical. At that point, it was also found that the number of volunteers involved in FR and ER projects was the same as the number of volunteers involved in TR and ER projects. Which of the projects, now has the highest number of volunteers?

(a) ER
(b) FR
(c) TR
(d) Cannot be determined
(e) None of these

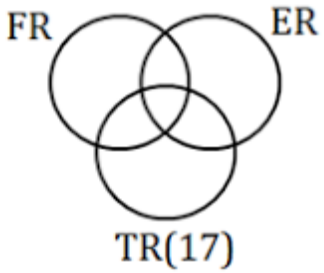
Q8. After some time, the volunteers who were involved in all the three projects were asked to withdraw from one project. As a result, one of the volunteers opted out of the TR project ,out of the ER project, while the remaining ones involved in all the three projects opted out of the FR project. Which of the following statements, then necessarily follows?
(a) The lowest number of volunteers in Now, in TR project
(b) More volunteers are, now in FR project as compared to ER project
(c) More volunteers are, now in TR project as compared to ER project
(d) None of these
(e) Can't be determined

Q9.Which of the following additional information would enable to find the exact number of volunteers involved in various projects?
(a) Twenty volunteers are involved in FR
(b) Four volunteers are involved in all the three projects
(c) Twenty-three volunteers are involved in exactly one project
(d) No need for any additional information
(e) None of these

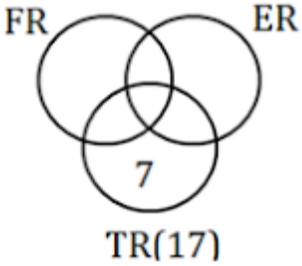
Q10.Based on the information given above, the minimum number of volunteers involved in both FR and TR projects, but not in the ER project is
(a) 1
(b) 3
(c) 4
(d) 5
(e) Can't be determined

Solutions (5-10):

- 17 in TR

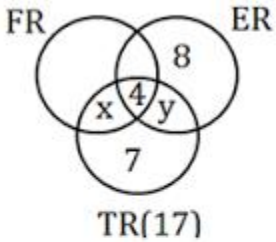


- 10 in TR also in at least one more
  ⇒ 7 in TR alone

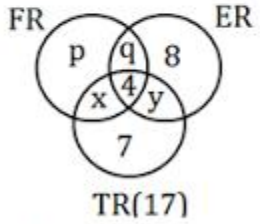


- TR alone = one less than ER alone

  ⇒ ER alone = 8
- ER alone = double of all 3
  ⇒ In all three = $\frac{8}{2} = 4$

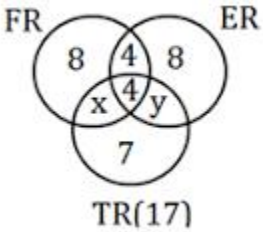


- FR alone = (FR and ER)



⇒ p = q + 4
Total = 37
P+ q = 37-8-17
= 12

$\Rightarrow p = 8$ and $q = 4$



Now, total number of FR is maximum

$\Rightarrow 8 + 4 + 4 + x > 8 + 4 + 4 + y$

$\Rightarrow x > y$ and $x + y = 6$

$\Rightarrow x = \{4, 5, 6\}$ $y = \{0, 1, 2\}$

S5. Ans.(b) It is clear from the Venn diagram.

S6. Ans.(a) It is clear from the Venn diagram.

S7. Ans.(d)

Sol. FR and ER = 5

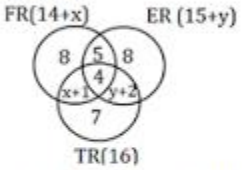
ER and TR = y + 2

$\Rightarrow 5 = y + 2 \Rightarrow y = 3$

Hence, option (d) is correct answer.

Because it is impossible to find the new volunteers.

S8. Ans.(b)



Sol. Out of 4 who are in all the three, 2 move out of FR and one-one move out of ER and TR.

Minimum in FR = 14 + x = 14 + 4 = 18

Maximum in ER = 15 + y = 15 + 2 = 17

Hence, option (b) is correct answer.

S9. Ans.(a)

Sol. Option (b) and option (c) are superfluous. They are not required, option (a), if given would tell us the value of x = 4 and hence y = 2.

S10. Ans.(c)

Sol. Both FR and TR but not ER = x

Minimum x = 4

Directions (11-15): Answer the questions based of the following information.

Krishna distributed 10-acre land to Gopal and Ram who paid him the total amount in the ratio 2: 3. Gopal invested a further Rs. 2 lakh in the land and planted coconut and lemon trees in the ratio 5: 1 on equal areas of land. There were a total of 100 lemon trees. The cost of one coconut was Rs. 5. The crop took 7 yr to mature and when the crop was reaped in 1997, the total revenue generated was 25% of the total amount put in by Gopal and Ram together. The revenue generated from the coconut and lemon trees was in the ratio 3: 2 and it was shared equally by Gopal and Ram as the initial amounts spent by them were equal.

Q11. What was the ratio of yield per acre of land for coconuts and lemons (in terms of number of lemons and coconuts)?

(a) 3: 2
(b)2: 3
(c) 1: 1
(d) Cannot be determined
(e) None of these

Q12. What was the value of output per tree for coconuts?
(a) Rs 36
(b) Rs 360
(c) Rs 3,600
(d) Rs 240
(e) None of these

Q13. What was the amount received by Gopal in 1997?
(a) Rs. 1.5 lakh
(b) Rs. 3 lakh
(c) Rs. 6 lakh
(d) None of these
(e) None of these

Q14. What was the value of output per acre of the lemon tree planted?
(a) 0.24 lakh/acre
(b) 2.4 lakh/acre
(c) 24 lakh/acres
(d) Cannot be determined
(e) None of these

Q15. What was the total output of coconuts?
(a) 24,000
(b) 36,000
(c) 18,000
(d) 48,000
(e) None of these

Solutions (11-15):

S11. Ans.(d)
Sol. Data are insufficient to determine the required ratio.

S12. Ans.(b)
Sol. Ratio of number of coconut trees and lemon trees = 5 : 1, therefore number of coconut trees is 500. Since, revenue generated from coconut trees is Rs. 180,000. Hence, value per tree = $\frac{1,80,000}{500}$ = Rs. 360

S13. Ans.(a)
Sol. Since revenue of Rs. 3,00,000 is equally divided by Gopal and Ram. Hence, amount received by Gopal in 1997 = $\frac{1}{2} \times 3,00,000$ = Rs. 1,50,000.

S14. Ans.(a)
Sol. The value of lemon output per acre of land = $\frac{1,20,000}{5}$ = 0.24 lakh/acre.

S15. Ans.(b)
Sol. Let the amount invested by Gopal and Ram be 2x and 3x respectively.
Gopal further invested Rs 2 lakh.
Acc. to question
(2x + 2) = 3x or x = 2 lakh.
Hence, initial amount paid by Gopal and Ram to Krishna is 4 lakh and 6 lakh respectively.
Hence, total money invested by them together = (6 + 6) = 12 lakh.
The total revenue generated = 12 × 25% = 3 lakh.

Also The ratio of revenue from coconut and lemon trees are in the ratio 3 : 2.

Hence, revenue from coconut = Rs. 1,80,000 and revenue from lemons = Rs. 1,20,000. So total output of coconut = $\frac{1,80,000}{5}$ = 36,000.

Directions (1-5): Study the following table carefully to answer the following questions.

Number of students studying in five different disciplines from five Institutes

Discipline / Institutes	Arts	Commerce	Science	Management	Comp. Sci.
A	350	260	450	140	300
B	240	320	400	180	320
C	460	300	360	160	380
D	440	480	420	120	340
E	280	360	340	200	330

Q1. What is the average number of students studying Commerce from all the Institutes together?
(a) 356
(b) 360
(c) 348
(d) 344
(e) None of these

S1. Ans.(d)
Sol.
Average number of students studying commerce from all the institutes
$= \frac{1}{5} \times (260 + 320 + 300 + 480 + 360)$
$= \frac{1}{5} \times 1720$
$= 344$

Q2. The total number of students studying Arts from Institutes A and B together is approximately what percent of the total number of students studying Computer Science from these two Institutes?
(a) 84
(b) 85
(c) 88
(d) 90
(e) 95

S2. Ans.(e)
Sol.
Total number of students studying Arts from A and B together = 350 + 240 = 590
Total number of students studying Computer Science from A and B = 300 + 320 = 620

Required percentage = $\frac{590}{620} \times 100 = 95.16\% \simeq 95\%$ (approximately)

Q3. The number of students studying Commerce from Institute D is what percent of the total number of students studying all the disciplines together from the same Institute?

(a) $28\frac{1}{3}\%$
(b) $26\frac{2}{3}\%$
(c) $24\frac{2}{3}\%$
(d) $24\frac{1}{3}\%$
(e) None of these

S3. Ans.(b)
Sol.
Required % = $\frac{480}{(440 + 480 + 420 + 120 + 340)} \times 100 = \frac{480}{1800} \times 100 = \frac{480}{18} = \frac{80}{3} = 26\frac{2}{3}\%$

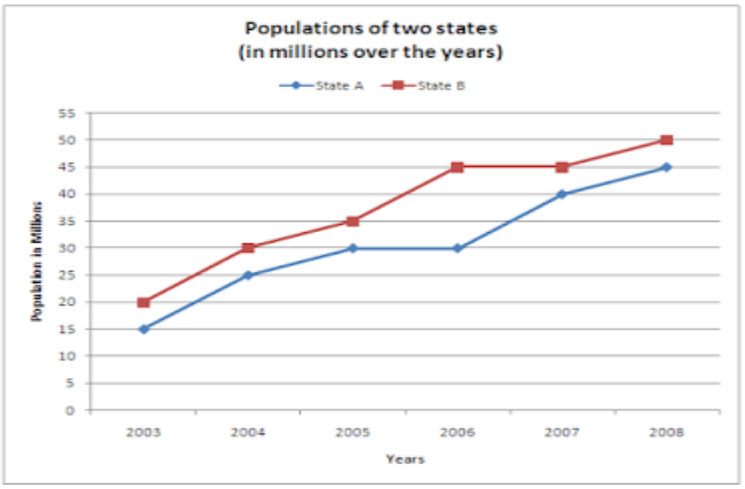
Q4. What is the ratio between the total number of students studying Science from Institutes C and D together and the total number of students studying computer Science from these two Institutes together respectively?
(a) 13: 12
(b) 12: 13
(c) 13: 15
(d) 15: 13
(e) None of these

S4. Ans.(a)
Sol.
Required ratio = $\frac{(360 + 420)}{(380 + 340)} = \frac{78}{72} = \frac{13}{12}$

Q5. What is the average number of students studying all disciplines together from Institute E?
(a) 312
(b) 310
(c) 302
(d) 304
(e) None of these

S5. Ans.(c)
Sol.
$= (280 + 360 + 340 + 200 + 330)$
$= 1510$
$\therefore$ Required average = $\frac{1}{5} \times 1510 = 302$

Directions (6-10): Study the following graph carefully to answer these questions.



Q6. For state B the per cent rise in population from the previous year was the highest in which of the following years?

(a) 2008
(b) 2006
(c) 2005
(d) 2004
(e) 2007

S6. Ans.(d)

Sol.

From the chart % rise in population of state B in 2004 = $\frac{30-20}{20} \times 100 = 50\%$

We can see in the line chart, this is the maximum rise in population among all years.

Q7. What was the average population of state B (in millions) for all the years together?

(a) 38.5
(b) 28.5
(c) 35
(d) 26.85
(e) 37.5

S7. Ans.(e)

Sol.

Average population of state B

$= \frac{1}{6} \times (20 + 30 + 35 + 45 + 45 + 50)$ millions

= 37.5 millions

Q8. What is the per cent rise in population of state A in 2007 from the previous year?

(a) $25\frac{2}{5}$

(b) $33\frac{1}{3}$

(c) $33\frac{4}{5}$

(d) $25\frac{1}{3}$

(e) None of these

S8. Ans.(b)

Sol.

Percentage rise in population of state A in 2007

$$= \frac{40 - 30}{30} \times 100$$

$$= \frac{100}{3}\%$$

$$= 33\frac{1}{3}\%$$

Q9. What is the ratio between the total population of state A and that of state B respectively for all the years together?

(a) 37: 45
(b) 37: 43
(c) 43: 37
(d) 45: 37
(e) None of these

S9. Ans.(a)

Sol.

$$\text{Required ratio} = \frac{(15 + 25 + 30 + 30 + 40 + 45)}{(20 + 30 + 35 + 45 + 45 + 50)} = \frac{185}{225} = \frac{37}{45}$$

Q10. The population of state A in 2005 is what percent of its total population for all the years together for the same state?

(a) $17\frac{8}{33}\%$

(b) $16\frac{5}{33}\%$

(c) $16\frac{8}{37}\%$

(d) 17%

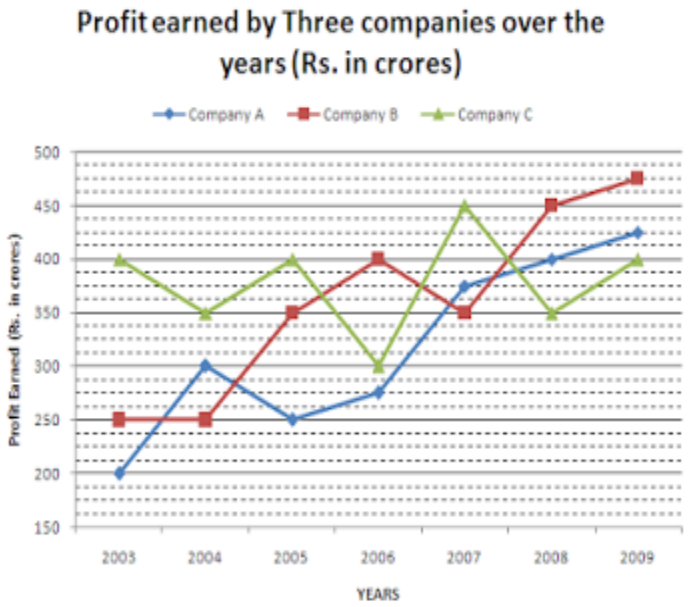
(e) None of these

S10. Ans.(c)

Sol.

$$\text{Required percentage} = \frac{30}{185} \times 100 = \frac{600}{37}\% = 16\frac{8}{37}\%$$

Directions (11-15): Study the following graph carefully and answer the questions given below:



Q11. What was the average profit earned by all the three companies in the year 2008?
(a) Rs. 300 crore
(b) Rs. 400 crore
(c) Rs. 350 crore
(d) Rs. 520 crore
(e) None of these

S11. Ans.(b)

Sol.

Average profit earned by three companies in the year 2008

$$= \frac{1}{3} \times (350 + 400 + 450)$$

$$= \frac{1}{3} \times 1200$$

$$= 400$$

Q12. In which of the following years was the difference between the profits earned by company B and company A the minimum?
(a) 2003
(b) 2004
(c) 2005
(d) 2008
(e) None of these

S12. Ans.(e)

Sol.

From line graph, it is clear that in the year 2007, the difference is minimum.

Q13. In which of the following years was the total profit earned by all three companies together with the highest?
(a) 2004
(b) 2007
(c) 2008
(d) 2009
(e) None of these

S13. Ans.(d)

Sol.

From graph, the highest total profit is earned in 2009 and it is

$= 400 + 425 + 475$

$= 1300$

Q14. What was the approximate percentage increase in the profit earned by Company A from 2006 to 2007?

(a) 36
(b) 24
(c) 40
(d) 20
(e) 54

S14. Ans.(a)

Sol.

% increase in profit earned by A from 2006 to 2007

$$= \frac{375 - 275}{275} \times 100$$

$$= \frac{100}{275} \times 100$$

$$= \frac{400}{11}$$

$= 36.363$

$\simeq 36\%$ (approximately)

Q15. What was the difference between the profit earned by company A in 2004 and the profit earned by company C in 2009?

(a) Rs. 50crore
(b) Rs. 1 crore
(c) Rs. 100 crore
(d) Rs. 200 crore
(e) None of these

S15. Ans.(c)

Sol.

Required difference = (Profit earned by A in 2004) ~ (Profit earned by C in 2009)

$= 400 - 300$

$= 100$ crore

Directions (1-5): Study the following table carefully to answer the questions that follow–

Company / year	Per cent profit earned by six companies over the years					
	P	Q	R	S	T	U
2004	11	12	3	7	10	6
2005	9	10	5	8	12	6
2006	4	5	7	13	12	5
2007	7	6	8	14	14	7
2008	12	8	9	15	13	5
2009	14	12	11	15	14	8

Q1. If the profit earned by Company R in the year 2008 was Rs. 18.9 lakhs, what was the income in that year?

(a) Rs. 303.7 lakhs
(b) Rs. 264.5 lakhs
(c) Rs. 329.4 lakhs
(d) Rs. 228.9 lakhs
(e) None of these

S1. Ans.(d)
Sol.
Income in the year of 2008 by R
$= \frac{100}{9} \times 18.9 \times \frac{109}{100}$
= Rs. 228.9 lakhs

Q2. What is the percentage rise in profit of Company T in the year 2009 from the year 2004?
(a) 40
(b) 35
(c) 26
(d) 48
(e) None of these

S2. Ans.(a)
Sol.
$\%\ \text{rise} = \frac{14 - 10}{10} \times 100 = 40\%$

Q3. If the profit earned by Company P in the year 2007 was Rs. 2.1 lakhs, what was the expenditure in that year?
(a) Rs. 30 lakhs
(b) Rs. 15 lakhs
(c) Rs. 23 lakhs
(d) Rs. 27 lakhs
(e) None of these

S3. Ans.(a)
Sol.
Total income of P in 2007 $= \frac{100}{7} \times 2.1 \times \frac{107}{100} = 32.1$ lakhs
$\therefore$ expenditure = 32.1 – 2.1
= 30 lakhs

Q4. What was the average per cent profit of Company S over all the years together?
(a) 13.5
(b) 11
(c) 12
(d) 14
(e) None of these

S4. Ans.(c)
Sol.
Average % profit of company S
$= \frac{1}{6} \times (7 + 8 + 13 + 14 + 15 + 15)$
$= \frac{1}{6} \times 72$
= 12%

Q5. What is the difference between the per cent profit earned by Company Q in the year 2005 and the average per cent profit earned by the remaining Companies together in that year?
(a) 4
(b) 2

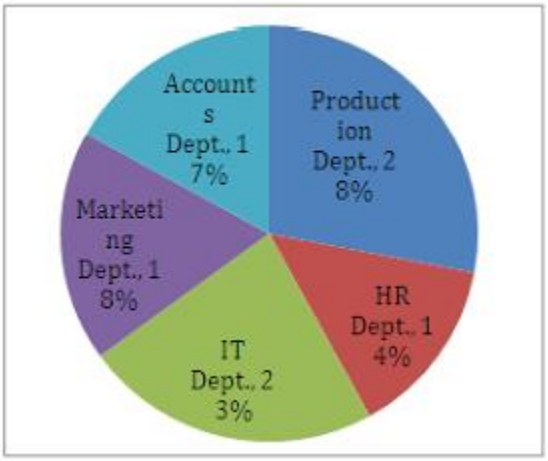
(c) 1
(d) 3
(e) None of these

S5. Ans.(b)
Sol.
Average percent profit earned by all companies except Q in the year 2005
$= \frac{1}{5} \times (9 + 5 + 8 + 12 + 6)$
$= \frac{1}{5} \times 40$
$= 8\%$
∴ Required difference = 10 – 8 = 2%

Directions (6-10): Study the following pie chart and table carefully to answer the following questions that follow:

Percentage break up of employees working in various departments of an organisation and the ratio of men to women in them.

Total Number of Employees = 1800
Percentage Break up of employees



Ratio of Men to Women		
Department	**Men**	**Women**
Production	11	1
HR	1	3
IT	5	4
Marketing	7	5
Accounts	2	7

Q6. What is the number of men working in the marketing department?
(a) 132
(b) 174
(c) 126
(d) 189
(e) None of these

S6. Ans.(d)
Sol.
Number of men working in Marketing department
$= \frac{7}{12} \times 1800 \times \frac{18}{100}$
$= 189$

Q7. The number of women working in the IT department of the organisation forms approximately what per cent of the total number of employees in the organisations from all departments together?
(a) 7
(b) 5
(c) 19
(d) 15
(e) 10

S7. Ans.(e)
Sol.
Women in IT department
$= \frac{4}{9} \times 1800 \times \frac{23}{100}$
$= 184$
$\therefore$ Required percentage $= \frac{184}{1800} \times 100 = 10.22\% \simeq 10\%$

Q8. What is the respective ratio of the number of women working in the HR department of the organisation and the total number of employees in that department?
(a) 3: 4
(b) 2: 5
(c) 2: 9
(d) 3: 7
(e) None of these

S8. Ans.(a)
Sol.
Number of women working in HR department
$= \frac{3}{4} \times 1800 \times \frac{14}{100}$
$= 189$
and Total employees in that department
$= \frac{14}{100} \times 1800$
$= 252$
$\therefore$ Required ratio $= \frac{189}{252} = \frac{3}{4}$

Q9. What is the respective ratio of the number of men working in the Accounts departments to the total number of employees working in that departments?
(a) 9: 2
(b) 7: 6
(c) 2: 9
(d) 6: 7
(e) None of these

S9. Ans.(c)
Sol.

$$\text{Required ratio} = \frac{\frac{2}{9} \times 1800 \times \frac{17}{100}}{\frac{17}{100} \times 1800} = \frac{2}{9}$$

Q10. The number of men working in the production department of the organisation forms what per cent of the total number of employees working in that department? (rounded off to two digits after decimal)
(a) 89.76
(b) 91.67
(c) 88.56
(d) 94.29
(e) None of these

S10. Ans.(b)
Sol.

Men working in Production department

$$= \frac{11}{12} \times 1800 \times \frac{28}{100}$$
$$= 462$$

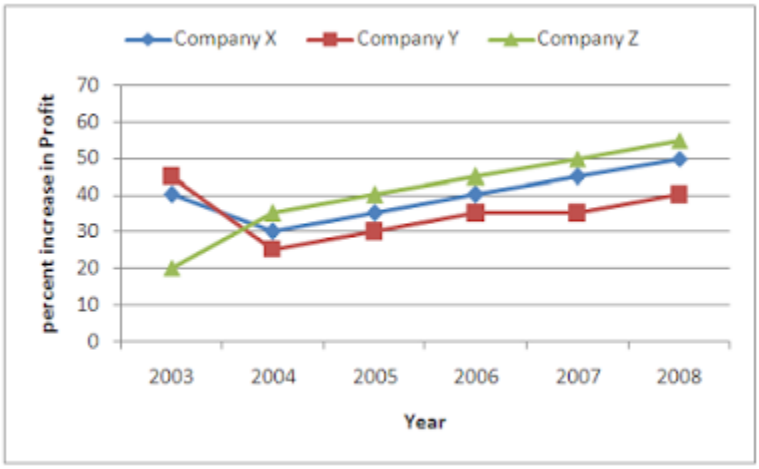
Total employees in Production department

$$= \frac{28}{100} \times 1800$$
$$= 504$$

$$\therefore \text{Required percentage} = \frac{462}{504} \times 100 = 91.67\%$$

Directions (11-15): Study the graph carefully to answer the questions that follow:

PERCENT INCREASE IN PROFIT OF THREE COMPANIES OVER THE YEARS



Q11. What was the per cent increase in profit of company Y in the year 2008 from the previous year?
(a) 2
(b) 10
(c) 20
(d) 14
(e) None of these

S11. Ans.(d)
Sol.
% increase in profit of company Y in 2008
$= \frac{40 - 35}{35} \times 100$
$= \frac{5}{35} \times 100$
$\simeq 14\%$

Q12. What was the approximate percent increase in the profit of company Z in the year 2005 from the previous year?
(a) 14
(b) 21
(c) 8
(d) 26
(e) 19

S12. Ans.(a)
Sol.
% increase in profit of company Z in 2005
$= \frac{40 - 35}{35} \times 10$
$= 14.14$
$\simeq 14\%$

Q13. If the profit earned by company X in the year 2004 was Rs. 2,65,000, what was its profit in the year 2006?
(a) Rs 6,21,560
(b) Rs 4,68,290
(c) Rs 7,05,211
(d) Rs 4,82,300
(e) None of these

S13. Ans.(d)
Sol.
Required profit = Rs. $(2,65,000 \times \frac{130}{100} \times \frac{140}{100}) =$ Rs. 482300

Q14. What is the average per cent increase in profit of company Z over the years?
(a) $40\frac{5}{6}$
(b) $41\frac{2}{3}$
(c) $28\frac{1}{6}$
(d) $23\frac{1}{3}$
(e) None of these

S14. Ans.(a)
Sol.
Average % increase in profit of Z over the years

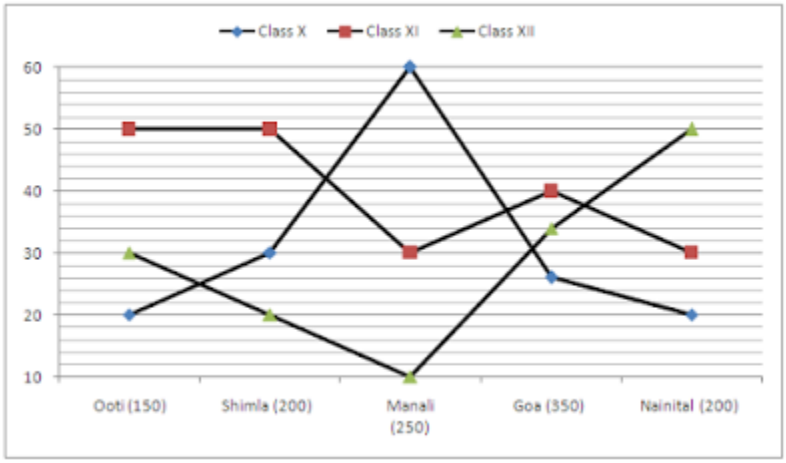
$$= \frac{1}{6} \times (20 + 35 + 40 + 45 + 50 + 55)$$
$$= \frac{1}{6} \times 245$$
$$= \frac{245}{6}$$
$$= 40\frac{5}{6}$$

Q15. Which of the following statements is TRUE with respect to the graph?
(a) Company X incurred a loss in the year 2004
(b) The amount of profit earned by company Y in the years 2006 and 2007 is the same
(c) Company Z earned the highest profit in the year 2008 as compared to the other years
(d) Profit earned by company X in the year 2004 is lesser than the profit earned by company Z in that year
(e) None of these

S15. Ans.(c)
Sol.
Company Z earned the highest profit in 2008 as compared to other years.

Directions (Q1- 5): Study the bar graph given below and answer the following questions:

The bar graph below shows the percentage break-up of the number of students who visited various tourist spots on New Year Evening.



The table below shows the total number of students in classes X, XI and XII.

Class	No. of students
X	420
XI	480
XII	400

Note: No Student went to more than one place.

Q1. If the ratio of girls and boys, who went to Manali from class X, was 7 : 8, then what percent of the total number of students from class X who went to a tourist spot is the number of girls who went to Manali? (approximate)
(a) 19%
(b) 23%
(c) 25%
(d) 15%
(e) 21%

Q2. What is the difference between the number of students who did not got to any tourist spotfrom class XI and that from class XII?
(a) 19
(b) 41
(c) 27
(d) 21
(e) None of these

Q3. If all the students from class XII who did not go to any tourist spot, later changed their mind and went to Nainital, then calculate the % mark-up in the number of students who visited Nainital?
(a) 30%
(b) 25.5%
(c) 35.5%
(d) 42.6%
(e) None of these

Q4. The number of students from class XI and XII together who visited Manali is what percent of the number of students from class X who visited Shimla, Ooty and Nainital together? (approximate)
(a) 81%
(b) 72%
(c) 75%
(d) 77%
(e) 70%

Q5. Find the total number of students who didn't visit any tourist spot?
(a) 152
(b) 165
(c) 105
(d) 150
(e) None of these

Directions (Q6-10): The following information is about the production of cars by 3 different companies from Monday to Friday in a specific week. Read the information carefully and answer the following question:-

The total production by 3 companies on Monday was 540 out of which 100/3% cars were produced by Tata. The number of cars produced by Renault on Monday is less than the cars produced by Tata on Monday by the same extent as the number of cars produced by Maruti on Monday is more than the cars produced by Tata on Monday. The difference between cars produced by Renault and Maruti on Monday is 40.
150 cars are produced by Tata on Tuesday, which is 100 less than the cars produced by the same company on Wednesday. A total of 910 cars were produced by Tata from Monday to Friday. The ratio between cars produced by Tata on Thursday to cars produced by the same company on Friday is 5 : 6.
220 cars were produced by Renault on Tuesday, which is 80 less than the cars produced by Maruti on Wednesday. A total of 570 cars were produced on Tuesday, which is 76% of the total cars produced on Wednesday. The number of cars produced by Maruti on Thursday is 200/3% more than cars produced by Tata on the same day. Total 580 cars were produced on Thursday. The number of cars produced by Maruti on Friday is same as that on Monday. 140 cars were produced by Renault on Friday.

Q6. Find the ratio between total cars produced on Monday to that on Wednesday.
(a) 18 : 29
(b) 18 : 25
(c) 18 : 31
(d) 3 : 5
(e) None of these

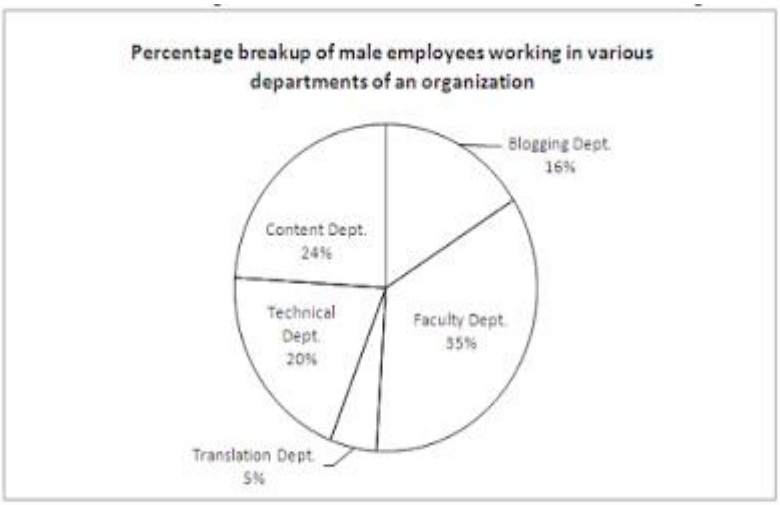
Q7. Find the total number of cars produced by Renault from Monday to Friday.
(a) 900
(b) 980
(c) 950
(d) 960
(e) None of these

Q8. Find the average number of cars produced per day by Maruti from Monday to Friday. (approximate)
(a) 250
(b) 220
(c) 270
(d) 240
(e) 230

Q9. On which pair of days out of the following, the number of cars produced by Tata is the same?
(a) Tuesday and Wednesday
(b) Wednesday and Thursday
(c) Tuesday and Thursday
(d) Monday and Wednesday
(e) Monday and Tuesday

Q10. On which day the total number of cars produced was the maximum?
(a) Monday
(b) Tuesday
(c) Wednesday
(d) Thursday
(e) Friday

Directions (Q11-15): Study the following pie chart and answer the following question given below: -
Number of male in the organization is two times of the number of females in the organization



Number of females in Each Department	
Faculty Department	2400
Blogging Department	3200
Translation Department	2800
Technical Department	3800
Content Department	2100

Q11. Number of males in Blogging, Technical and Content department together are approximately what percent more/less than the total number of females in the same departments?

(a) 85%
(b) 89%
(c) 94%
(d) 79%
(e) 95%

Q12. Out of the total number of employees from Translation department, 30% of the employees got promoted then find the ratio of the number of employees from Translation department who get promoted to the total number of male employees in the organization ?

(a) 28600 : 1269
(b) 1170 : 28779
(c) 1269 : 14300
(d) 1269 : 28600
(e) 28779 : 1170

Q13. If one male from Faculty can do a work in 20020 days and the female from Faculty are 20% less efficient than that of male in Faculty. Find the total no. of employees from Faculty to do the same job?

(a) $\frac{2002}{2009}$Days
(b) $\frac{2002}{1096}$Days
(c) $\frac{1008}{1001}$Days
(d) $\frac{2002}{2097}$Days
(e) $\frac{2097}{2002}$Days

Q14. Find the difference between the average number of males in all departments of the organization and the average number of females in all departments of the organization?
(a) 2860
(b) 2440
(c) 2630
(d) 2920
(e) None of these

Q15. If some male employees from Content Department shifted to Blogging department and some female employees from Blogging departments shifted to Content departments such that total number of male employees and female employees in Content Department are same as total number of male employee and female employee in Blogging departments respectively. Now find the Average of the number of female employees from Content and male employee in Blogging department together?
(a) 4195
(b) 4185
(c) 4220
(d) 5210
(e) Can't be determined

Solutions

S1. Ans.(a)
Sol.

No. of students from class X who visited Manali = $\frac{60}{100} \times 250 = 150$

No. of girls from class X who visited Manali= $\frac{7}{15} \times 150 = 70$

Total no. of students from class X who went to a tourist place

$$= \frac{20}{100} \times 150 + \frac{30}{100} + 200 + \frac{60}{100} \times 250 + \frac{26}{100} \times 350 + \frac{20}{100} \times 200$$
$$= 30 + 60 + 150 + 91 + 40$$
$$= 371$$

Required % = $\frac{70}{371} \times 100 \approx 19\%$

S2. Ans.(b)
Sol.

No. of students from class XI who didn't visit any place = $450 - \left(\frac{30}{100} \times 150 + \frac{30}{100} \times 200 + \frac{30}{100} \times 250 + \frac{40}{100} \times 350 + \frac{30}{100} \times 200\right)$

$$= 450 - (75 + 100 + 75 + 140 + 60)$$
$$= 480 - 450$$
$$= 30$$

No. of students from class XII who didn't visit any place= $400 - \left(\frac{30}{100} \times 150 + \frac{20}{100} \times 200 + \frac{30}{100} \times 250 + \frac{34}{100} \times 350 + \frac{30}{100} \times 200\right)$

$$= 400 - (45 + 40 + 25 + 119 + 100)$$
$$= 400 - (329)$$
$$= 71$$

Req. Difference = 71 − 30 = 41

S3. Ans.(c)
Sol.
Using solution of previous question,
Required % = $\frac{71}{200} \times 100 = 35.5\%$

S4. Ans.(d)

Sol.

No. of students who visited Manali from class XI and XII = $\frac{30+10}{100} \times 250$

= 100

No. of students from class X who visited Shimla, Ooti and Nainital = 30 + 60 + 40 = 130

Req. % = $\frac{100}{130} \times 100 \approx 77\%$

S5. Ans.(d)

Sol.

From class X: $420 - (\frac{20}{100} \times 150 + \frac{30}{100} \times 200 + \frac{60}{100} \times 250 + \frac{26}{100} \times 350 + \frac{20}{100} \times 200)$

$= 420 - 30 - 60 - 150 - 91 - 40$

$= 49$

From class XI: 30

From class XII: 71

So, required number = 49 + 30 + 71 = 150

Solutions (6-10)

	Monday	Tuesday	Wednesday	Thursday	Friday
Tata	180	150	250	150	180
Renault	160	220	200	180	140
Maruti	200	200	300	250	200
	540	570	750	580	520

S6. Ans.(b)

Sol.

$$\frac{540}{750} = 18 : 25$$

S7. Ans.(a)

Sol.

Total number of cars produced by Renault from Monday to Friday = 900

S8. Ans.(e)

Sol.

Required average = $\frac{1150}{5} = 230$

S9. Ans.(c)
Sol.
No. of cars produced on Tuesday and Thursday is same i.e. 150

S10. Ans.(c)
Sol.
Maximum number of cars produced = 750, on Wednesday.

Solutions (11-15)

Departments	Male	Female
Faculty Dept.	10010	2400
Blogging Dept.	4576	3200
TranslationDept.	1430	2800
Technical Dept.	5720	3800
Content Dept.	6864	2100
Total	28600	14300

S11. Ans.(b)
Sol.
Number of male in Blogging, Technical and Content Dept. = 4576 + 5720 + 6864 = 17160
Number of female in Blogging, Technical and Content Dept. = 3200 + 3800 + 2100 = 9100
Required % = $\frac{17160-9100}{9100} \times 100$
$= \frac{8060}{9100} \times 100$
$= 88.57\% \approx 89\%$

S12. Ans.(d)
Sol.
Required Ratio = $\frac{30}{100}(2800 + 1430) : 28,600$
$= 1269 : 28600$

S13. Ans.(d)
Sol.
M → 20020 days
F → 25025 days
Required No. of days

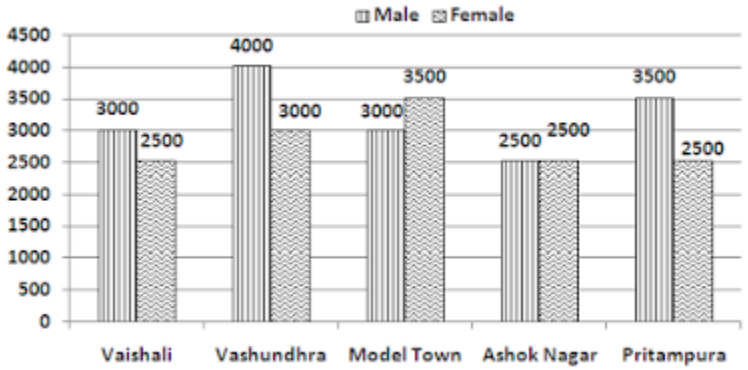
$$\frac{1}{\frac{10010}{20020} + \frac{2400}{25025}}$$
$$= \frac{1}{\frac{1}{2} + \frac{95}{1001}}$$
$$= \frac{1}{\frac{2097}{2002}}$$

$= \frac{2002}{2097}$ days

S14. Ans.(a)
Sol.
Required difference $= \frac{1}{5}(28600 - 14300)$
$= \frac{1}{5} \times 14300$
$= 2860$

S15. Ans.(b)
Sol.
Now, Male employees in Content Dept. = Male employee in Blogging Dept. $= \frac{4576+6864}{2}$
$= 5720$
And female employees in Content Dept. = Female employee in Blogging Dept .
$= \frac{3200 + 2100}{2}$
$= 2650$
Required average $= \frac{5720+2650}{2}$
$= 4185$

Directions (1-5): Study the following graph carefully to answer the questions that follow:



Q1. What is the average number of females from all the organizations together?
(a) 2700
(b) 2500
(c) 2800
(d) 2900
(e) 2750

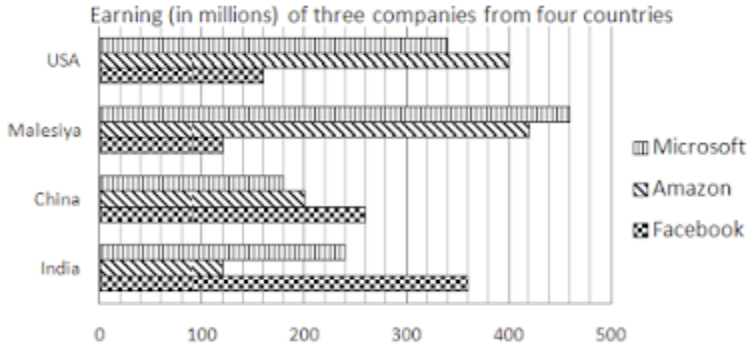
Q2. The total number of males from organization Vaishali and Vashundhra together is approximately what percent of the total number of females from organization Vaishali, Vashundhra and Model Town together?
(a) 33%
(b) 55%
(c) 66%
(d) 78%
(e) 7.5%

Q3. What is the difference between the total number of females and the total number of males from organization Vaishali, Vashundra, Model Town and Ashok Nagar together?
(a) 900
(b) 800
(c) 700
(d) 600
(e) None of these

Q4. What is the ratio of the number of females from organization Vashundra to the number of females from organization Pritampura?
(a) 6 : 5
(b) 5 : 6
(c) 6 : 7
(d) 7 : 6
(e) 4 : 5

Q5. The number of males from organization Vashundhra is approximately what percent of the total number of males from all the organizations together?
(a) 23.42%
(b) 21.42%
(c) 25%
(d) 26%
(e) 22.43%

Directions (6-10): Study the following bar-graph carefully and answer the following questions:



Q6. What is the Average earning of Amazon from all the countries together (in million) ?
(a) 285
(b) 290
(c) 280
(d) 295
(e) None of these

Q7. What is the total amount earned by Microsoft and Facebook together from USA and India (in million) ?
(a) 1050
(b) 950
(c) 1200
(d) 1100
(e) None of these

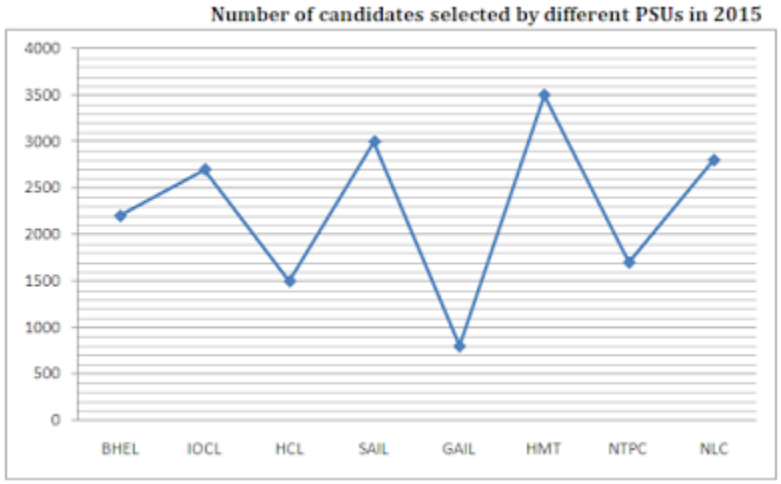
Q8. Amazon donated his earning from Malaysia to Facebook. What was Facebook's total earning from Malaysia after Amazon's donation (in Million) ?
(a) 540
(b) 560
(c) 620
(d) 640
(e) None of these

Q9. What is the ratio of earning of Facebook starting from India, China, Malaysia and U.S.A. ?
(a) 18 : 13 : 6 : 8
(b) 8 : 7 : 13 : 17
(c) 8 : 6 : 14 : 19
(d) 7 : 6 : 13 : 20
(e) None of these

Q10. What is the difference between total earning of Microsoft from all four countries and total earning of Facebook from all four countries?
(a) 420
(b) 520
(c) 360
(d) 320

(e) 440

Directions (Q. 11-15): Read the following line graph carefully and answer the following questions correctly



Q11. What is the average number of students taken by all of the PSUs together ?
(a) 2270
(b) 2275
(c) 2280
(d) 2285
(e) None of these

Q12. If three fourth of the female students selected at each PSU are at clerical posts and there are 40% females for every PSU, then find the number of female selected for clerical posts in GAIL, HMT and NLC together ?
(a) 2230
(b) 2200
(c) 2130
(d) 2100
(e) None of these

Q13. Students selected by GAIL and HMT together are what percent more than that of the students selected by NTPC ? (Rounded off to two decimal points)
(a) 158.94%
(b) 156.84%
(c) 162.84%
(d) 152.94%
(e) 154.94%

Q14. What is the ratio between the students selected by SAIL and NTPC together to the students taken by all of the PSUs together excluding HMT ?
(a) 61 : 161
(b) 53 : 153
(c) 37 : 137
(d) 43 : 143
(e) 47 : 147

Q15. In every year there is an increase of 25% vacancies in all of the PSUs then what is the ratio between total vacancies declared by all of the PSUs in 2017 to the total number of vacancies declared by all of the PSUs in 2013.
(a) 625 : 256
(b) 256 : 625
(c) 256 : 81
(d) 81 : 256

(e) None of these

Solutions

S1. Ans.(c)

Sol. Average number of females

$$= \frac{2500+3000+3500+2500+2500}{5} = \frac{14000}{5} = 2800$$

S2. Ans.(d)

Sol. Total number of males from organization Vaishali and Vashundhra together = 3000 + 4000 = 7000

Total number of females from organization Vaishali, Vashundhra and Model Town together

$= 2500 + 3000 + 3500 = 9000$

Required Percentage $= \frac{7000}{9000} \times 100 \simeq 78\%$

S3. Ans.(e)

Sol. Total number of females from organization Vaishali, Vashundhra, Model Town and Ashok Nagar

$= 2500 + 3000 + 3500 + 2500 = 11500$

Total number of males from organization Vaishali, Vashundhra, Model Town and Ashok Nagar

$= 3000 + 4000 + 3000 + 2500 = 12500$

Required difference $= 12500 - 11500 = 1000$

S4. Ans.(a)

Sol. Required ratio $= \frac{3000}{2500} = \frac{6}{5} = 6 : 5$

S5. Ans.(c)

Sol. No. of males in organization Vashundhra= 4000

Required Percentage $= \frac{4000}{16000} \times 100$

$= \frac{400}{16} = 25\%$

S6. Ans.(a)

Sol. required average $= \frac{120+200+420+400}{4} = 285$

S7. Ans.(d)

Sol. Amount earned by Microsoft from USA and India

$= 240 + 340 = 580$

Amount earned by Facebook from

USA and India $= 360 + 160 = 520$

Total $= 580 + 520 = 1100$

S8. Ans.(a)

Sol. Total earning of Facebook from Malaysia after donation

$= 120 + 420 = 540$

S9. Ans.(a)

Sol. Ratio of earning of Facebook from all four countries

$= 360 : 260 : 120 : 160$

$= 18 : 13 : 6 : 8$

S10. Ans.(d)

Sol. Total earning of Microsoft $= 240 + 180 + 460 + 340$

$= 1220$

Total earning of Facebook $= 360 + 260 + 120 + 160$

$= 900$

Required Difference $= 1220 - 900 = 320$

S11. Ans. (b)

Sol. Total number of students

$= 2200 + 2700 + 1500 + 3000 + 3500 + 800 + 1700 + 2800 = 18200$

Required average $= \frac{18200}{8} = 2275$

S12. Ans. (c)

Sol.

Required no. of females $= 0.4 \times 7100 \times 0.75 = 2130$

S13. Ans. (d)

Sol. Required % $= \frac{4300-1700}{1700} \times 100$

$= \frac{2600}{17}$

$= 152.94\%$

S14. Ans. (e)

Sol. Required Ratio $= (3000 + 1700) : (18200 - 3500)$

$= 47 : 147$

S15. Ans. (a)

Sol. Let total number of students in 2015 = 100

$\therefore$ Total number of students in 2017 $= 100 + 25 + \frac{25}{100} \times 125$

$= 125\left(1 + \frac{1}{4}\right)$

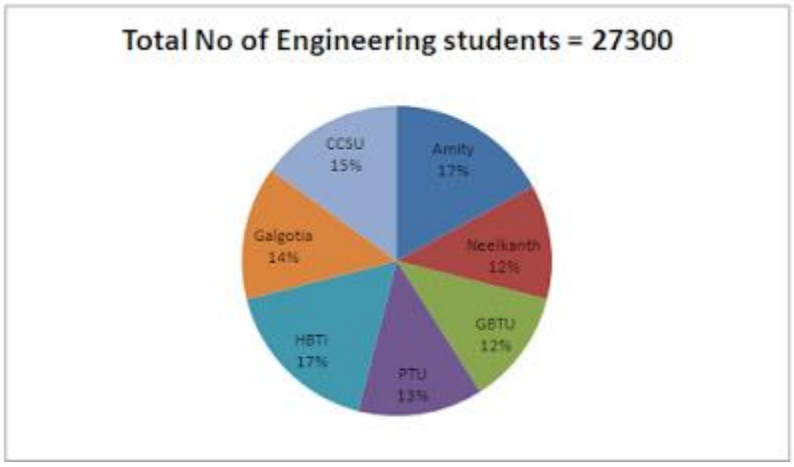
$= \frac{125 \times 5}{4}$

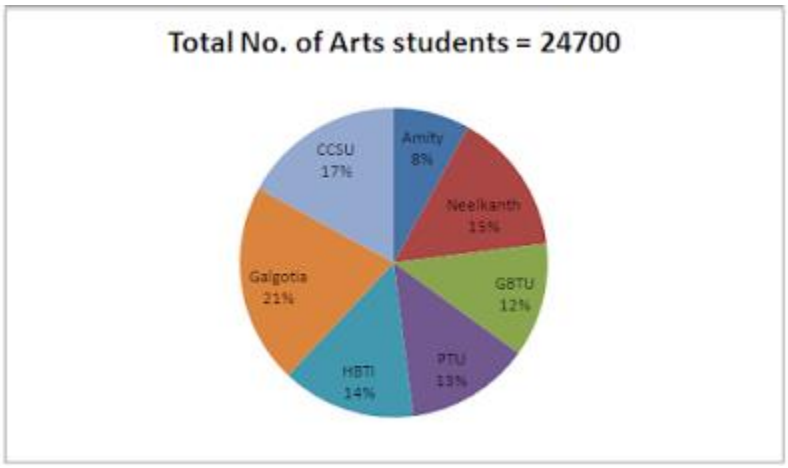
And, total number of student in 2013 $= \frac{100}{125} \times \frac{100}{125} \times 100 = 64$

$\therefore$ Required Ratio $= \frac{125 \times 5}{4} : 64$

$= 625 : 256$

Directions (Q.1-5): The following pie chart shows the distribution of Students of Engineering and Arts students enrolled in seven different universities. Read the following questions and answer it carefully.





Q1. What is the total number of students of Engineering and Arts from Both GBTU and CCSU.?
(a) 13824
(b) 14534
(c) 12167
(d) 17576
(e) None of the above

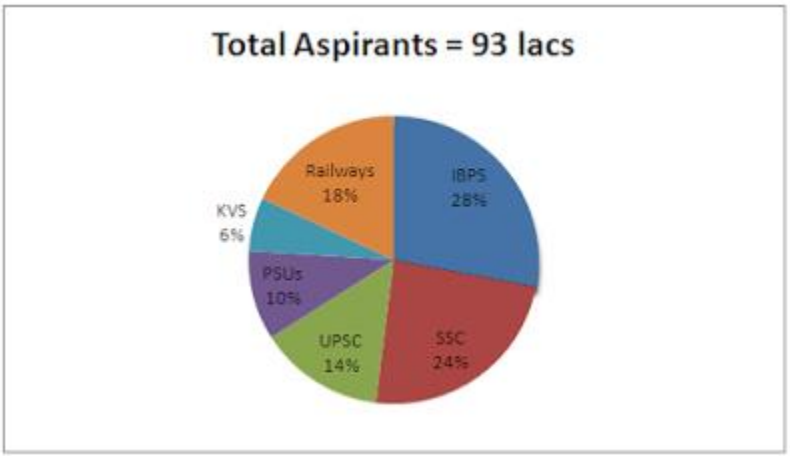
Q2. What will be the ratio of no. of students from Neelkanth of both stream to the no. of students of Arts from HBTI and CCSU?
(a) 82 : 85
(b) 729 : 1089
(c) 829 : 1043
(d) 537:589
(e) None of these

Q3. What will be the difference between the average no of students of Arts from HBTI ,GBTU , Neelkanth & Amity Universities and average no of students of Engineering students from top 5 universities according to no of students enrolled?
(a) 1050
(b) 1193.85
(c) 1123.85
(d) 1089
(e) 1117

Q4. If one-third of engineering students to be enrolled in Galgotia changed their mind and joined Amity University instead. What will be the difference between new central angle of Both Galgotia and Amity University now?
(a) 54.4°
(b) 44.4°
(c) 47.6°
(d) 45.9°
(e) None of the above

Q5. 75% of engineering students passed in first year while 80% of arts students entered into second year. What is the difference between the no. of failed engineering students andtwo-third of passed Arts students?
(a) 6349
(b) 6400
(c) 6449
(d) 6198
(e) 6000

Directions (Q.6 - 10): Study the following pie chart shows the percentage of the total number of aspirants applied for various Govt. examinations in 2016.



Vacancies	
IBPS	9500
SSC	9890
UPSC	5500
PSUs	2800
KVS	700
Railways	16250

Q6. Average number of aspirants applied for a Govt. exam is approximately how many times the total no. of vacancies?
(a) 39
(b) 32
(c) 35
(d) 38
(e) 41

Q7. If Railways reduces two-fifth of its vacancies, then total vacancies will be reduced by how much percent?
(a) 13.56%
(b) 14.56%
(c) 18.2%
(d) 17%
(e) None of these

Q8. What will be the approximate difference between no of aspirant per post in SSC to the no of aspirant per post in IBPS?
(a) 50

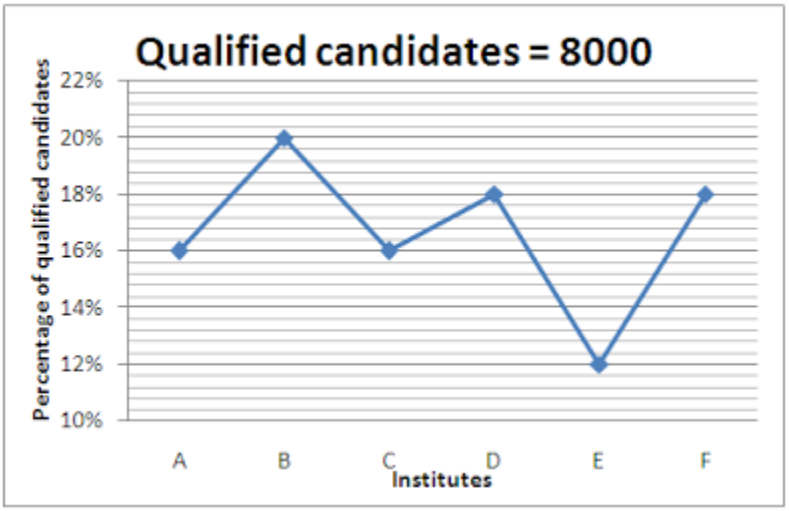
(b) 41
(c) 45
(d) 52
(e) 48

Q9. For each vacancy, 4 will be selected for interview after written exam and one will be finally selected. If no. of vacancies of IBPS increased by 10%. No of aspirant qualified for Interview for IBPS is approximately how many times the no of aspirant qualified for interview in PSUs and KVS together.
(a) 3
(b) 3.5
(c) 5
(d) 4.5
(e) 2

Q10. Out of all vacancies allocated, 15% of the selected aspirants didn't join. Hence 8% of the IBPS and 10% of Railways vacancies remain unfulfilled. What is approximate percent of total vacancies remain unfulfilled for IBPS and Railways to the rest of the organisations vacancy which remain unfulfilled.?
(a) 33
(b) 44
(c) 55
(d) 50
(e) 60

Directions (Q.11-15): Study the following table and bar graph to answer the questions given below it.
Percentage of appeared and qualified candidates in a competitive examination from different institutes

Appeared Candidates = 36000	
Institute	%of appeared candidates
A	12%
B	18%
C	20%
D	15%
E	10%
F	25%



Q11. What is the ratio of the qualified candidates from institutes A, B and C together to the appeared candidates from institutes D, E and F?
(a) 52 : 225
(b) 26 : 125
(c) 125 : 26
(d) 13 : 200
(e) None of these

Q12. What per cent of the candidates from institute 'E' has been declared qualified out of the total candidates appeared from this institute?
(a) 16%
(b) 26%
(c) 16.66%
(d) 18%
(e) None of these

Q13. What is the approximate percentage of students qualified w.r.t. to those appeared from the institutes B and C together?
(a) 20
(b) 21
(c) 22
(d) 23
(e) 24

Q14. Which institute has the highest percentage of candidates qualified w.r.t. to those appeared?
(a) A
(b) B
(c) C
(d) D
(e) None of these

Q15. What is the average number of appeared candidates from the institutes A, B and F together?
(a) 19800
(b) 2200
(c) 6600
(d) 8600
(e) None of these

Solutions

S1. Ans.(b)
Sol.

ARTS	Engg.
GBTU = 247 × 12 = 2964	GBTU = 273 × 12 = 3276
CCSU = 247 × 17 = 4199	CCSU = 273 × 15 = 4095

Total students = 2964 + 4199 + 3276 + 4095 = 14534

S2. Ans.(d)
Sol.

Neelkanth	ARTS
Engg : 273 × 12	HBTI : 247 × 14
Arts : 247 × 15	CCSU : 247 × 17

Desired ratio = $\frac{273\times12+273\times15}{247(14+17)} = \frac{537}{589}$

S3. Ans.(c)
Sol.
For ARTS Graduates
Avg (HBTI + GBTU + Neelkanth + Amity) = $\frac{247\times(14+12+15+8)}{4} = 3025.75$
Engg. Graduates
Avg. (Top 5 colleges) = $\frac{273\times76}{5} = 4149.6$
Desired difference = $|3025.75 - 4149.6| = 1123.85$

S4. Ans.(b)
Sol.
Engg. Students added to Amity University from Galgotia= $\frac{1}{3}\times 14 \times 273 = 1274$
New central angle for Galgotia= $\frac{3822-1274}{27300}\times 360 = \frac{2548}{27300}\times 360 = 33.6°$
Total students of Engg. In Amity = 273 × 17 + 1274 = 5915
Central angle for Amity = $\frac{5915}{27300}\times 360 = 78°$
Desired difference = $78° - 33.6° = 44.4°$

S5. Ans.(a)
Sol.
Failed Engg. Students = $\frac{1}{4}\times 27300 = 6825$
Two-third of Arts student who passed = $\frac{2}{3}\times\frac{80}{100}\times 24700 \approx 13174$
Difference = 13174 – 6825 = 6349

S6. Ans.(c)
Sol.
Now, Avg of all aspirants = $\frac{93\ lacs}{6} = 1550000$
Total vacancies = 44640
Desired value = $\frac{1550000}{44640} \approx 35$ times

S7. Ans.(b)
Sol.
Vacancy reduced by Railway = $\frac{2}{5}\times 16250 = 6500$
Hence, total vacancy will be reduced by $\frac{6500}{44640}\times 100 = 14.56\%$

S8. Ans.(e)
Sol.
SSC : $\frac{24\times93000}{9890} \approx 226$
IBPS : $\frac{28\times93000}{9500} \approx 274$
Difference = 274 – 226 = 48

S9. Ans.(a)
Sol.
As per given statement, clearly For one post, 4 will selected for Interviews
No. of posts/ vacancies in IBPS now = 9500 + 950 = 10450
∴ No. of aspirant qualifies for IBPS interview = 10450 × 4 = 41800
No. of aspirants qualifies for PSUs and KVS interviews = (2800 + 700) × 4 = 14000
Desired value = $\frac{41800}{14000} \approx 3$ times

S10. Ans.(c)
Sol.
Total aspirants who didn't join = $44640 \times \frac{15}{100} = 6696$
Vacancies remained void/unfilled for IBPS and Railways = $9500 \times \frac{8}{100} + 16250 \times \frac{10}{100}$
$= 760 + 1625 = 2385$
Desired ratio = $\frac{2385}{6696-2385}$
$= \frac{2385}{4311} \times 100 = 55\%(approx)$

S11. Ans.(a)
Sol. Required ratio $= \frac{(16+20+16)\% \text{ of } 8000}{(15+10+25)\% \text{ of } 36000}$
$= \frac{\left(\frac{52\times8000}{100}\right)}{\left(\frac{50\times36000}{100}\right)} = \frac{4160}{18000} = 52:225$

S12. Ans.(e)
Sol. Qualified students from 'E' $= 12\% \text{ of } 8000 = 960$
Appeared students from 'E' $= 10\% \text{ of } 36000 = 3600$
∴ Required percentage $= \frac{690}{3600} \times 100 = 26\frac{2}{3}\%$

S13. Ans.(b)
Sol. Required percentage $= \frac{(20+16)\% \text{ of } 8000}{(18+20)\% \text{ of } 36000} \times 100$
$= \frac{36 \times 80}{38 \times 360} \times 100 = 21.0526 \approx 21\%$

S14. Ans.(a)
Sol. It was in Institute 'A' and highest percentage $= \frac{16\% \text{ of } 8000}{12\% \text{ of } 36000} \times 100 \approx 30\%$

S15. Ans.(c)
Sol. Total appeared candidates from Institute A, B and F =(12+18+25)% of 36000

$$= (12 + 18 + 25)\% \ of \ 36000$$
$$= 55 \times 360 = 19800$$

$$\therefore \text{Average} = \frac{19800}{3} = 6600$$

Directions (Q.1-5) Study the table and answer the given questions.

Data related to candidates appeared and qualified from a state in a competitive exam during 5 years

Years No. of appeared candidates % of appeared candidates who qualified Respective ratio of number of qualified male & female candidates

Years	No. of appeared candidates	% of appeared candidates who qualified	Respective ratio of number of qualified male & female candidates
2011	700	—	3 : 2
2012	—	—	5 : 3
2013	480	60%	—
2014	—	42%	9 : 5
2015	900	64%	—

Q1. In 2015, if the number of female qualified candidates was 176, what was the respective ratio of number of male qualified candidates and number of female qualified candidates in 2015 ?
(a) 25 : 16
(b) 5 : 4
(c) 25 : 11
(d) 21 : 16
(e) None of these

Q2. The number of appeared candidates increased by 40% from 2011 to 2016. If 25% of the appeared candidates qualified in 2016, what was the number of qualified candidates in 2016?
(a) 240
(b) 225
(c) 255
(d) 245
(e) None of these

Q3. In 2012, the respective ratio of number of appeared candidates to the qualified candidates was 5:4. Number of female qualified candidates constitutes what per cent of number of appeared candidates in the same year?
(a) 20
(b) 25
(c) 30
(d) 15
(e) 40

Q4. In 2014, if the difference between number of male qualified candidates and female qualified candidates was 72, what was the number of appeared candidates in 2014?
(a) 800
(b) 900
(c) 850
(d) 600
(e) None of these

Q5. If the average number of qualified candidates in 2011 and 2013 was 249, what percent of appeared candidates qualified in the competitive exam in 2011?
(a) 40
(b) 30
(c) 20
(d) 35
(e) 25

Directions (Q.6-10): A dealer purchased 6 old washing machines of 6 different companies from OLX and sold them in market. Given below is the data showing cost price, selling price and profit/loss percentage.

Washing Machines	C.P. (in Rs.)	Profit%	Loss%	S.P. (in Rs.)
Samsung	9375	—	—	7968.75
LG	—	14%	—	21375
Videocon	12325	—	18%	—
Godrej	10385	—	—	14019.75
Panasonic	—	24%	—	5022
Whirlpool	14360	—	—	12924

Q6. Cost price of Panasonic washing machine is what percent of selling price of Videocon washing machine? (approximate)
(a) 38%
(b) 40%
(c) 42%
(d) 44%
(e) 46%

Q7. If there have been a profit of 18% on Videocon washing machine instead of 18% loss, then the new S.P. is how much more than the original S.P. ?
(a) 4439
(b) 4429
(c) 4427
(d) 4437
(e) None of these

Q8. Profit percentage on Godrej washing machine is what percent more/less than profit percentage on LG washing machine?
(a) 50% more
(b)150% more
(c) 250% more
(d) 50% less
(e) 150% less

Q9. What is the ratio between loss percentage of Whirlpool washing machine to loss percentage of Samsung washing machine ?
(a) 2 : 3
(b) 3 : 2
(c) 3 : 5
(d) 2 : 5
(e) None of these

Q10. What is the overall profit/loss percentage? (approximate)
(a) 2.1% profit
(b) 3.1% profit
(c) 4.1% profit
(d) 3.1% loss
(e) 2.1% loss

Directions (Q.11-15): In following questions two equations are given. Solve the equations and give answer
(a) if x<y
(b) if x>y
(c) if x≤y
(d) if x≥y
(e) if x=y or no relation can be established

Q11. I. $x^2 + 10x + 24 = 0$
II. $4y^2 - 17y + 18 = 0$
Q12. I. $x^2 = 729$
II. $y = \sqrt{729}$
Q13. I. $x^2 - 1 = 0$
II. $y^2 + 4y + 3 = 0$
Q14. I. $x^2 - 7x + 12 = 0$
II. $y^2 - 12y + 32 = 0$
Q15. I. $3x^2 - 20x - 32 = 0$
II. $2y^2 - 3y - 20 = 0$

Solutions

S1. Ans.(c)
Sol.
No. of qualified candidates in 2015
= 64 × 9 = 576
∴no.of males=576-176=400
∴Required Ratio=400:176=25:11

S2. Ans.(d)
Sol.
No. of appeared candidates in 2016
=140/100×700 = 980
Required no. of candidates = 25/100×980= 245

S3. Ans.(c)
Sol.
Let appeared candidates in 2012 = 500
∴ Let qualified candidates in 2012 = 400
∴ No. of female qualified in 2012 =3/8×400=150
∴Required %=150/500×100=30%

S4. Ans.(d)
Sol.
Let no. of males qualified in 2014 = 9x
∴ No. of females qualified in 2014 = 5x
∴9x-5x=72
x = 18
∴No.of candidates qualifed in 2014=14x=14×18=252

∴Required no.of candidates=252/42×100 = 600

S5. Ans.(b)
Sol. let candidate who qualified in 2011 = x
Candidate who qualified in 2013 = 480 ×0.6=288
X = 498-288=210
Required percent = 210/7 = 30%

S6. Ans.(b)
Sol. Let cost price of Panasonic washing machine $= x$

$\therefore x \times \frac{(100+24)}{100} = 5022$

Or, $x = 4050$

Selling price of Videocon washing machine

$= 12325 \times \frac{(100-18)}{100} = 10106.5$

Required percentage $= \frac{4050}{10106.5} \times 100 \approx 40\%$

S7. Ans.(d)
Sol.

Original S.P. $= 12325 \times \frac{82}{100} = 10106.5$

New S.P $= 12325 \times \frac{(100+18)}{100} = 14543.5$

Difference = 4437

S8. Ans.(b)
Sol.

Percentage profit on Godrej washing machine

$= \frac{14019.75 - 10385}{10385} \times 100 = 35\%$

Profit percentage on LG washing machine = 14%

Required percentage $= \frac{(35-14)}{14} \times 100 = 150\%$ more

S9. Ans.(a)
Sol.

Loss percentage on Whirlpool washing machine

$= \frac{14360 - 12924}{14360} \times 100 = 10\%$

Loss percentage on Samsung washing machine

$= \frac{9375 - 7968.75}{9375} \times 100 = 15\%$

Required Ratio $= 2 : 3$

S10. Ans.(b)

Sol.
Overall cost price of all washing machines together
=9375+18750+12325+10385+4050+14360=69245
Overall selling price of all washing machines together
=7968.75+21375+10106.5+14019.75+5022+12924=71416
Profit percentage =(71416-69245)/69245×100≈3.1% profit

S11. Ans.(a)
Sol.
$x^2 + 6x + 4x + 24 = 0$
$x(x + 6) + 4(x + 6) = 0$
$(x + 4)(x + 6) = 0$
$x = -4, -6$
$4y^2 - 8y - 9y + 18 = 0$
$4y(y - 2) - 9(y - 2) = 0$
$(4y - 9)(y - 2) = 0$
$y = \frac{9}{4}, 2$
$x < y$

S12. Ans.(c)
Sol.
$x^2 - 729 = 0$
$(x - 27)(x + 27) = 0$
$x = 27, -27$
$y = \sqrt{729} = 27$
$x \leq y$

S13. Ans.(d)
Sol.
$(x - 1)(x + 1) = 0$
$x = 1, -1$
$y^2 + y + 3y + 3 = 0$
$y(y + 1) + 3(y + 1) = 0$
$(y + 3)(y + 1) = 0$
$y = -1, -3$
$x \geq y$

S14. Ans.(c)
Sol.
$x^2 - 4x - 3x + 12 = 0$
$x(x-4) - 3(x-4) = 0$
$(x-3)(x-4) = 0$
$x = 3, 4$
$y^2 - 4y - 8y + 32 = 0$
$y(y-4) - 8(y-4) = 0$
$(y-8)(y-4) = 0$
$y = 4, 8$
$x \leq y$

S15. Ans.(e)
Sol.
$3x^2 - 24x + 4x - 32 = 0$
$3x(x-8) + 4(x-8) = 0$
$(3x+4)(x-8) = 0$
$x = -\frac{4}{3}, 8$
$2y^2 - 8y + 5y - 20 = 0$
$2y(y-4) + 5(y-4) = 0$
$(2y+5)(y-4) = 0$
$y = -\frac{5}{2}, 4$
No relation can be established

Directions (Q.1-5): Study the following table carefully and answer the questions given below:

Marks obtained by the six students in five subjects in annual examination

Subjects \ Students	A	B	C	D	E	F
Phy. (out of 75)	72	70	69	55	54	60
Chem. (out of 75)	63	66	57	42	45	51
Maths (out of 100)	90	78	82	96	62	85
Eng (out of 150)	75	120	95	105	76	90
Bio (out of 50)	44	48	35	40	34	36

Q1. Who stood first in the examination?
(a) F
(b) E
(c) A
(d) B
(e) D

Q2. What is difference between overall percentage marks obtained by B and E?

(a) 26.67
(b) 24.66
(c) 23.22
(d) 27.64
(e) 25.33

Q3. How many students obtained more marks than average marks in Physics by all the students?
(a) 2
(b) 4
(c) 1
(d) 6
(e) 3

Q4. Marks obtained by B in Chem. and Eng. together are approximately what percent of the total marks obtained by F in all subjectstogether?
(a) 57.76
(b) 58.26
(c) 60.23
(d) 59.14
(e) 49.95

Q5. How many students obtained less than 70% marks in aggregate?
(a) 3
(b) 2
(c) 1
(d) 4
(e) None of these

Directions (Q.6-10): Study the table carefully and answer the question given below:

Number of new employees and also who left the company, since 2010

Years	Managers		Technician		Operators		Accountants		Peons	
	New	left	New	left	New	left	New	left	New	left
2010	760	—	1200	—	880	—	1160	—	820	—
2011	280	120	272	120	256	104	200	100	184	96
2012	179	92	240	128	240	120	224	104	152	88
2013	148	88	236	96	208	100	248	96	196	80
2014	160	72	256	100	192	112	272	88	224	120
2015	193	96	288	112	248	144	260	92	200	104

Q6. What is the difference between the total number of Technicians added to the company and total number of accountants added to company during year 2011-2015?
(a) 84
(b) 88
(c) 89
(d) 93
(e) None of these

Q7. What is total number of peons and operators together in company in 2014?
(a) 2626
(b) 2296
(c) 2532
(d) 2438
(e) None of these

Q8. The number of Technician in 2013 is what percent more/less than number of Accountants in 2012?
(a) 16.23%

(b) 17.85%
(c) 18.21%
(d) 16.81%
(e) 15.34%

Q9. What is average of total number of employees of all categories in year 2012?
(a) 1005
(b) 1310
(c) 1205
(d) 1195
(e) None of these

Q10. The total number of managers in 2014 in company is what approximately percent of an accountant in that year?
(a) 67.31%
(b) 72.32%
(c) 69.17%
(d) 68.56%
(e) 64.67%

Directions (Q.11-15): What should come in place of question-mark (?) in the following question?

Q11. $[(165)^2 \div 75 \times 12] \div 36 = ?^2$
(a) 13
(b) 165
(c) 121
(d) 11
(e) None of these

Q12. $\{(45)^3 + (65)^2\} \div ? = 1907$
(a) 80
(b) 50
(c) 60
(d) 70
(e) None of these

Q13. $8^{0.4} \times 4^{1.6} \times 2^{1.6} = ?$
(a) 52
(b) 48
(c) 64
(d) 76
(e) None of these

Q14. $2.8 \times 1.5 + 8\%$ of 250 = ?
(a) 24.2
(b) 24.02
(c) 242.2
(d) 2.42
(e) None of these

Q15. 64% of ? ÷ 14 = 176
(a) 3800
(b) 3950
(c) 3850
(d) 3900
(e) None of these

Solutions

S1. Ans.(d)
Sol.
Total marks obtained by A = 344
Total marks obtained by B = 382
Total marks obtained by C = 338
Total marks obtained by D = 338
Total marks obtained by E = 271
Total marks obtained by F = 322

S2. Ans.(b)
Sol.
Aggregate percentage of B = $\frac{382}{450} \times 100 = 84.88\%$
Aggregate % of E = $\frac{271}{450} \times 100 = 60.22\%$
Difference = $84.88 - 60.22 = 24.66$

S3. Ans.(e)
Sol.
Average marks in Physics = $\frac{72+70+69+55+54+60}{6} = 63.33$
∴ A, B and C has required marks.

S4. Ans.(a)
Sol.
Marks obtained by B in Chem. & Eng. = 66 + 120 = 186
Total marks by F = 322
Required answer = $\frac{186\times100}{322}$ = 57.76%

S5. Ans.(c)
Sol.
A's aggregate = $\frac{344}{450}\times 100$ = 76.44%
B's aggregate = $\frac{382\times100}{450}$ = 84.88%
C's aggregate = $\frac{338\times100}{450}$ = 75.11%
D's aggregate = $\frac{338\times100}{450}$ = 75.11%
E's aggregate = $\frac{271\times100}{450}$ = 60.22%
F's aggregate = $\frac{322\times100}{450}$ = 71.55%

S6. Ans.(b)
Sol.
Total Technician added = 1292
Total Accountants added = 1204
Difference = 1292 – 1204 = 88

S7. Ans.(c)
Sol.
Required number = 820 + 184 + 152 + 196 + 224 – (96 + 88 + 80 + 120) + 880 + 256 + 240 + 208 + 192 – (104 + 120 + 100 + 112)
= 1576 – 384 + 1776 – 436
= 2532

S8. Ans.(a)
Sol.
No. of Technician in 2013 = 1604
No. of Accountants in 2012 = 1380
Required answer = $\frac{1604-1380}{1380}\times 100$ = 16.23%

S9. Ans.(d)
Sol.
Total managers in 2012 = 760 + 280 + 179 – 120 – 92
= 1007
Similarly,
Technicians = 1464
Operators = 1152
Accountants = 1380
Peons = 972
Average = $\frac{5975}{5} = 1195$

S10. Ans.(a)
Sol.
Managers in 2014 = 1527 – 372 = 1155
Accountant in 2014 = 2104 – 388 = 1716
Required answer = $\frac{1155\times100}{1716} = 67.31\%$

S11. Ans.(d)
Sol.
$\frac{\frac{165\times165}{75}\times 12}{36} = 121 = 11^2$

$\therefore ? = 11$

S12. Ans.(b)
Sol.
$\Rightarrow \frac{91125 + 4225}{1907} = ?$
$\therefore ? = 50$

S13. Ans.(c)
Sol.
$8^{0.4} \times 4^{1.6} \times 2^{1.6}$
$= 2^{3\times0.4} \times 2^{2\times1.6} \times 2^{1.6}$
$= 2^{1.2+3.2+1.6}$
$= 2^6 = 64$

S14. Ans.(a)
Sol.

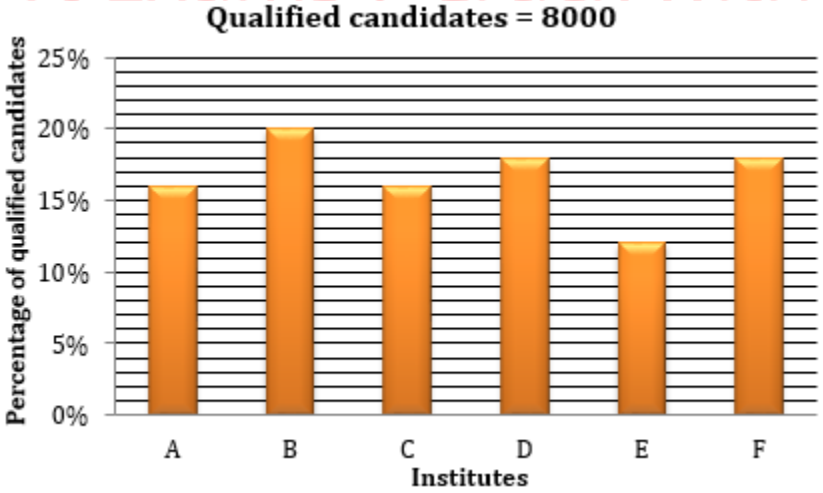
$$2.8 \times 1.5 + \frac{250 \times 8}{100}$$
$$= 4.2 + 20 = 24.2$$

S15. Ans.(c)
Sol.

$$\frac{64\% \text{ of } ?}{14} = 176$$
$$\Rightarrow ? = \frac{176 \times 14 \times 100}{64} = 3850$$

Directions (Q.1-5): Study the following table and bar graph to answer the questions given below it.
Percentage of appeared and qualified candidates in a competitive examination from different institutes

Appeared Candidates = 36000	
Institute	%of appeared candidates
A	12%
B	18%
C	20%
D	15%
E	10%
F	25%



Q1. What is the ratio of the qualified candidates from institutes A, B and C together to the appeared candidates from institutes D, E and F?
(a) 52 : 225

(b) 26 : 125
(c) 125 : 26
(d) 13 : 200
(e) None of these

Q2. What percent of the candidates from institute 'E' has been declared qualified out of the total candidates appeared from this institute?
(a) 16%
(b) 26%
(c) 16.66%
(d) 18%
(e) None of these

Q3. What is the approximate percentage of students qualified w.r.t. to those appeared from the institutes B and C together?
(a) 20
(b) 21
(c) 22
(d) 23
(e) 24

Q4. Which institute has the highest percentage of candidates qualified w.r.t. to those appeared?
(a) A
(b) B
(c) C
(d) D
(e) None of these

Q5. What is the average number of appeared candidates from the institutes A, B and F together?
(a) 19800
(b) 2200
(c) 6600
(d) 8600
(e) None of these

Directions (Q.6-10): In the following number series only one number is wrong. Find out the wrong number.
Q6. 5 15 30 135 405 1215 3645
(a) 15
(b) 30
(c) 405
(d) 3645
(e) None of these

Q7. 36 54 18 27 9 18.5 4.5
(a) 4.5
(b) 18.5
(c) 54
(d) 18
(e) 27

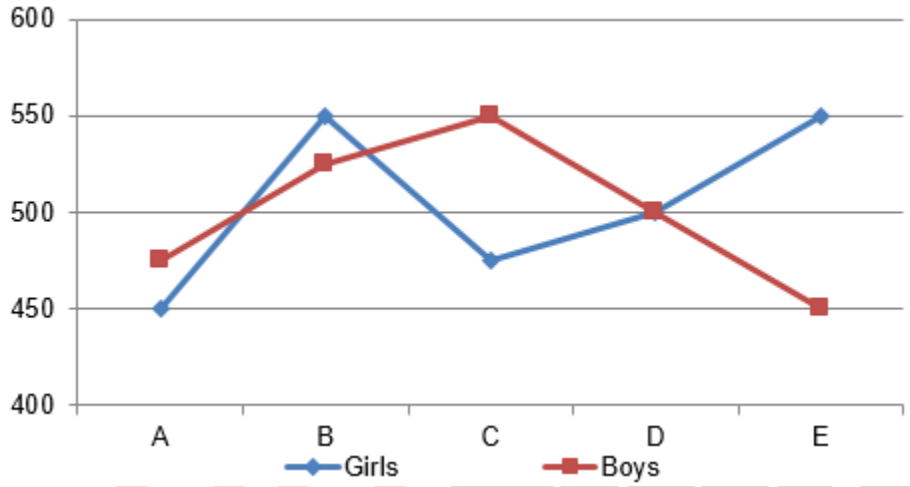
Q8. 582 605 588 611 634 617 600
(a) 634
(b) 611
(c) 605
(d) 600
(e) 582

Q9. 46080 3840 384 48 24 2 1
(a) 1

(b) 2
(c) 24
(d) 384
(e) 48

Q10. 1 8 27 64 124 216 343
(a) 8
(b) 27
(c) 64
(d) 124
(e) 216

Directions (Q.11-15): Study the following graph carefully to answer the questions that follow:
Number of Girls and Boys participating in a rally from five different schools



Q11. What is the total number of girls participating in the rally from schools A and C together?
(a) 825
(b) 875
(c) 950
(d) 975
(e) None of these

Q12. The number of boys participating in the rally from school B is what percent of the total number of children participating in the rally from that school? (Rounded off to two digits after decimal.)
(a) 48.84 %
(b) 47.37 %
(c) 49.28 %
(d) 46.46 %
(e) None of these

Q13. The number of girls participating in the rally from School E is approximately what percent of the number of boys participating in the rally from the same school?
(a) 81 %
(b) 106 %
(c)122 %
(d) 98 %
(e) 114 %

Q14. What is the respective ratio of total number of girls participating in the rally from schools D and C together to the total number of boys participating in the rally from schools A and B together?
(a) 23 : 18

(b) 43 : 35
(c) 41 : 38
(d) 21 : 20
(e) None of these

Q15. What is the average number of girls participating in the rally from all schools together?
(a) 500
(b) 460
(c) 525
(d) 505
(e) None of these

SOLUTIONS

S1. Ans.(a)
Sol. Required ratio $= \frac{(16+20+16)\% \ of \ 8000}{(15+10+25)\% \ of \ 36000}$

$= \frac{\left(\frac{52\times8000}{100}\right)}{\left(\frac{50\times36000}{100}\right)} = \frac{4160}{18000} = 52 : 225$

S2. Ans.(e)
Sol. Qualified students from 'E'$= 12\% \ of \ 8000 = 960$
Appeared students from 'E'$= 10\% \ of \ 36000 = 3600$
$\therefore$ Required percentage$= \frac{690}{3600}\times100 = 26\frac{2}{3}\%$

S3. Ans.(b)
Sol. Required percentage$= \frac{(20+16)\% \ of \ 8000}{(18+20)\% \ of \ 36000}\times100$

$= \frac{36\times80}{38\times360}\times100 = 21.0526 \approx 21\%$

S4. Ans.(a)
Sol. It was in Institute 'A' and highest percentage
$= \frac{16\% \ of \ 8000}{12\% \ of \ 36000}\times100 \approx 30\%$

S5. Ans.(c)
Sol. Total appeared candidates from Institute A, B and F =(12+18+25)% of 36000
$= (12+18+25)\% \ of \ 36000$
$= 55\times360 = 19800$
$\therefore$ Average $= \frac{19800}{3} = 6600$

S6. Ans.(b)
Sol. Patten is $T_{n+1} = T_n \times 3$
$\therefore 15 \times 3 = 45$ Not 30

S7. Ans.(b)
Sol. Pattern of series is–
$36 \times 1.5 = 54$
$54 \div 3 = 18$
$18 \times 1.5 = 27$
$27 \div 3 = 9$
$9 \times 1.5 = 13.5 \neq 18.5$
$13.5 \div 3 = 4.5$

S8. Ans.(a)
Sol. Pattern of series is –
$582 + 23 = 605$
$605 - 17 = 588$
$588 + 23 = 611$
$611 - 17 = 594 \neq 634$
$594 + 23 = 617$
$617 - 17 = 600$

S9. Ans.(c)
Sol. Pattern of series is–
$46080 \div 12 = 3840$
$3840 \div 10 = 384$
$384 \div 8 = 48$
$48 \div 6 = 8 \neq 24$
$8 \div 4 = 2$
$2 \div 2 = 1$

S10. Ans.(d)
Sol. Pattern of series is
$1^3, 2^3, 3^3, 4^3, [5^3 = 125 \neq 124], 216, 343$

S11. Ans.(e)
Sol. Required number = 450 + 475 =925

S12. Ans.(a)
Sol. Required percentage $= \frac{525}{525+550} \times 100 = 48.84\%$

S13. Ans.(c)

Sol. Required percentage $= \frac{550}{450} \times 100 = 122\%(\text{approx})$

S14. Ans.(e)

Sol. Total number of girls participating in the rally from schools D and C together = 475 + 500 =975

Total number of boys participating in the rally from schools A and B together = 475 + 525 = 1000

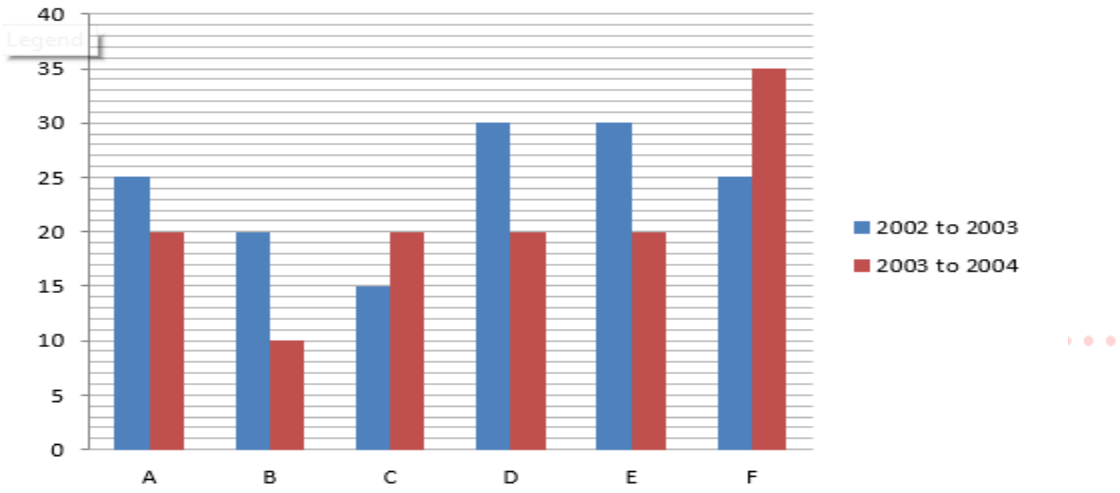
Required ratio= 975 : 1000 = 39 : 40

S15. Ans.(d)

Sol. Required average $= \frac{450+550+475+500+550}{5} = 505$

Directions (Q.1-5): Read the following table carefully and answer the questions given below.

Percentage increase in population of 6 villages from 2002 to 2003 and from 2003 to 2004



Actual total population of these villages in 3 different years.

Years / Village	2002	2003	2004
A	-	-	3750
B	-	1980	-
C	-	-	1518
D	-	-	-
E	1250	-	-
F	1200	-	-

Q1. What is the ratio of total population of village E in 2004 to village A in 2002?

(a) 41:50
(b) 37:45
(c) 48:31
(d) 44:53
(e) None of these

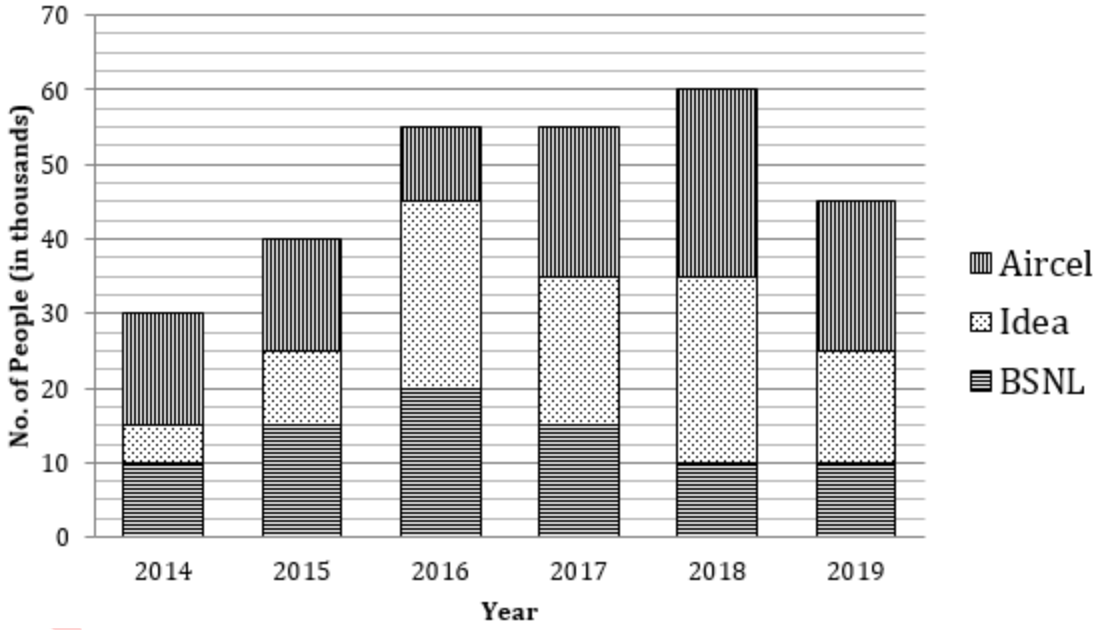
Q2. Total population of village A in 2002 is what percent more than total population of village C in 2002?(round off to 2 decimal Places)
(a) 129.27%
(b) 127.27%
(c) 135%
(d) 123.37%
(e) None of these

Q3. Ratio of Total population of village C and D in 2002 is 22:27 respectively, what will be total population of village D in 2004?
(a) 1350
(b) 2108
(c) 1250
(d) 2106
(e) None of these

Q4. The total population of F in 2002 is approximately what percent of the total population of same village in 2004?(round off to 2 decimal places)
(a) 53.26
(b) 59.38
(c) 49.38
(d) 57.38
(e) 59.26

Q5. Total population in 2002 of all villages together is approximately what percent less than the total population in 2004 of all villages together?
(a) 33
(b) 39
(c) 37
(d) Can't be determined
(e) None of these

Directions (Q.6-10): Study the given graph carefully to answer the questions that follow:



Q6. What is the average number of people using mobile service of Idea for all the years together?

(a) $16\frac{2}{3}$
(b) $14444\frac{1}{6}$
(c) $16666\frac{2}{3}$
(d) $14\frac{1}{6}$
(e) None of these

Q7. The total number of people using all the three mobile services in the year 2017 is what per cent of the total number of people using all the three mobile services in the year 2018? (rounded off to two digits after decimal)
(a) 89.72
(b) 93.46
(c) 88.18
(d) 91.67
(e) None of these

Q8. The number of people using mobile service of Aircel in the year 2016 forms approximately what per cent of the total number of people using all the three mobile services in that year?
(a) 18
(b) 26
(c) 11
(d) 23
(e) 29

Q9. What is the ratio of the number of people using mobile service of BSNL in the year 2015 to that of those using the same service in the year 2014?
(a) 8 : 7
(b) 3 : 2
(c) 19 : 13
(d) 15 : 11
(e) None of these

Q10. What is the total number of people using mobile service of Idea in the years 2018 and 2019 together?
(a) 35,000
(b) 30,000
(c) 45,000
(d) 25,000
(e) None of these

Directions (Q.11-15): What should come in place of question mark (?) in the following questions?

Q11. $\sqrt{1225} \div \sqrt[3]{343} \times 45\%$ of 760 = ?
(a) 1170
(b) 1760
(c) 1510
(d) 1710
(e) None of these

Q12. 175% of $460 + 110\%$ of $170 + 2^{?} = 1000$

(a) 3
(b) 4
(c) 5
(d) 2
(e) 1

Q13. $18^{7.9} \times 3^{0.1} \times 6^{0.1} \div (3^4 \times 6^4) = 18^{?}$
(a) 1
(b) 2
(c) 3
(d) 4
(e) 5

Q14. $3\frac{1}{7} + 2\frac{3}{5} + 7\frac{1}{5} - 5\frac{3}{7} - \frac{18}{35} = \frac{35}{?}$
(a) 3
(b) 5
(c) 7
(d) 9
(e) 11

Q15. 36% of 245-40% of 210=10- ?
(a) 4.2
(b) 6.8
(c) 4.9
(d) 5.6
(e) None of these

Solutions

S1. Ans. (e)
Sol. Total population of E in 2004

$$1250\times\frac{(100+30)}{100}\times\frac{(100+20)}{100}=1950$$

Total population of A in 2002

$$=3750\times\frac{100}{125}\times\frac{100}{120}=2500$$

$$\text{required ratio}=\frac{1950}{2500}=39:50$$

S2. Ans. (b)
Sol. Total population of A in 2002 = 2500

$$\text{Total population of C in 2002}=1518\times\frac{100}{120}\times\frac{100}{115}=1100$$

$$\text{Required percentage}=\frac{2500-1100}{1100}\times100=127.27\%$$

S3. Ans. (d)
Sol. total population of D in 2002 $=\frac{27}{22}\times1100=1350$

$$\text{Total population of D in 2004}=1350\times\frac{130}{100}\times\frac{120}{100}=2106$$

S4. Ans. (e)
Sol. Total population of F in 2004 $=1200\times\frac{125}{100}\times\frac{135}{100}=2025$

$$\text{required percentage}=\frac{1200}{2025}\times100=59.26\%$$

S5. Ans. (d)
Sol. Can't be determined as no information is given about population of D

S6. Ans.(c)
Sol. Average $= \frac{1}{6} \times [5 + 10 + 25 + 20 + 25 + 15] \times 1000$
$= \frac{100000}{6} = 16666\frac{2}{3}$

S7. Ans.(d)
Sol. Required % $= \frac{55}{60} \times 100 = 91.67\%$

S8. Ans.(a)
Sol. Required % $= \frac{10}{55} \times 100 = 18\%$ (approx.)

S9. Ans.(b)
Sol. Required Ratio $= 15 : 10 = 3 : 2$

S10. Ans.(e)
Sol. Required no. of people $= (25 + 15) \times 1000 = 40000$

S11. Ans.(d)
Sol. $? = 35 \div 7 \times 342 = 1710$

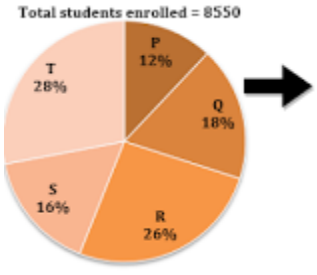
S12. Ans.(a)
Sol. $2^{?} = 1000 - 805 - 187 = 8$
Or, $? = 3$

S13. Ans.(d)
Sol. $18^{?} = 18^{7.9} \times 18^{0.1} \div 18^{4}$
$\therefore ? = 4$

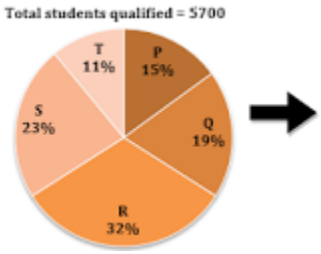
S14. Ans.(b)
Sol. $\frac{35}{?} = \frac{263}{35} - \frac{18}{35}$
Or, $? = \frac{35 \times 35}{245} = 5$

S15. Ans.(e)
Sol. $? = 10 - 88.2 + 84 = 5.8$

Direction (Q.1-5): Given below is the data related to students enrolled in "Mega Talent Hunt" Science Olympiad from 6 different colleges.



Colleges	Male : Female
P	4 : 5
Q	7 : 2
R	9 : 4
S	3 : 5
T	19 : 23



Colleges	Male : Female
P	2 : 3
Q	13 : 6
R	21 : 11
S	9 : 14
T	3 : 8

Q1. Boys enrolled from college S are what percent of boys qualified from college Q?(Round off to 2 decimal places)
(a) 69.23%
(b) 52.56%
(c) 61.58%
(d) 56.58%
(e) None of these

Q2. Find the ratio of boys enrolled from college Q and college S together to the girls qualified from the same.
(a) 5 : 4
(b) 4 : 3
(c) 3 : 2
(d) 2 : 1
(e) None of these

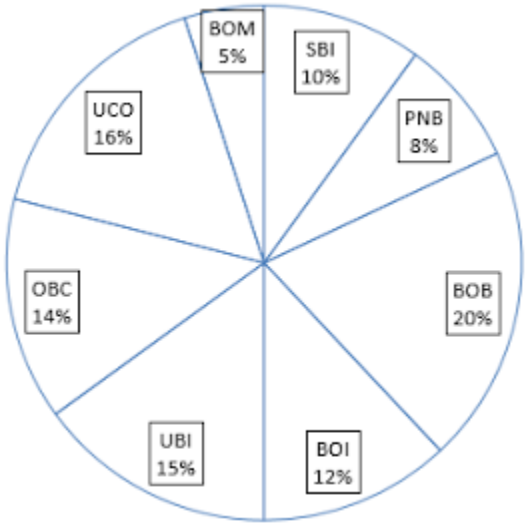
Q3. Boys enrolled from college T are what percent of average no. of boys enrolled from all colleges together?
(a) 150%
(b) 124%
(c) 138%
(d) 113%
(e) 105%

Q4. If 22 (2/9)% of girls qualified from college P were found not eligible to play further in the olympiad due to sevral reasons, then find the ratio between girls promoted to next part of olympiad from college P to the total number of students qualified from colege P.
(a) 8 : 23
(b) 7 : 23
(c) 15 : 8
(d) 7 : 15
(e) 23 : 8

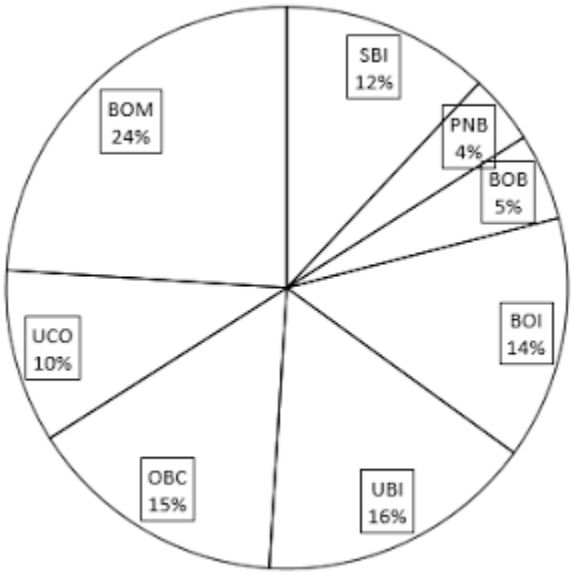
Q5. Find the total number of boys qualified from all colleges together.
(a) 2652
(b) 2742
(c) 2826
(d) 2761
(e) None of these

Directions (Q.6-10): The following pie-chart shows the distribution of the number of vacancies in different banks to be filled through IBPS PO recruitment exam in 2010 and 2015.

Total vacancies in the year 2010 = 32000



Total vacancies in the year 2015 = 60000



Q6. What is the difference between the central angle made by vacancies in banks SBI, UBI and UCO in the year 2010 and that of by vacancies in banks PNB, OBC and BOM in the year 2015?

(a) 9.6°
(b) 8.2°
(c) 4.6°
(d) 7.2°
(e) 5.4°

Q7. What is the percentage increase in number of vacancies in SBI and PNB together from 2010 to year 2015?

(a) $65\frac{2}{3}\%$
(b) 60%
(c) $62\frac{2}{3}\%$
(d) $66\frac{2}{3}\%$
(e) None of these

Q8. What is the ratio of the number of vacancies in UCO, UBI and BOB in the year 2015 to the number of vacancies in PNB, BOI and BOM in the year 2010?
(a) 93:40
(b) 51:40
(c) 93:81
(d) 63:59
(e) None of these

Q9. The number of vacancies in SBI, PNB and BOI in the year 2015 is approximately what percent of the number of vacancies in BOB, UCO and BOM in the year 2010?
(a) 122.5%
(b) 131.25%
(c) 137.2%
(d) 150%
(e) 152.25%

Q10. The number of vacancies in UCO and BOB together in the year 2010 is what percent more than the number of vacancies in same banks together in 2015?
(a) 12%
(b) 17%
(c) 24%
(d) 28%
(e) 35%

Directions (Q.11-15): Two equations I and II are given below in each question. You have to solve these equations and give answer
(a) if x<y
(b) if x>y
(c) if x≤y
(d) if x≥y
(e) if x=y or no relation can be established

Q11. I. $x^2 - x - 6 = 0$
II. $2y^2 + 13y + 21 = 0$
Q12. I. $x^2 = 4$
II. $y^2 + 6y + 9 = 0$
Q13. I. $2x + 3y = 4$
II. $3x + 2y = 11$
Q14. I. $x^2 - 7x + 12 = 0$
II. $y^2 + 4y + 3 = 0$
Q15. I. $\sqrt{361}x + \sqrt{16} = 0$
II. $\sqrt{441}y + 4 = 0$

Solutions

S1. Ans.(a)

Sol. Boys enrolled from college S = $\frac{3}{8}\times\frac{16}{100}\times8550 = 513$

Boys qualified from college Q = $\frac{13}{19}\times\frac{19}{100}\times5700 = 741$

Required percentage = $\frac{513}{741}\times100 = 69.23\%$

S2. Ans.(c)

Sol. Boys enrolled from college Q and S together

$= \frac{7}{9}\times\frac{18}{100}\times8550 + \frac{3}{8}\times\frac{16}{100}\times8550 = 1710$

Girls qualified from college Q and S together

$= \frac{6}{19}\times\frac{19}{100}\times5700 + \frac{14}{23}\times\frac{23}{100}\times5700 = 1140$

Required ratio = $\frac{1710}{1140} = 3:2$

S3. Ans.(d)

Sol.

Boys enrolled from college T = $\frac{19}{42}\times\frac{28}{100}\times8550 = 1083$

Average no. of boys enrolled

$= \frac{1}{5}\left[\frac{4}{9}\times12 + \frac{7}{9}\times18 + \frac{9}{13}\times26 + \frac{3}{8}\times16 + \frac{19}{42}\times28\right]\times\frac{8550}{100}$

$= 957.6 \approx 958$

Required percentage = $\frac{1083}{958}\times100 \approx 113\%$

S4. Ans.(d)

Sol. Girls promoted to next level = $\frac{7}{9}\times\frac{3}{5}\times\frac{15}{100}\times5700 = 399$

Required ratio = $\frac{399}{\frac{15}{100}\times5700} = 7:15$

S5. Ans.(e)
Sol. Total boys qualified
$= \left[\frac{2}{5}\times15+\frac{13}{19}\times19+\frac{21}{32}\times32+\frac{9}{23}\times23+\frac{3}{11}\times11\right]\times57 = 2964$

S6. Ans.(d)
Sol. Required difference $= \frac{43}{100}\times360-\frac{41}{100}\times360 = 7.2°$

S7. Ans.(d)
Sol. Vacancies in SBI and PNB together in 2010 $= \frac{18}{100}\times32000 = 5760$
Vacancies in SBI and PNB together in 2015$= \frac{16}{100}\times60000 = 9600$
$\therefore$ Required % $= \frac{9600-5760}{5760}\times100 = 66\frac{2}{3}\%$

S8. Ans.(a)
Sol. Required Ratio $= \frac{(10+16+5)\times60}{(8+12+5)\times32}$
$= \frac{1860}{800} = 93:40$

S9. Ans.(c)
Sol. Required % $= \frac{\frac{12+4+14}{100}\times60000}{\frac{20+16+5}{100}\times32000}$
$= \frac{30\times60}{41\times32}\times100 = 137.2\%$

S10. Ans.(d)
Sol. Vacancies in UCO and BOB together in 2010
$= \frac{16+20}{100}\times32000 = 11520$
Vacancies in UCO and BOB together in 2015
$= \frac{15}{100}\times60{,}000 = 9000$
$\therefore$ Required % $= \frac{11520-9000}{9000}\times100 = 28\%$

S11. Ans.(b)
Sol. I. $x^2 - x - 6 = 0$
$\Rightarrow x^2 - 3x + 2x - 6 = 0$
$\Rightarrow x(x-3) + 2(x-3) = 0$
$\Rightarrow (x+2)(x-3) = 0$
$\Rightarrow x = -2, 3$
II. $2y^2 + 13y + 21 = 0$
$\Rightarrow 2y^2 + 7y + 6y + 21 = 0$
$\Rightarrow y(2y+7) + 3(2y+7) = 0$
$\Rightarrow (y+3)(2y+7) = 0$
$\Rightarrow y = -3, -\frac{7}{2}$
$\therefore x > y$

S12. Ans.(b)
Sol. I. $x^2 = 4$
$\Rightarrow x^2 - 4 = 0$
$\Rightarrow (x-2)(x+2) = 0$
$\Rightarrow x = 2, -2$
II. $y^2 + 6y + 9 = 0$
$\Rightarrow y^2 + 3y + 3y + 9 = 0$
$\Rightarrow y(y+3) + 3(y+3) = 0$
$\Rightarrow (y+3)(y+3) = 0$
$\Rightarrow y = -3$
$\therefore x > y$

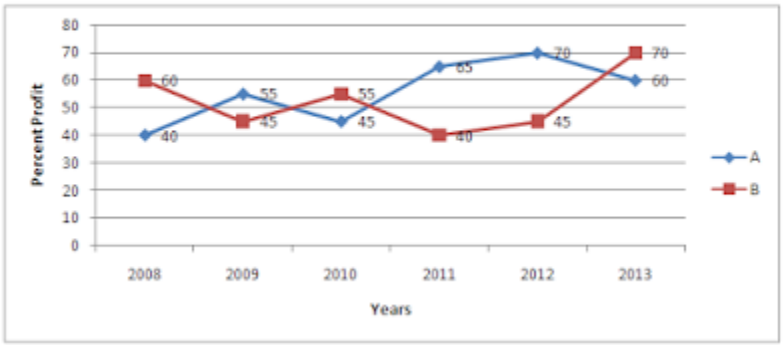
S13. Ans.(b)
Sol. I. $2x + 3y = 4$
II. $3x + 2y = 11$
On (i) $\times 3 - (ii) \times 2$
x = 5, y = – 2
$\therefore x > y$

S14. Ans.(b)
Sol. I. $x^2 - 7x + 12 = 0$
$\Rightarrow x^2 - 4x - 3x + 12 = 0$
$\Rightarrow x(x-4) - 3(x-4) = 0$
$\Rightarrow (x-3)(x-4) = 0$
$\Rightarrow x = 3, 4$
II. $y^2 + 4y + 3 = 0$
$\Rightarrow y^2 + 3y + y + 3 = 0$
$\Rightarrow y(y+3) + 1(y+3) = 0$
$\Rightarrow (y+1)(y+3) = 0$
$\Rightarrow y = -1, = -3$
$\therefore x > y$

S15. Ans.(a)
Sol. I. $\sqrt{361}x + \sqrt{16} = 0$
$\Rightarrow 19x + 4 = 0$
$\Rightarrow x = -\frac{4}{19}$
II. $\sqrt{441}\,y + 4 = 0$
$\Rightarrow 21y + 4 = 0$
$\Rightarrow y = -\frac{4}{21}$
$\therefore x < y$

Directions (Q.1-5): The following line graph gives the annual percent profit earned by two businessmen during the period 2008-2013. Study the graph and answer the questions based on it. Percent profit earned by two businessmen over the years

Note: % profit = $\frac{Income - Expenditure}{Expenditure} \times 100$



Q1. What is the average profit percent earned by A and B throughout the years?

(a) $54\frac{2}{7}\%$
(b) $54\frac{1}{6}\%$
(c) $54\frac{5}{6}\%$
(d) $53\frac{1}{6}\%$
(e) None of these

S1. Ans.(b)
Sol. Required average = $\frac{315+335}{12} = 54\frac{1}{6}\%$

Q2. If in year 2010, the expenditure made by A was Rs. 5 lakhs, then what was the income in that year?
(a) Rs. 7,22,000
(b) Rs. 7,25,500
(c) Rs. 7,25,000
(d) Rs. 7,50,000

(e) None of these

S2. Ans.(c)

Sol. Required Income $= \frac{45\times500000}{100} + 500000$

$=$ Rs. 7, 25,000

Q3. If in year 2012 the income of A and B was Rs. 18.7 lakhs and Rs. 20.3 lakhs respectively, the expenditure of B was by about what percent more or less than that of A in that year?

(a) 27% more
(b) 27% less
(c) 26% more
(d) 26% less
(e) 37% more

S3. Ans.(a)

Sol. Expenditure of A $= \frac{1870000}{1.70} =$ Rs. 11 lakhs

Expenditure of B $= \frac{2030000}{1.45} =$ Rs. 14 lakhs

$\therefore$ Require percentage $= \frac{14-11}{11} \times 100 \approx 27\%$

Q4. If the income of B remains same throughout the years i.eRs. 3.4 lakhs then in which year his expenditure was minimum and what was the expenditure in that year?

(a) 2013, Rs. 2,20,000
(b) 2012, Rs. 2,00,000
(c) 2013, Rs. 2,00,000
(d) 2013, Rs. 2,50,000
(e) None of these

S4. Ans.(c)

Sol. Clearly from graph, since profit percent is max in 2013,

So expenditure is minimum in year 2013

Now, Expenditure of B in 2013 $= \frac{340000}{1.7} =$ Rs. 2, 00,000

Q5. In which year the ratio of profit percent of A and B has the maximum numeric value?

(a) 2009
(b) 2008
(c) 2011
(d) 2012
(e) 2013

S5. Ans.(c)

Sol. Ratio in 2008 $= \frac{40}{60} \approx 0.67$

Ratio in 2009 $= \frac{55}{45} \approx 1.22$

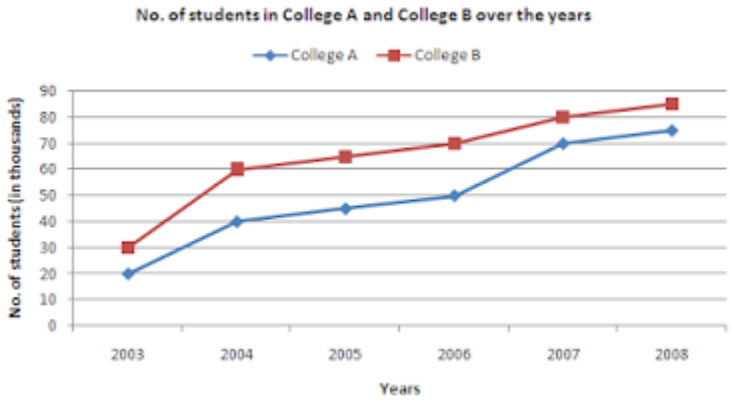
Ratio in 2010 $= \frac{45}{55} \approx 0.81$

Ratio in 2011 $= \frac{65}{40} \approx 1.625$

Ratio in 2012 $= \frac{70}{45} \approx 1.56$

Ratio in 2013 $= \frac{60}{70} \approx 0.86$

Directions (Q.6-10): Study the following graph carefully to answer these questions :



Q6. Total number of students of College B in years 2005, 2006 and 2003 together are what percent more/less then total number of students of College A in years 2003, 2004 and 2008 together?

(a) $22\frac{4}{9}\%$
(b) $22\frac{2}{11}\%$
(c) $22\frac{2}{9}\%$
(d) $22\frac{2}{11}\%$
(e) None of these

S6. Ans.(c)
Sol. required percentage $= \frac{165-135}{135} \times 100\% = 22\frac{2}{9}\%$

Q7. What is the ratio of the total number of students of College A in years 2004, 2006 and 2007 together and the total number of students of College B in years 2003, 2004 and 2008?
(a) 35 : 32
(b) 33 : 37
(c) 34 : 31
(d) 32 : 35
(e) None of these

S7. Ans.(d)
Sol. required ratio = (40 + 50 + 70): (30 + 60 + 85)
= 160: 175
= 32: 35

Q8. What is the average number of students in College A for all the years together?
(a) 45,000
(b) 50,000
(c) 52,000
(d) 48,000
(e) None of these

S8. Ans.(b)

Sol. required average $= \frac{300}{6} = 50$

$= 50 \times 1000 \quad \therefore (unit = 1000)$

$= 50{,}000$

Q9. What is the approximate percentage rise in the number of students of College B from 2005 to 2006?
(a) 8
(b) 12
(c) 4
(d) 15
(e) 20

S9. Ans.(a)

Sol. Required $\% = \frac{70-65}{65} \times 100$

$= \frac{100}{13} \approx 8\%$

Q10. The number of students of College B in year 2008 is what percent of the total students of College B in all the years together (Round off to two digits after decimal)
(a) 20.61
(b) 23.79
(c) 21.79
(d) 17.29
(e) None of these

S10. Ans.(c)

Sol. Required $\% = \frac{85}{390} \times 100$

$= 21.79\%$

Directions (Q.11-15): What will come in place of question mark (?) in the following number series?

Q11. 6, 9, 18, 45, 135, ?
(a) 470
(b) 472.5
(c) 493.75
(d) 476.5
(e) 439

S11. Ans.(b)

Sol. Series is $\times 1.5, \times 2, \times 2.5, \times 3, \times 3.5$

$\therefore ? = 135 \times 3.5 = 472.5$

Q12. 66, 35, 72, 38, 78, ?
(a) 39
(b) 158
(c) 37
(d) 41

(e) 40

S12. Ans.(d)
Sol. Series is ÷ 2 + 2, × 2+ 2, ÷ 2 + 2, × 2 + 2, ÷ 2 + 2
∴? = 78 ÷ 2 + 2 = 41

Q13. 29, 33, 60, 76, 201, ?
(a) 391
(b) 139
(c) 237
(d) 211
(e) 229

S13. Ans.(c)
Sol. Series is $+ 2^2, + 3^3, + 4^2, +5^3, + 6^2$
$\therefore ? = 201 + 6^2 = 237$

Q14. 5, 7.25, 13.5, 25.75 46, ?
(a) 70.25
(b) 71.25
(c) 73.25
(d) 75.25
(e) 76.25

S14. Ans.(e)
Sol. Series is $+ 1.5^2, + 2.5^2, + 3.5^2, 4.5^2, + 5.5^2$
$\therefore ? = 46 + (5.5)^2 = 76.25$

Q15. 138, 269, 532, 1059, 2114, ?
(a) 4405
(b) 4025
(c) 4252
(d) 4225
(e) 4325

S15. Ans.(d)
Sol. Series is × 2 – 7, × 2 – 6, × 2 – 5, × 2 – 4, × 2 – 3
∴ ? = 2114 × 2 – 3 = 4225

DIRECTIONS(Q.1-5): Given below is the percentage of illiterate people in 6 states and the ratio of males to females in illiterate and literate category. Study the table carefully and answer the following questions:

States	% illiterate People	M : F (illiterate)	M : F (litrate)
A	35	5 : 6	6 : 7
B	25	3 : 5	4 : 5
C	24	1 : 2	2 : 3
D	20	3 : 2	4 : 3
E	15	5 : 3	3 : 2

Q1. If illiterate female population of state D is 2 million and total population of C is 20% less than that of D, then find the total literate population of state C?
(a) 18 million
(b) 15.2 million
(c) 25 million
(d) 22 million
(e) None of these

S1. Ans.(b)
Sol.
Illiterate female population (D) = 2
Then total illiterate = 2 + 3 = 5 million
So, total population (D) = 5 × 5 = 25 million
$\Rightarrow$ Population of C = $25 \times \frac{80}{100} = 20$ million
$\therefore literate\ population = 20 \times \frac{76}{100} = 15.2\ million$

Q2. If literate male in state D and A are in ratio 4 : 3. Then population of D is what percent of that of A?
(a) 86.75
(b) 89.25
(c) 97.25
(d) 87.5
(e) None of these

S2. Ans.(d)
Sol.
Let literate male in D = 4
Then total literate = 4 + 3 = 7
$\therefore$ Total population (D) = $\frac{7\times5}{4} = 8.75$ million
And Literate male A = 3
Then total literate = $\frac{3}{6} \times 13 = 6.5$
So, total population (A) = $\frac{6.5\times100}{65} = 10$ million
Required answer = $\frac{8.75\times100}{10} = 87.5\%$

Q3. If there are 2.4 million literate male in state B and 4 million illiterate female in state D then find ratio of population of state B and population of D?
(a) 18 : 125
(b) 18 : 121
(c) 7 : 13
(d) 9 : 121
(e) None of these

S3. Ans.(a)

Sol.

Literate male in B = 2.4 million

Total literate = $\frac{2.4}{4} \times 9 = 5.4$

Total population = $\frac{5.4 \times 4}{3} = 7.2$ million

Illiterate female in D = 4 million

Total illiterate = $(3 + 2) \times 2 = 10$ million

$\Rightarrow$ total population = $10 \times 5 = 50$ million

Required ratio = $7.2 : 50 = 18 : 125$

Q4. What is approximate illiterate female population of state E if total literate female in that state is 1 million?

(a) 2.20 million
(b) 1.13 million
(c) 1.26 million
(d) 0.17 million
(e) 0.98 million

S4. Ans.(d)

Sol.

Total female in E (literate) = 1 million

$\therefore$ Total literate = $\frac{5}{2} = 2.5$ million

$\therefore$ Total illiterate in E = $\frac{2.5}{85} \times 15$

$\therefore$ Required answer = $\frac{2.5}{85} \times 15 \times \frac{3}{8} \approx 0.17$ million (approx.)

Q5. If population of state A and C is 6 and 8 million respectively, then illiterate female population of C is what percent less/more than literate male population of state A?

(a) 26.13
(b) 27.74
(c) 28.89
(d) 27.25
(e) 31.50

S5. Ans.(c)

Sol.

Illiterate female population of state C = $8 \times \frac{24}{100} \times \frac{2}{3} = 1.28$ million

Literate male population of state A = $6 \times \frac{65}{100} \times \frac{6}{13} = 1.80$ million

Required answer = $\frac{1.8 - 1.28}{1.8} \times 100 = 28.89\%$ (less)

Directions(Q6-10): Given below is the table showing the Production (in lakh units) of 6 companies over the years. Study the data carefully and answer the following questions:

Company	Years					
	2007	2008	2009	2010	2011	2012
A	103	150	105	107	110	132
B	75	80	83	86	90	91
C	300	300	300	360	370	340
D	275	280	281	280	285	287
E	25	30	35	40	42	45
F	85	87	89	91	92	96

Q6. What is average production in 2009 of all the six companies together? (In lakh)
(a) 148.83
(b) 142.48
(c) 149.13
(d) 146.26
(e) 159.23

S6. Ans.(a)
Sol.

$$\text{Required average} = \frac{105+83+300+281+35+89}{6} = 148.83$$

Q7. What is the ratio of total production of company C and D over the years (2007-2012)?
(a) 708 : 813
(b) 985 : 844
(c) 99 : 101
(d) 135 : 137
(e) None of these

S7. Ans.(b)
Sol.

$$\text{Required ratio} = \frac{300+300+300+360+370+340}{275+280+281+280+285+287} = \frac{1970}{1688} = \frac{985}{844}$$

Q8. What is the percentage decrement in production of company A from 2008 to 2011?

(a) $31\frac{1}{2}\%$
(b) $23\frac{1}{3}\%$
(c) $20\frac{1}{4}\%$
(d) $26\frac{2}{3}\%$
(e) None of these

S8. Ans.(d)
Sol.

$$\text{Required answer} = \frac{150-110}{150} \times 100 = \frac{80}{3}\%$$

Q9. If 25% of item produced by F in 2012 is defective, and 50% of defective items remains unsold as having major defects, then what is total number of sold items by that company in that year assuming that all remaining items were sold?
(a) 82
(b) 86

(c) 84
(d) 81
(e) None of these

S9. Ans.(c)

Sol.

Defective = $96 \times 25\% = 24$

Unsold defective = $24 \times \frac{1}{2} = 12$

Total sold items = $96 - 12 = 84$

Q10. Which company has less average production in last three years as compared to average production in first 3 years?
(a) D
(b) E
(c) F
(d) C
(e) A

S10. Ans.(e)

Sol.

	First 3 years	Last 3 years
A →	358	349
B →	238	267
C →	900	1070
D →	836	852
E →	90	127
F →	261	279

Directions (11-15): What will come in place of the question mark (?) in the following question?

Q11. 36% of 365 + ?% of 56.2 = 156.69
(a) 35
(b) 30
(c) 45
(d) 40
(e) None of these

S11. Ans.(c)
Sol.

$$\frac{365 \times 36}{100} + \frac{56.2 \times ?}{100} = 156.69$$

$$= 156.69 - 131.40 = \frac{56.2 \times ?}{100}$$

$$? = \frac{25.29 \times 100}{56.2}$$

$$= 45$$

Q12. $(?)^3 \div 32 = 54$
(a) 318
(b) 12
(c) 14
(d) 16
(e) None of these

S12. Ans.(b)
Sol.

$$?^3 = 54 \times 32$$

$$? = \sqrt[3]{1728}$$

$$? = 12$$

Q13. $1\frac{1}{4} + 1\frac{5}{9} \times 1\frac{5}{8} \div 6\frac{1}{2} = ?$
(a) $\frac{17}{8}$
(b) $\frac{27}{56}$
(c) $42\frac{21}{23}$
(d) $18\frac{2}{3}$
(e) $1\frac{23}{36}$

S13. Ans.(e)

Sol.

$$\frac{5}{4}+\frac{14}{9}\times\frac{13}{8}\times\frac{2}{13}$$

$$=\frac{5}{4}+\frac{14}{36}=\frac{45+14}{36}=\frac{59}{36}=1\frac{23}{36}$$

Q14. $0.01 \times 0.1 - 0.001 \div 10 + 0.01 = ?$

(a) 0.01009

(b) 0.0101

(c) 0.19

(d) 0.109

(e) 0.0109

S14. Ans.(e)

Sol.

$0.01 \times 0.1 - 0.001 \div 10 + 0.01$

$0.001 - 0.0001 + 0.01$

$= 0.011 - 0.0001 = 0.0109$

Q15. $23 \times 15 - 60 + ? \div 31 = 292$

(a) 218

(b) 186

(c) 217

(d) 201

(e) None of these

S15. Ans.(c)

Sol.

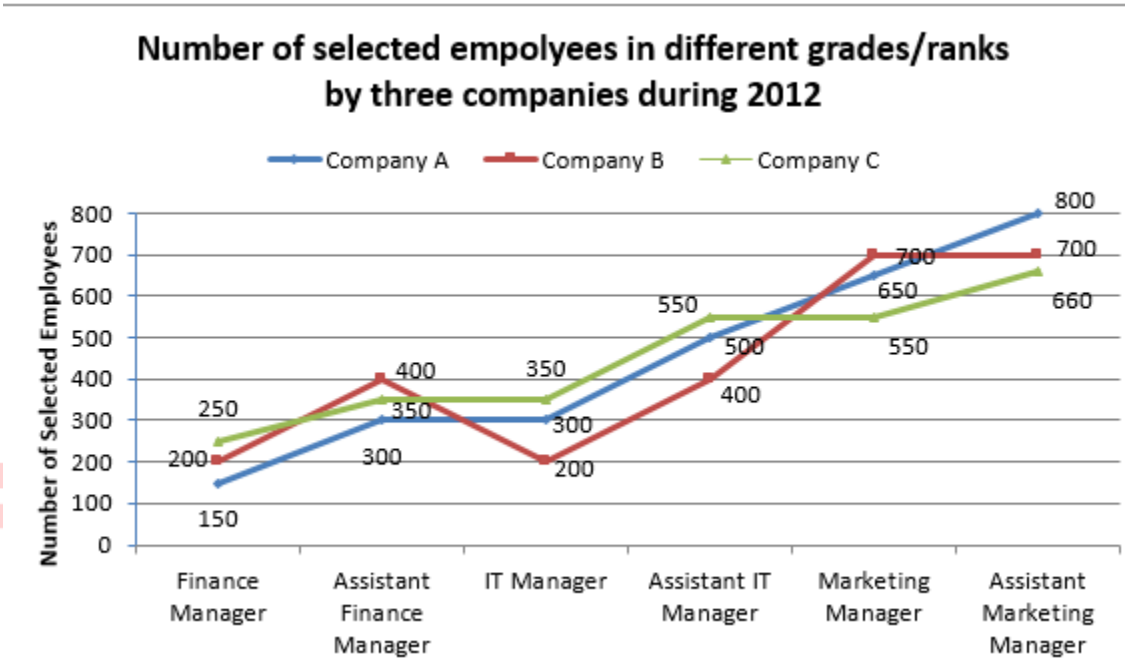
$26 \times 15 - 60 + ? \div 31 = 292$

$\Rightarrow 345 - 60 + \frac{?}{31} = 292$

$\Rightarrow \frac{?}{31} = 292 - 285$

$? = 31 \times 7 = 217$

Directions (1-5): Study the following graph carefully to answer the questions given below.



Q1. What is the respective ratio of selected employees for the post of marketing manager by all the companies A, B and C together ?
(a) 12 : 11 : 14
(b) 11 : 13 : 14
(c) 13 : 14 : 11
(d) 13 : 12 : 11
(e) None of these

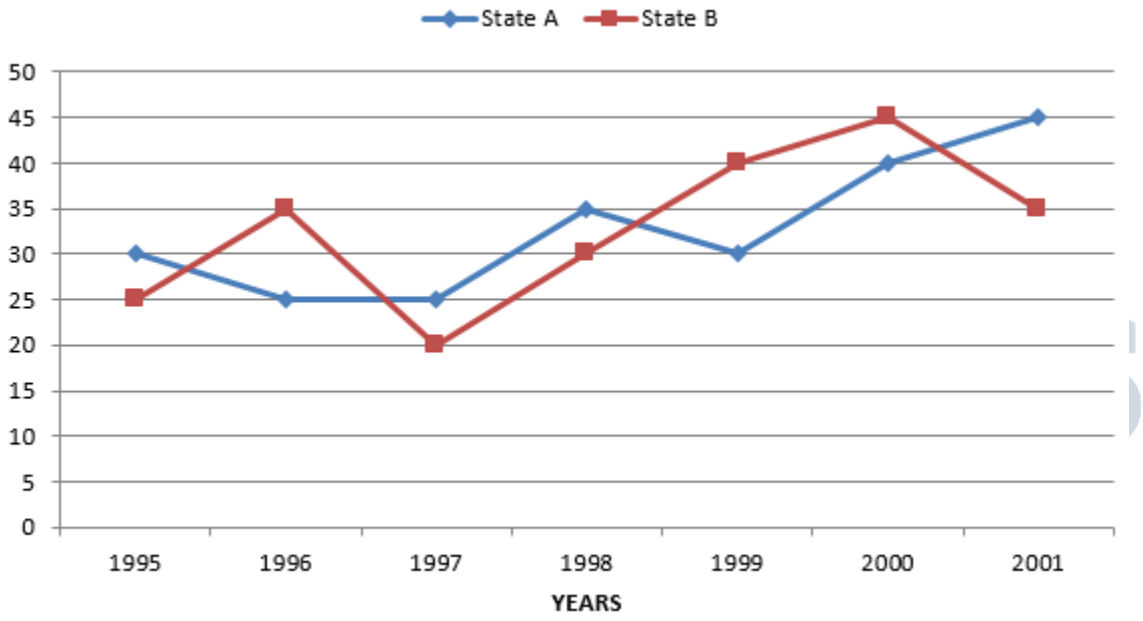
Q2. By what percent is the number of selected employees for assistant finance manager by company C less than total selected IT manager for all companies ?
(a) 59.13%
(b) 57.33%
(c) 57.72%
(d) 56.43%
(e) 58.82%

Q3. What is approximate average number of selected employees by company B in all grades taken together ?
(a) 471
(b) 433
(c) 429
(d) 437
(e) 467

Q4. What is respective ratio of the total selected employees for all the grades by all 3 companies A, B and C ?
(a) 27 : 26 : 27
(b) 23 : 13 : 9
(c) 9 : 13 : 26
(d) 3 : 13 : 11
(e) None of these

Q5. The number of marketing manager in company C is what percent of total employees selected in same company ?
(a) 20.3%
(b) 19.73%
(c) 21.33%
(d) 18.12%
(e) 17.47%

Directions (6-10): Study the following graph carefully to answer these questions.
Percentage rise in population of two states from previous year



Q6. If total population of two states in 1996 was 90 lakhs, what was the total population of two states in 1997 ? (in Lakh)
(a) 92.75
(b) 96.25
(c) 94.50
(d) Can't be determined
(e) None of these

Q7. If the ratio between the population of states A and B in year 1999 was 2 : 3 respectively, what was the respective ratio in 1998 ?
(a) 28 : 39
(b) 13 : 21
(c) 19 : 21
(d) 21 : 19
(e) None of these

Q8. If population of state A in 1996 was 20 lakh, what was the average population of state in 1996, 1997 and 1998 together ?
(a) 24.33
(b) 25.30
(c) 26.25
(d) 24.75
(e) None of these

Q9. What was the effective percentage increase in population of state A from 1999 to 2001 ?
(a) 104.75
(b) 107.25
(c) 101
(d) 103
(e) None of these

Q10. If population of state B in 1998 was 80 lakh, what was its approximate population in 1996 ? (in lakh)
(a) 53.40
(b) 51.30
(c) 54.25
(d) 52.95
(e) 50.75

Directions (11-15): Find out the approximate value which should replace the question mark (?) in the following questions. (You are not expected to find out the exact value)
Q11. 6,23,898 × 99 = ? × 60,000
(a) 1000
(b) 1030
(c) 1080
(d) 1065
(e) 1010

Q12. $\sqrt{624.9995} + (4.9989)^2 = ? \div \frac{1}{4.9900865}$
(a) 6
(b) 50
(c) 10
(d) 125
(e) 15

Q13. 564.666 + 82.5091 × 44.581 - 34.111 = ?
(a) 28450
(b) 4000
(c) 1600
(d) 14225
(e) 4210

Q14. (47% of 1442 - 36% of 1412) ÷ 63 = ?
(a) 7
(b) 5
(c) 3
(d) 9
(e) 1

Q15. (341789 + 265108) ÷ (8936 - 3578) = ?
(a) 150
(b) 113
(c) 135
(d) 100
(e) 125

Solutions

S1. Ans.(c)
Sol.
Required ratio = 650 : 700 : 550
= 13 : 14 : 11

S2. Ans.(e)
Sol.
Required answer = $\frac{850-350}{850} \times 100 = 58.82\%$

S3. Ans.(b)
Sol.
Average = $\frac{200+400+200+400+700+700}{6}$
$= \frac{2600}{6} \approx 433$

S4. Ans.(e)
Sol.
Total employees selected by A = 150 + 300 + 300 + 500 + 650 + 800 = 2700
Total employees by B = 200 + 400 + 200 + 400 + 700 + 700 = 2600
Total employees by C = 250 + 350 + 350 + 550 + 550 + 660 = 2710
Ratio = 270 : 260 : 271

S5. Ans.(a)
Sol.
Required answer = $\frac{550 \times 100}{2710} = 20.3\%$

S6. Ans.(d)
Sol. Can't be determined.

S7. Ans.(a)
Sol.
Let respective ratio in 1998 = $x : y$
Then,
$\frac{x \times \frac{130}{100}}{y \times \frac{140}{100}} = \frac{2}{3} \Rightarrow x : y = 28 : 39$

S8. Ans.(c)
Sol.
Population of A in 1996 = 20 Lakh
Population of A in 1997 = $20\times\frac{125}{100} = 25$ Lakh
Population of A in 1998 = $25\times\frac{135}{100} = 33.75$ Lakh
Average = $\frac{20+25+33.75}{3} = 26.25$ lakh

S9. Ans.(d)
Sol.
Let A's population in 1999 = 100
A's population in 2000 = 140
A's population in 2001 = $\frac{140\times145}{100} = 203$
Effective percentage increment = 203 – 100 = 103

S10. Ans.(b)
Sol.
Let population in 1996 = x
Then, $x\times\frac{120}{100}\times\frac{130}{100} = 80$
$\Rightarrow x = \frac{80\times100\times100}{120\times130} \approx 51.30$ lakh

S11. Ans.(b)
Sol.
$? = \frac{623898\times99}{60000}$
$= \frac{624000\times100}{600000} \approx 1030$

S12. Ans.(c)
Sol.
$\sqrt{625} + 5^2 = ?\div\frac{1}{5}$
$\Rightarrow 25 + 25 = ?\times5$
$? = \frac{50}{5} = 10$

S13. Ans.(e)
Sol.
$\approx 565 + 82 \times 45 - 34 = 4250$
≈ 4210

S14. Ans.(c)
Sol.

$$\frac{(47\% \times 1442 - 36\% \times 1412)}{63}$$

$$= \frac{\frac{1440 \times 45}{100} - \frac{35 \times 1410}{100}}{60} \approx \frac{648 - 493.5}{60} \approx 3$$

S15. Ans.(b)
Sol.

$$\frac{341789 + 265108}{8936 - 3578} = \frac{606897}{5358}$$

$$\approx \frac{606900}{5360} \approx 113$$