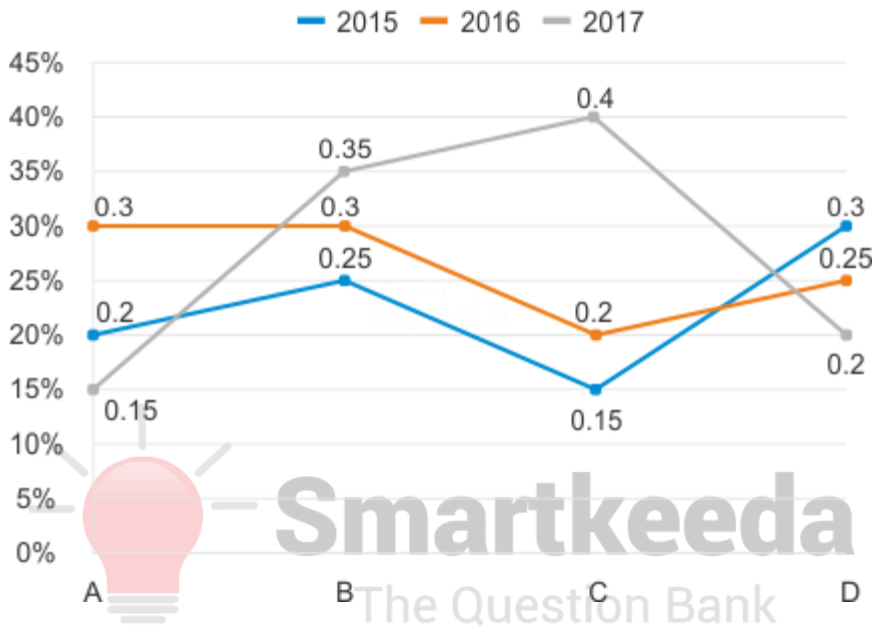

Bipin Nambiar
(SBI PO 2018)
Shiraz Khan
(SBI Clerk 2018)
Kuldeep Yadav
(SBI PO 2018)
Rajat Saxena
(IBPS Clerk 2018)
Anupam Tyagi
(IBPS PO 2018)
FRIENDS!
WE USED TESTZONE
AND CRACKED BANK EXAMS
बैंक परीक्षाओ के लिए निश्चित
रूप से सर्वश्रेष्ट मॉक
टेस्ट सीरीज
IT'S YOUR TURN NOW
TAKE A FREE MOCK TEST
Smartkeeda
The Question Bank

Date Interpretation Questions for SBI PO, IBPS PO & RBI Grade B Exams.

Direction: Read the given line chart carefully and answer the questions given beside.

A battery is sold by four different shops A, B, C and D. The chart given below shows the percentage of discount offered by each shop for in three different years 2015, 2016 and 2017. Marked price, as well as the cost price of the battery, is the same for each shop in a particular year unless mentioned otherwise.



1. Marked price of battery increases by 20% every year with respect to previous year. Average of marked price of battery for the year 2014, 2015 and 2016 is Rs. 1820. Profit percent earned by shop D on selling a battery in 2017 was 38.24%. Find the difference between profit percentage of shop B and C in 2015 if cost price of battery increases by Rs. 150 with respect to previous year.

A. 12% B. 10% C. 15% D. 20% E. 16%

2. Profit earned by shop C each year was same. Increase in marked price of battery from 2016 to 2017 was twice the increase in marked price of battery from 2015 to 2016. Both selling price and cost price for shop C increased by Rs. 100 from 2016 to 2017. Battery is marked up Rs. 700 and Rs. 1600 above the cost price in 2016 and 2017 respectively. What is the profit earned by shop A in 2015?

A. Rs. 120 B. Rs. 100 C. Rs. 140 D. Rs. 50 E. Rs. 200

3. Ratio of cost price of battery in 2015 : 2016 : 2017 was 2 : 4 : 5. Ratio of selling price at shop D in 2015 :2 016:2017 was 7 : 12 : 16. Average of profit earned by A and C in 2016 was Rs. 400 and total profit earned by B in three years is Rs. 970. Find the difference of discount offered by C in 2015 and 2017.

A. Rs. 650 B. Rs. 450 C. Rs. 750 D. Rs. 700 E. Rs. 550

4. Marked price in 2017 was Rs. 8000 and marked price in 2016 was same as the selling price at shop A in 2017. Cost price in 2016 was same as the selling price at shop D in 2015. Profit percent earned by A in 2016 was 36%. If cost price in 2015 was Rs. 2295 then find the ratio of profit earned by shop B in 2015 to shop C in 2016.

A. 5 : 8 B. 1 : 3 C. 2 : 3 D. 3 : 4 E. 7 : 9

5. Selling price at shop B in 2015 and 2016 was Rs. 2400 and Rs. 2800 respectively and selling price at shop D in 2017 was Rs. 3840. Ratio of profit earned by A to C in 2016 was 2:3. If cost prices were in an increasing AP with passing years with a common difference of Rs. 400, find the difference between profit earned by A in 2015 and in 2017.

A. Rs. 840 B. Rs. 800 C. Rs. 780 D. Rs. 720 E. Rs. 700

SET – 2

Directions: Study the following information carefully and answer the questions given beside.

Mr. Dexter has four kids and all were born on same date of different years. They all have birthday today. Mr. Dexter wants to buy chocolates for all his kids. But he don't want to give each kid equal number of chocolates.

He decides to do the following thing:

He will divide the height (in centimeters) by the sum of age number with weight (in kilogram).

He arrive at this formula –

Number of chocolate = height in centimeters/(weight in kilogram + age)

The number that will come is the number of chocolates that a particular kid gets.

His second youngest kid is twice the age of the youngest kid whose age is one-third the oldest kid. The second oldest kid is three year younger than the oldest kid. Weight of oldest kid is 36 kg which is numerically three times the age of second oldest kid, whose weight is four times the age of second youngest kid. Weight of the youngest kid is 40% less than the second oldest kid. Sum of weight of all four kids is 129 kg.

6. After two years, weight of oldest kid increases 4 kg, second oldest kid by 2 kg, the second youngest kid gains 6kg and the youngest kid gains 9 kg weight. Ratio of average weight to average age of all the four kids.

A. 1 : 3 B. 1 : 4 C. 3 : 1 D. 4 : 1 E. None of these

7. The oldest and second oldest kids get equal number of chocolates. Find the ratio of their heights if both of them got three chocolates. (oldest : second oldest)

A. 50 : 49 B. 52 : 51 C. 51 : 52 D. 49 : 50 E. None of these

8. How many total chocolates were distributed if oldest and second oldest got total 6 and the height of youngest is 145 cm while the second youngest is 11 cm taller than the youngest?

A. 12 B. 13 C. 14 D. 15 E. None of these

9. Mr. Dexter also buys some pens for his kids and he wants to distribute in this way. The kid with highest weight will get half of them, the kid with second highest weight will get half of what left after giving half the pen to the kid with highest weight. The third highest weight kid get half of what left after the first two round of distributions. If last kid gets 2 pens, ratio of weight to the number of pens for the oldest kid?

A. 1 : 4 B. 1 : 9 C. 9 : 1 D. 4 : 1 E. None of these

10. After 5 years from this birthday, Mr. Dexter repeat the same method of distributing the chocolates. After five years, his youngest kid has gained 25% weight while the oldest kid has weight twice the youngest kid. He distribute 6 chocolates between youngest and the oldest kid. If their heights are equal then choose the correct option.

A. Youngest kid gets 2 chocolates B. oldest kid gets 4 chocolates C. height of them is 156cm each
D. height of them is 160cm each E. None of these

SET – 3

Directions: Study the following information carefully and answer the questions given beside.

The information given below is regarding the number of students appeared in three different exams A, B and C in four different years 2015, 2016, 2017 and 2018.

In 2015:

Students appeared in exam A was twice the students appeared in exam B. Total students appeared in three exams together was 1640. Students appeared in exam B was 40 more than students appeared in exam C.

In 2016:

Students appeared in exam B was 40% more than students appeared in exam A while students appeared in exam C was 20% more than students appeared in exam B. Total students appeared in all three exams together was 2448.

In 2017:

Ratio of students appeared in exam A to exam B was 7:9. Students appeared in exam C was 25% more than students appeared in exam B. Total students appeared in all three exams together was 2180.

In 2018:

Average of students appeared in exams A and B was 560. Students appeared in exam C was 600. Ratio of students appeared in exam A to exam C was 4 : 5.

11. What is the difference between number of students appeared in exams B and C together in 2015 and number of students appeared in exams A and B together in 2017?

A. 450 B. 480 C. 510 D. 420 E. 560

12. What is the ratio of number of students appeared in exams A and B in 2016 to number of students appeared in exams A and C in 2018?

A. 4 : 3 B. 3: 5 C. 1 : 3 D. 8 : 5 E. 7 : 4

13. Ratio of number of girls to boys appeared in exam A in 2015 was 5 : 7 and 35% of total students appeared in exam C in 2017 was boys. What is the sum of number of boys appeared in exam A in 2015 and in exam C in 2017?

A. 835 B. 825 C. 805 D. 845 E. 885

14. Find the total number of students appeared in all three exams in all four years together.

A. 7424 B. 7828 C. 7684 D. 7988 E. 7544

15. In 2017, 10%, 20% and 20% of students appeared in exams A, B and C cleared the respective exams while in 2018 percentage for same was 20%, 10% and 40%. How many students cleared all three exams in these two years?

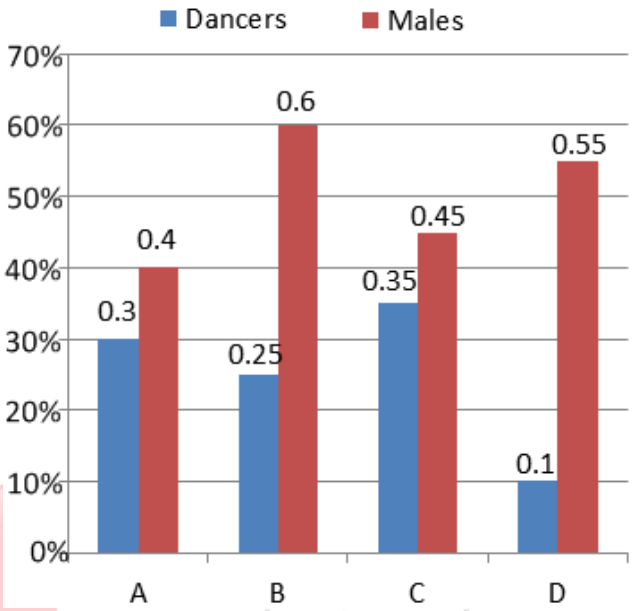
A. 750 B. 780 C. 840 D. 860 E. 720

SET – 4

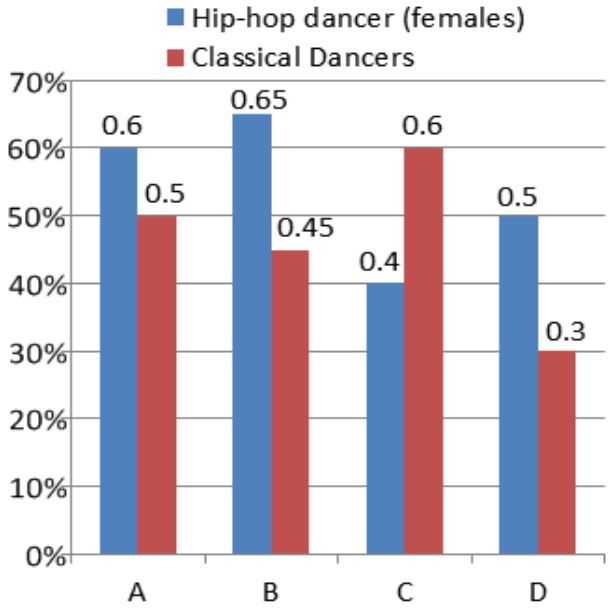
Directions : Study the following bar and table chart carefully and answer the questions given beside.

There are four groups A, B, C and D in a dance academy. Each group has two types of dancers who do dance of exactly one type either hip-hop or classical. Total number of dancers in academy is 6000.

The chart given below shows the number of dancers in each group as percent of total dancers in the academy and percentage of number of males in each group.



The chart given below shows the percentage of number of females (among females) who do hip-hop from each group and percentage of number of dancers who do classical from each group.



The table chart given below shows the average expenditure on a dancer.

	Hip-hop	Classical
Male	80	120
Female	60	150

16. What is the expenditure on group A?

A. Rs. 1,70,500 B. Rs. 1,60,000 C. Rs. 1,80,000 D. Rs. 1,90,200 E. Rs. 1,50,000

17. The expenditure on male dancers of group B and C is what percent of expenditure on female dancers of group C and D?

A. 118% B. 120% C. 112% D. 126% E. 140%

18. Which group has most number of classical dancers?

A. Ground A B. Group B C. Group C D. Group D E. Can't be determined

19. What is the ratio of expenditure on female dancers of group B to expenditure on male dancers of group D?

A. 8 : 3 B. 200 : 103 C. 174 : 101 D. 82 : 41 E. 183 : 94

20. What is the difference between expenditure on male classical dancers of group A and D and expenditure on female hip-hop dancers of group B and C?

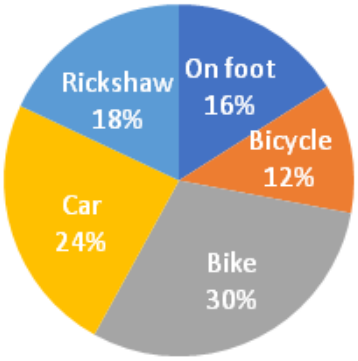
A. Rs. 10,440 B. Rs. 10,860 C. Rs. 11,220 D. Rs. 11,520 E. Rs. 10,280

SET – 5

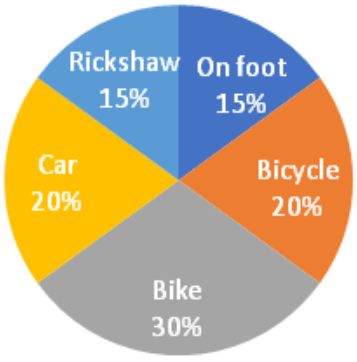
Direction: Study the following pie chart and table chart carefully and answer the questions based on it.

Four friends, Priyanka, Pinki, Rinki, and Munni start travelling towards a certain distance from the same point and at the same time. The following four pie charts give the information about the percentage of the total distance travelled by them in five different modes of travelling i.e. on foot, bicycle, Bike, Car and Rickshaw. Each one travels a different distance in the same time.

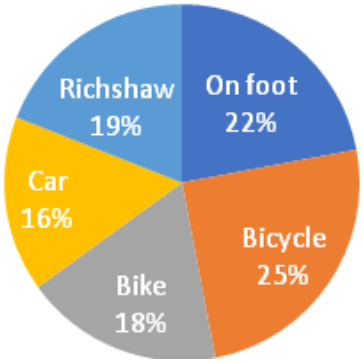
Priyanka



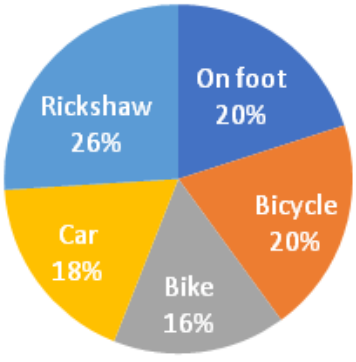
Pinki



Rinki



Munni



The following table provides information about the distance (in km) travelled by each of them on foot as a percentage of the sum of the total distance travelled by them on foot.

Priyanka	Pinki	Rinki	Munni
20%	30%	25%	25%

21. For who among the following, the distance travelled by her was the least?

A. Priyanka B. Pinki C. Rinki D. Munni E. Can't be determined

22. If the average speed of Priyanka is 45 km/hr and the distance travelled by her on foot is 36 km. Find the difference between the average speed of Priyanka and the average speed of Munni?

A. 90 km/hr B. 35 km/hr C. 45 km/hr D. 54 km/hr E. None of these

23. Suppose Pinki starts 1hour later than all other three start their journey but Priyanka and Pinki complete their respective distance at the same time. The total distance travelled by all of them on foot is 250 km. Find the respective ratio of the average speed of Priyanka and Pinki in this case?

A. 5 : 8 B. 5 : 6 C. 6 : 7 D. 6 : 5 E. Can't be determined

24. If the total distance travelled by all of them on foot is 300 km. Find the sum of the total distance travelled by all of them by car and by rickshaw? (approximately)

A.651.82 km B. 541.32 km C. 648.42 km D. 698.45 km E. Can't be determined

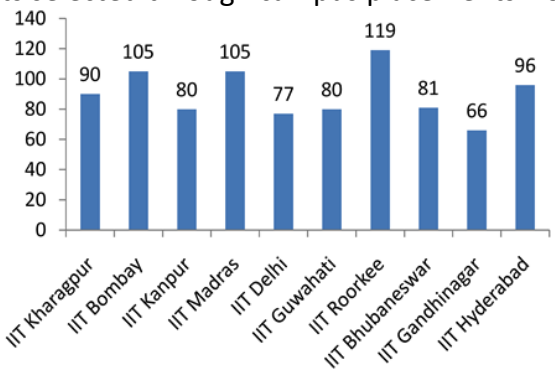
25. Each of the two girls Rinki and Munni starts their journey at 10: 30 AM but Munni take 1-hour rest in the middle of the journey but each of them reaches their respective distance at 00:30 AM on the next day. Find the ratio of the respective average speed of Rinki and Munni? (It is given that the average of the total distance travelled by Priyanka and Pinki together on foot is 125 km)

A. 10 : 11 B. 143 : 140 C. 13 : 14 D. 14 : 13 E. 1 : 2

SET – 6

Direction: Study the following bar chart and table chart carefully and answer the questions based on it.

Number of students selected through campus placements from ten IIT colleges



Percentage of student who did not get campus placements

College	Percentage
IIT Kharagpur	75
IIT Bombay	65
IIT Kanpur	68
IIT Madras	62.5
IIT Delhi	65
IIT Guwahati	66.7
IIT Roorkee	66
IIT Bhubaneswar	55
IIT Gandhinagar	56
IIT Hyderabad	68

Stream wise classification of student in each college (percentage)

College	Civil engineering	Mechanical engineering	Chemical engineering	Computer science engineering
IIT Kharagpur	30	20	35	15
IIT Bombay	20	24	27	29
IIT Kanpur	22	26	32	20
IIT Madras	34	26	22	18
IIT Delhi	18	24	27	31
IIT Guwahati	25	22	27	26
IIT Roorkee	26	28	20	26
IIT Bhubaneswar	16	34	32	18
IIT Gandhinagar	22	26	20	32
IIT Hyderabad	28	16	22	34

26. In which among the following colleges is the number of Mechanical engineering students the second highest?

A. IIT Kharagpur B. IIT Bombay C. IIT Madras D. IIT Roorkee E. IIT Hyderabad

27. If the number of students selected through campus placements from college IIT Guwahati from Civil engineering, Mechanical engineering, Chemical engineering and Computer science engineering are in the ratio 6 : 5 : 3 : 2, from which stream did the highest percentage of students get selected?

A. Civil Engineering B. Mechanical Engineering C. Chemical Engireeing
D. Computer Science Engineering E. None of these

28. If 65% of the total-number of students selected from college IIT Guwahati are boys and they form 40% of the total number of boys in the college, then what percentage of the girls in the college got selected through campus placements?

A. 25% B. 28% C. 31% D. 35% E. 41%

29. What percentage of the students studying in the ten colleges got selected through campus placements?

A. 30.4 B. 31.2 C. 32.5 D. 34.2 E. 36.7

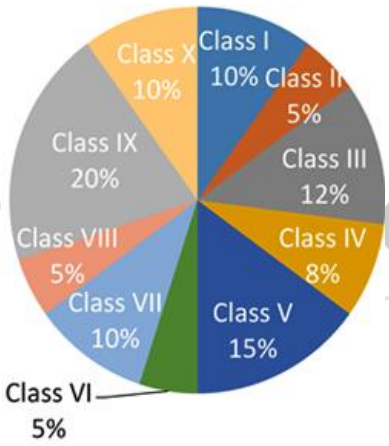
30. What is the percentage of total number of students in Civil Engineering in IIT Kharaghpur, IIT Bombay and IIT Kanpur combined together to total number of students in Chemical engineering in IIT Madras, IIT Delhi and IIT Guwahati combined together?

A. 80% B. 100% C. 120% D.140% E. None of these

SET – 7

Direction: Study the following pie chart and bar chart carefully and answer the questions based on it.

The pie chart gives the breakup of all the students in Delhi public school on the basis of the class they study in:



Total number of students are 200

The Table (I) gives the percentage of boys in each class and the classes are divided into three groups in Table II

Table I

Class	Percentage of Boys
I	20
II	50
III	50
IV	50
V	20
VI	10
VII	20
VIII	40
IX	60
X	50

Table II

Group	Classes
A	I, II and III
B	IV, V and VI
C	VII, VIII, IX and X

Special data Table III
$^{200}C_3 = 200$
$^{54}C_1 = 4$
$^{86}C1 = 5$
$^{90}C_1 = 10$
$^{144}C_3 = 144$
$^{30}P_{30} = 300$
$^{25}P_{25} = 25$
$^{6}P_6 = 6$

31. If three students are selected randomly, what is the probability that all selected students are from different group (use data only from table III)

A. 1 B. 0.5 C. 0.05 D. 0.2 E. 0.3

32. If three students are selected randomly, what is the probability that no student are selected from group B (use data only from table III)

A. 1 B. 0.72 C. 0.25 D. 0.32 E. 0.5

33. If all students of class V sit in a row randomly. What is the chance that all boys do not sit together? (use data only from table III)

A. 0.5 B. 0.6 C. 0.7 D. 0.8 E. None of these

34. If two students are selected randomly from class IX. What is the probability that both are of same sex

A. 0.5 B. 0.23 C. 0.11 D. 0 E. 0.7

35. One student is select from either of class II or III. What is the probability of selecting a boy?

A. 0.3 B. 0.2 C. 0.5 D. 0.6 E. 0.4

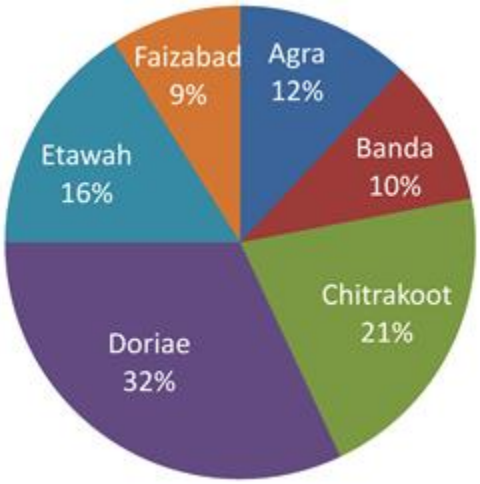
SET – 8

Direction: Study the following pie chart and bar chart carefully and answer the questions based on it.

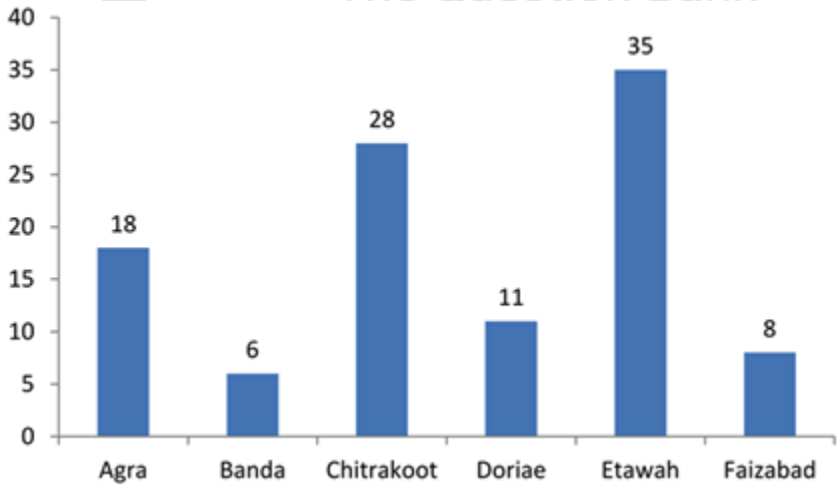
A statistics on the no. of people attended the Rathyatra festival in six places of a state:

Total no. of people attended the festival in all six places = 45000.

% of people attended in six different places:



% of people from outside of the state attended the festival in different places:



36. What is the ratio between the no. of people from outside of the state attended the festival in place Agra to that of the in place Faizabad?

A. 3 : 2 B. 7 : 5 C. 3 : 1 D. 11 : 7 E. None of these

37. The no. of people from inside of state attended the festival in place Etawah is approximately what percent of the no. of people from inside of the state attended the festival in place Chitrakoot?

A. 69 B. 73 C. 57 D. 48 E. None of these

38. What is the average no. of people from outside of the state attended the festival in places Agra, Doriae, Etawah, Faizabad?

A. 1480 B. 1350 C. 2170 D. 1260 E. None of these

39. Find the difference in the no. of people from inside and outside of the state attended the festival in place Doriae.

A. 11232 B. 12132 C. 11322 D. 11223 E. None of these

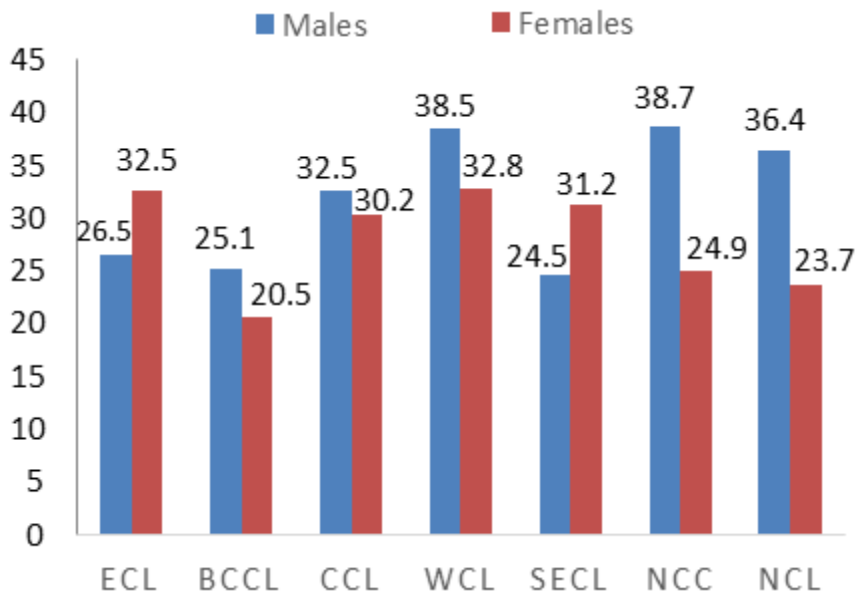
40. What is the difference between the average no. of people attended the festival in places Agra, Chitrakoot, Etawah and Banda, Doriae, Faizabaad?

A. 410 B. 400 C. 354 D. 300 E. None of these

SET – 9

Directions: Study the following bar chart carefully and answer the questions given beside.

The graph below provides the number of male employees (in lakhs) and the number of female employees (in lakhs) in each of seven subsidiaries viz. ECL, BCCL, CCL, WCL, SCEL, NCC and NCL - of Coal India limited. The males and females in any subsidiary comprise the total workforce of that subsidiary and the total workforce population of the seven subsidiaries together is equal to the one fourth population of the country.



41. For how many subsidiaries is the percentage of population of that subsidiary less than 14.5% of the one by fourth part of the country's population?

A. Zero B. One C. Three D. Four E. Five

42. For how many subsidiaries is the ratio of the number of females to the number of males less than that for the one by fourth part of the country?

A. 1 B. 2 C. 3 D. 4 E. 5

43. If, in each subsidiary, exactly 60% of the males and 40% of the females are literate, which subsidiary has the third highest illiterate population?

A. ECL B. NCC C. WCL D. CCL E. NCL

44. If it is given that that there are no widows or widowers in the seven subsidiary then, For how many subsidiary is it possible that the population of the unmarried persons in the subsidiary is less than 10% of the population of the subsidiary?

A. 6 B. 4 C. 3 D. 2 E. 1

45. For which subsidiary/subsidiary is the number of males as a percentage of the total number of males out of one fourth population of the country less than 13.25%?

A. ECL, NCC and BCCL B. BCCL only C. WCL and SCEL D. BCCL, SCEL, ECL and NCL
E. None of these

SET – 10

Directions: Study the following table chart carefully and answer the questions given beside:

There are total of 1000 employees working in four departments in Central secretariat - Patna. Canteen Management of Central secretariat was surveyed for their preference of Indian Food Lover or Chinese Food Lover. The table gives the proportion of Indian Food Lover or Chinese Food Lover in each of the four departments.

Department	Indian Food Lover	Chinese Food Lover
AYUSH		0.6
Consumer Affairs	0.25	
Farmer Welfare		
Backward communities Development		0.7
Total	0.45	

The number of employees surveyed in the four departments are in the ratio 1 : 2 : 3 : 4

46. **If 10% of Indian food lover in the Consumer Affairs Department are females, then what is the number of male employees in the Consumer Affairs Department who are Indian food lover?**

A. 30 B. 35 C. 40 D. 45 E. None of these

47. **What is the percentage of the Indian Food Lover in that department which has the highest number of Chinese Food Lover?**

A. 26.7% B. 34.5% C. 44.0% D. 59.2% E. 73.0%

48. **If 5% and 20% of Indian Food Lover of AYUSH Department and Farmer Welfare Department respectively converted into Chinese Food Lover, as well as 20% each of Chinese Food Lover of Backward communities Development Department and Consumer Affairs Department converted into Indian Food Lover then what is the approximate percentage of Indian Food Lover to Chinese Food Lover of the employees?**

A. 72% B. 81% C. 88% D. 95% E.None of these

49. **What is the ratio of Indian Food Lover of AYUSH department and Backward communities Development department combined together to the Chinese Food Lover of Consumer Affairs department and Farmer Welfare department combined together?**

A. 15 : 19 B. 16 : 21 C. 17 : 21 D. 17 : 25 E. 16 : 25

50. **If 5%, 10%, 15% and 20% of Chinese Food Lover in the Farmer Welfare, AYUSH, Backward communities Development and Consumer Affairs department respectively are females, then what is the approx percentage of male Chinese Food Lover employees to the total Indian Food Lover employees?**

A. 100% B. 109% C. 112% D. 125% E. None of these

CORRECT ANSWERS:

1	C	**11**	B	**21**	C	**31**	A	**41**	D
2	B	**12**	A	**22**	E	**32**	B	**42**	D
3	A	**13**	C	**23**	E	**33**	A	**43**	B
4	D	**14**	D	**24**	A	**34**	A	**44**	D
5	D	**15**	B	**25**	A	**35**	C	**45**	E
6	C	**16**	C	**26**	C	**36**	C	**46**	D
7	C	**17**	A	**27**	A	**37**	A	**47**	A
8	D	**18**	C	**28**	A	**38**	B	**48**	D
9	C	**19**	E	**29**	D	**39**	A	**49**	B
10	D	**20**	A	**30**	C	**40**	D	**50**	E

Explanations:

1. Let marked price of battery in 2014 was Rs. x

Marked price of battery in 2015 was 120% of x = Rs. 1.2x

Marked price of battery in 2016 was 120% of 1.2x = Rs. 1.44x

So $\frac{x + 1.2x + 1.44x}{3} = 1820$

3.64x = 5460

x = 1500

Marked price of battery in 2017 = 120% of 1.44x = 1.728x = Rs. 2592

Selling price of battery at shop D in 2017 = 80% of 2592 = Rs. 2073.6

Let cost price of battery in 2017 was Rs. y

So y + 38.24% of y = 2073.6

$y = \frac{2073.6}{138.24} \times 100 = \text{Rs. } 1500$

Cost price of battery in 2015 = 1500 – 150 – 150 = Rs. 1200

Marked price of battery in 2015 = 1.2x = Rs. 1800

For shop B in 2015:

Selling price = 75% of 1800 = Rs. 1350

$\text{Profit \%} = \frac{1350 - 1200}{1200} \times 100 = 12.5\%$

For shop C in 2015:

Selling price = 85% of 1800 = Rs. 1530

$\text{Profit \%} = \frac{1530 - 1200}{1200} \times 100 = 27.5\%$

Difference in profit percentage = 27.5 – 12.5 = 15%
Hence, option C is correct.

2. Let marked price of battery in 2015 was Rs. x
Increase in marked price of battery in 2016 from 2015 was Rs. y
Marked price of battery in 2016 = Rs. (x + y)
According to question:
Increase in marked price of battery in 2017 from 2016 was Rs. 2y
Marked price of battery in 2017 = Rs. (x + y + 2y) = Rs. (x + 3y)
Let selling price of battery in 2016 was Rs. b
Selling price of battery in 2017 was Rs. (b + 100)
Selling price of battery in 2016 = 80% of (x + y)
Selling price of battery in 2017 = 60% of (x + 3y)
So 80% of (x + y) = b -------(1)
And 60% of (x + 3y) = b + 100
60% of (x + 3y) – 100 = b -----(2)
From (1) and (2)
0.8x + 0.8y = 0.6x + 1.8y – 100
y – 0.2x = 100
Let cost price of battery in 2016 was Rs. a
Cost price of battery in 2017 was Rs. (a + 100)
Marked cost price of battery in 2016 = Rs. (a + 700)
Marked cost price of battery in 2017 = Rs. (a + 100 + 1600) = Rs. (a + 1700)
So x + y = a + 700
x + y – 700 = a -----(3)
And x + 3y = a + 1700
x + 3y – 1700 = a ----(4)
From (3) and (4)
x + y – 700 = x + 3y – 1700
2y = 1000
y = 500

$$x = \frac{y - 100}{0.2} = 2000$$

a = x + y – 700 = 1800
b = 80% of (x + y) = 2000
Profit earned by shop C in 2017 = 2000 – 1800 = Rs. 200
marked price of battery in 2015 = Rs. 2000
Selling price of battery at shop C in 2015 = 85% of 2000 = Rs. 1700
Selling price of battery in 2015 = 1700 – 200 = Rs. 1500
Selling price of battery at shop A in 2015 = 80% of 2000 = Rs. 1600
Profit earned by shop A in 2015 = 1600 – 1500 = Rs. 100

Hence, option B is correct.

3. Let cost price of battery in 2015, 2016 and 2017 was Rs. 2z, Rs. 4z and Rs. 5z respectively, and

Selling price of battery at shop D in 2015, 2016 and 2017 was Rs. 7y, Rs. 12y and Rs. 16y respectively.

70% of Marked price of battery in 2015 = Rs. 7y

Marked price of battery in 2015 = Rs. 10y

Similarly,

Marked price of battery in 2016 = Rs. 16y
Marked price of battery in 2017 = Rs. 20y

Selling price of battery at shop A in 2016 = 70% of 16y = 11.2y
Selling price of battery at shop C in 2016 = 80% of 16y = 12.8y

Profit of shop A in 2016 = 11.2y – 4z
Profit of shop C in 2016 = 12.8y – 4z

So 11.2y – 4z + 12.8y – 4z = 400 × 2

24y – 8z = 800
3y – z = 100 ----------(1)

Selling price of battery at shop B in 2015 = 75% of 10y = 7.5y
Selling price of battery at shop B in 2016 = 70% of 16y = 11.2y
Selling price of battery at shop B in 2017 = 65% of 20y = 13y

So 7.5y + 11.2y + 13y – 2z – 4z – 5z = 970

31.7y – 11z = 970
31.7y – 11 x (3y – 100) = 970 [from (1)]
31.7y – 33y = 970 – 1100
1.3y = 130
y = 100

z = 200

Discount offered by C in 2015 = 15% of 10y = Rs. 150
Discount offered by C in 2017 = 40% of 20y = Rs. 800
Difference = 800 – 150 = Rs. 650
Hence, option A is correct.

4. Marked price in 2016 = 85% of 8000 = Rs. 6800
Selling price at shop A in 2016 = 70% of 6800 = Rs. 4760
Let the cost price in 2016 was Rs. a
So a + 36% of a = 4760
$a = \frac{4760}{1.36}$ = Rs. 3500

Selling price at shop D in 2015 = Rs. 3500
70% of Marked price in 2015 = 3500
Marked price in 2015 = $\frac{3500}{0.7}$ = Rs. 5000
Selling price at shop B in 2015 = 75% of 5000 = Rs. 3750
Profit earned by shop B in 2015 = 3750 – 2295 = Rs. 1455
Selling price at shop C in 2016 = 80% of 6800 = Rs. 5440
Profit earned by shop C in 2016 = 5400 – 3500 = Rs. 1940
Ratio = 1455 : 1940 = 3 : 4
Hence, option D is correct.

5. 75% of Marked price in 2015 = 2400
Marked price in 2015 = $\frac{2400}{0.75}$ = Rs. 3200

70% of Marked price in 2016 = 2800
Marked price in 2016 = $\frac{2800}{0.7}$ = Rs. 4000

80% of Marked price in 2017 = 3840
Marked price in 2017 = $\frac{3840}{0.8}$ = Rs. 4800
Selling price at shop A in 2016 = 70% of 4000 = Rs. 2800
Selling price at shop C in 2016 = 80% of 4000 = Rs. 3200
Let profit earned by A and C in 2016 was 2x and 3x respectively
Let cost price in 2016 was Rs. y
So 2800 – 2x = y ------(1)
And 3200 – 3x = y -------(2)
From (1) and (2)
2800 – 2x = 3200 – 3x
x = 400
y = 2800 – 800 = 2000
For A in 2015:
Cost price = Rs. 1600
Selling price = 80% of 3200 = Rs. 2560
Profit earned = 2560 – 1600 = Rs. 960
For A in 2017:
Cost price = Rs. 2400
Selling price = 85% of 4800 = Rs. 4080
Profit earned = 4080 – 2400 = Rs. 1680
Difference = 1680 – 960 = Rs. 720
Hence, option D is correct.

Common Explanations : (Q.6 to Q.10)

It is given that the second youngest kid is twice the age of the youngest kid whose age is three times less than the oldest kid.

Let the age of youngest kid is 'y', then the second youngest kid would be 2y and the oldest would be 3y.
Weight of oldest kid is 36 kg which is numerically three times more than the age of second oldest kid.
Age of second oldest kid would be 12 years.

Since, the second oldest kid is three year younger than the oldest kid, oldest kid would be 15 years. From this we get 3y = 15, thus y = 3. So the age of youngest kid = 5 years, second youngest kid = 10 years.

Second oldest kid, whose weight is four times the age of second youngest kid
Second youngest kid = 10 years, so weight of second oldest kid = 4 × 10 = 40 kg
Weight of the youngest kid is 40% less than the second oldest kid
Weight of second oldest = 40kg, youngest kid = 40kg – 40% of 40kg = 24kg
Sum of all the weights = 129kg = 36kg + 24kg + 40kg + weight of second youngest kid
Weight of second youngest kid = 29kg

In a table form all the values are:

	Age(years)	Weight(kg)
Oldest kid	15	36
2nd oldest kid	12	40
2nd youngest kid	10	29
Youngest kid	5	24

6. From common explanation we see weights after two years become:
36 + 4 = 40 kg
40 + 2 = 42 kg
29 + 6 = 35 kg
24 + 9 = 33 kg
Total = 150

Average weight = $\frac{150}{4}$ kg

After 2 years, ages would be
(15 + 2), (12 + 2), (10 + 2), and (5 + 2)
17, 14, 12, and 7

Average age = $\frac{17 + 14 + 12 + 7}{4} = \frac{50}{4}$

Ratio = $\frac{150}{4} : \frac{50}{4} = 3 : 1$

Hence, option C is correct.

7. From common explanation, we have

The formula he used to distribute the chocolates is

$$\text{Number of chocolate} = \frac{\text{height in centimeters}}{(\text{weight in kilogram} + \text{age})}$$

For second oldest kid –

$$3 = \frac{\text{height in cm}}{(40 + 12)} = \frac{\text{height in cm}}{52}$$

Height in cm = 52 × 3 = 156 cm

For oldest kid –

$$3 = \frac{\text{height in cm}}{(15 + 36)}$$

Height in cm = 51 × 3 = 153 cm
Ratio = oldest : second oldest = 153 : 156 = 51 : 52
Hence, option C is correct.

8. From common explanation, we have

It is given the two of them got total of 6 chocolates.

Youngest kid's height is 145 cm, so

$$\text{Number of chocolate} = \frac{\text{height in centimeters}}{(\text{weight in kilogram} + \text{age})}$$

$$\text{Number of chocolate} = \frac{145}{24 + 5} = \frac{145}{29} = 5$$

Second youngest height = 145 + 11 = 156 cm

$$\text{Number of chocolate} = \frac{156}{29 + 10} = \frac{156}{39} = 4$$

Total chocolates = 6 + 5 + 4 = 15

Hence, option D is correct.

9. From common explanation, we have

Let he bought 'y' pens.

Kid with highest weight (40kg) = $\frac{y}{2}$ pens

Number of pens left = $\frac{y}{2}$

Half of it will go to 36 kg kid = $\frac{y}{4}$

Number of pens left = $\frac{y}{4}$

Half of it will go to 29 kg kid = $\frac{y}{8}$

Number of pens left = $\frac{y}{8}$

The kid with 24kg weight will get whatever left,

so he also gets = $\frac{y}{8}$

Since he gets 2 pens, we must have:

$\frac{y}{8} = 2$, or $y = 16$

Ratio of weight to the number of pens for the oldest kid

Weight of oldest kid = 36kg, pens he got

$\frac{y}{4} = \frac{16}{4} = 4$

Ratio = 36 : 4 = 9 : 1

Hence, option C is correct.

10. From common explanation, we have

After 5 years, oldest kid = 15 + 5 = 20 years, and youngest kid = 5+5 = 10 years.
Weight of youngest kid = 24kg + 25% of 24 kg = 30kg
Weight of oldest kid = 2 × weight of youngest kid = 2 × 30 = 60kg
Let the youngest kid gets 'y' chocolates, then the oldest will get (6 – y) chocolates.
Now, let their heights be 'H'

Number of chocolates youngest kid get,

$$y = \frac{H}{10 + 30} = \frac{H}{40}$$

H = 40y ------(i)

Number of chocolates oldest kid get,

$$(6 - y) = \frac{H}{20 + 60} = \frac{H}{80}$$

H = 80 (6 – y) -------(ii)
H = 40y = 80 (6 – y)
y = 2(6 – y) = 12 – 2y
y = 4
from (i)
H = 40 × 4 = 160 cm

Hence, option D is correct.

11. In 2015:

Let students appeared in exam B = a

Students appeared in exam A = 2a

Students appeared in exam C = a – 40

So a + 2a + a – 40 = 1640

4a = 1680

a = 420

Students appeared in exam B = 420

Students appeared in exam A = 840

Students appeared in exam C = 380

In 2017:

Let students appeared in exam A and exam B be 7c and 9c respectively.

Students appeared in exam C = 125% of 9c = 11.25c

So 7c + 9c + 11.25c = 2180

27.25c = 2180

c = 80

Students appeared in exam A = 560

Students appeared in exam B = 720

Students appeared in exam C = 900

Number of students appeared in exams B and C together in 2015 = 420 + 380 = 800

Number of students appeared in exams A and B together in 2017 = 560 + 720 = 1280

Difference = 1280 – 800 = 480

Hence, option B is correct.

12. In 2016:

Let students appeared in exam A = b

Students appeared in exam B = 140% of b = 1.4b

Students appeared in exam C = 120% of 1.4b = 1.68b

So b + 1.4b + 1.68b = 2448

4.08b = 2448

b = 600

Students appeared in exam A = 600

Students appeared in exam B = 840

Students appeared in exam C = 1008

In 2018:

Students appeared in exam A = $\frac{600}{5} \times 4 = 480$

Students appeared in exam B = 560 × 2 – 480 = 640

Students appeared in exam C = 600

Total students appeared = 480 + 640 + 600 = 1720

Number of students appeared in exams A and B in 2016 = 600 + 840 = 1440

Number of students appeared in exams A and C in 2018 = 480 + 600 = 1080

Ratio = 1440 : 1080 = 4 : 3

Hence, option A is correct.

13. In 2015:

Let students appeared in exam B = a

Students appeared in exam A = 2a

Students appeared in exam C = a – 40

So a + 2a + a – 40 = 1640

4a = 1680

a = 420

Students appeared in exam B = 420

Students appeared in exam A = 840

Students appeared in exam C = 380

In 2017:

Let students appeared in exam A and exam B be 7c and 9c respectively.

Students appeared in exam C = 125% of 9c = 11.25c

So 7c + 9c + 11.25c = 2180

27.25c = 2180

c = 80

Students appeared in exam A = 560

Students appeared in exam B = 720

Students appeared in exam C = 900

Sum of boys = $\frac{840}{12} \times 7$ + 35% of 900 = 490 + 315 = 805

Hence, option C is correct.

14. Total students appeared in 2015 = 1640

Total students appeared in 2016 = 2448

Total students appeared in 2017 = 2180

In 2018:

Students appeared in exam A = $\frac{600}{5} \times 4 = 480$

Students appeared in exam B = 560 × 2 – 480 = 640

Students appeared in exam C = 600

Total students appeared = 480 + 640 + 600 = 1720

Total students appeared = 1640 + 2448 + 2180 + 1720 = 7988

Hence, option D is correct.

15. In 2017:
Let students appeared in exam A and exam B be 7c and 9c respectively.

Students appeared in exam C = 125% of 9c = 11.25c
So 7c + 9c + 11.25c = 2180
27.25c = 2180
c = 80

Students appeared in exam A = 560
Students appeared in exam B = 720
Students appeared in exam C = 900

In 2018:

Students appeared in exam A = $\frac{600}{5} \times 4 = 480$

Students appeared in exam B = 560 × 2 – 480 = 640
Students appeared in exam C = 600
Total students appeared = 480 + 640 + 600 = 1720

Number of students cleared exam = 10% of 560 + 20% of 720 + 20% of 900 + 20% of 480 + 10% of 640 + 40% of 600 = 56 + 144 + 180 + 96 + 64 + 240 = 780

Hence, option B is correct.

Common explanation : (Q. 16 to Q.20)

For group A:
Number of dancers in group A = 30% of 6000 = 1800
Male dancers in group A = 40% of 1800 = 720
Female dancers in group A = 1800 – 720 = 1080
Classical dancers in group A = 50% of 1800 = 900
Hip-hop dancers in group A = 1800 – 900 = 900
Female hip-hop dancers in group A = 60% of 1080 = 648
Female classical dancers in group A = 1080 – 648 = 432
Male hip-hop dancers in group A = 900 – 648 = 252
Male classical dancers in group A = 900 – 432 = 468
Similarly calculating for every group we get

Group	Dancers	Male	Female	Hip-hop dancers	Classical dancers
A	1800	720	1080	900	900
B	1500	900	600	825	675
C	2100	945	1155	840	1260
D	600	330	270	420	180

	Females		Males	
Group	Hip-hop	Classical	Hip-hop	Classical
A	648	432	252	468
B	390	210	435	465
C	462	693	378	567
D	135	135	285	45

16. From common explanation, we have

Expenditure = 252 × 80 + 648 × 60 + 468 × 120 + 432 × 150 = Rs. 1,80,000

Hence, option C is correct.

17. From common explanation, we have

Expenditure on male dancers of group B and C = (435 + 378) × 80 + (465 + 567) × 120 = Rs. 1,88,880

Expenditure on female dancers of group C and D = (462 + 135) × 60 + (693 + 135) × 150 = Rs. 160,020

$$\text{Percentage} = \frac{188880}{160020} \times 100 = 118\%$$

Hence, option A is correct.

18. From common explanation, we see that

Group C has most number of classical dancers.

Hence, option C is correct.

19. From common explanation, we have

Expenditure on female dancers of group B = 390 × 60 + 210 × 150 = Rs. 54,900
Expenditure on male dancers of group D = 285 × 80 + 45 × 120 = Rs. 28,200

Ratio = 54900 : 28200 = 183 : 94

Hence, option E is correct.

20. From common explanation, we have

Expenditure on male classical dancers of group A and D = (468 + 45) × 120 = Rs. 61,560

Expenditure on female hip-hop dancers of group B and C = (390 + 462) × 60 = Rs. 51,120

Difference = 61560 – 51120 = Rs. 10,440

Hence, option A is correct.

21. The total distance travelled by them on foot = x km

The total distance travelled by Priyanka on foot = 20% of x

$= \frac{x}{5}$ km = 16% of the total distance travelled by her

$\frac{x}{5}$ = 16% of the total distance travelled by Priyanka

By, solving

The total distance travelled by Priyanka = $\frac{5x}{4}$ = 1.25 x km

Similarly, the total distance travelled by Pinki = 2x km

The total distance travelled by Rinki = $25 \times \frac{x}{22}$ = 1.14x km

The total distance travelled by Munni = $\frac{5x}{4}$ = 1.25x km

Required answer = Rinki

Hence, option C is correct.

22. The distance travelled by Priyanka on foot = 16% of the total distance = 36 km

The total distance travelled by Priyanka = 225 km

Average speed = 45 km/hr,

Total time = $\frac{225}{45}$ = 5 hours.....(i)

From the table, 36 km = 20% of the total distance travelled by all of them on foot

The total distance travelled by Munni on foot = 25% of the total distance travelled by all of them on foot
Since, 20% = 36 therefore,

$25\% = 36 \times \frac{25}{20} = 45$ km

From the pie chart, 45 km = 20% of the total distance travelled by Munni

The total distance travelled by Munni $= 45 \times \frac{100}{20} = 225$ km

In the question, it is given that each of them takes equal time, so from the equation (i) even Munni will take 5 hours

Average speed of Munni $= \frac{225}{5} = 45$ km/hr

Required difference = 45 – 45 = 0 km/hr

Hence, option E is correct.

23. Let the time taken by Pinki = x hours
Then according to the question, the time taken by Priyanka = x + 1 hours
Now, For Priyanka
20% of the total distance travelled by all of them on foot = 16% of the total distance travelled by Priyanka
20% of 250 = 16% of the total distance travelled by Priyanka
By solving, the total distance travelled by Priyanka = 312.5 km

Average speed $= \frac{312.5}{(x+1)}$ km/hr

Similarly for Pinki,
30% of the total distance travelled by all of them on foot = 15% of the total distance travelled by Pinki
30% of 250 = 15% of the total distance travelled by Pinki By solving, the total distance travelled by Pinki = 500 km

Average speed $= \frac{500}{x}$ km/hr

Required Ratio $= \frac{312.5}{(x+1)}$ km/hr : $\frac{500}{x}$ km/hr

Since it is not possible to determine the value of x so ratio can't be determined
Hence, option E is correct.

24. The total distance travelled by all of them on foot is 300 km

For Priyanka,

The total distance travelled by Priyanka on foot = 20% of the total distance travelled by all of them on foot = 20% of 300 = 60 km

16% of the total distance travelled by Priyanka = 60 km

The total distance travelled by Priyanka by car and by rickshaw = (18 + 24) % of the total distance 16% = 60 so the value of 42%

$= 60 \times \frac{42}{16} = 157.5$ km

Similarly, For Pinki,

30% of 300 = 15% of the total distance travelled by her

15% = 90 So, (20 + 15)% = 35%

$= 90 \times \frac{35}{15} = 210$ km

For Rinki,

25% of 300 = 22% of the total distance travelled by her 22% = 75 km

So, (19 + 16)% = 35%

$= 75 \times \frac{35}{22} = 119.32$ km

For Munni,

25% of 300 = 20% of the total distance travelled by her 20% = 75 km

So, (26 + 18)% = 44%

$= 75 \times \frac{44}{20} = 165$ km

The required sum = 157.5 + 210 + 119.32 + 165 = 651.82 km

Hence, option A is correct.

25. The sum of the total distance travelled by Priyanka and Pinki together on foot is 125 × 2 = 250 km

From the data table, the sum of the total distance travelled by Priyanka and Pinki together on foot = (20 + 30) % of the total distance travelled by all of them on foot

50% of the total distance travelled by all of them on foot = 250 km

The total distance travelled by all of them on foot $= 250 \times \frac{100}{50} = 500$ km

The total distance travelled by Rinki on foot = 25% of 500 = 125 km = 22% of the total distance travelled by her 22% of the total distance = 125

Total distance $= 125 \times \frac{100}{22}$

Total time taken by her = 14 hrs

Speed $= \frac{(125 \times 100)}{(14 \times 22)}$ km/hr

The total distance travelled by Munni on foot = 25% of 500 = 125 km = 20% of the total distance travelled by her 20% of the total distance = 125

Total distance $= 125 \times \frac{100}{20}$

Total time taken by her = 14 hrs

Speed $= \frac{(125 \times 100)}{(20 \times 14)}$

The required Ratio $= \frac{(125 \times 100)}{(14 \times 22)} : \frac{(125 \times 100)}{(14 \times 20)} = 10 : 11$

Hence, option A is correct.

Common explanation : (Q. 26 to Q. 30)

The details of the college can be tabled as follows

College	Total Students	Selections	Non selections	Civil engineering	Mechanical engineering	Chemical engineering	Computer science engineering
IIT Kharagpur	360	90	270	108	72	126	54
IIT Bombay	300	105	195	60	72	81	87
IIT Kanpur	250	80	170	55	65	80	50
IIT Madras	280	105	175	95	73	62	50
IIT Delhi	220	77	143	40	53	59	68
IIT Guwahati	240	80	160	60	53	65	62
IIT Roorkee	350	119	231	91	98	70	91
IIT Bhubaneswar	180	81	99	29	61	58	32
IIT Gandhinagar	150	66	84	33	39	30	48
IIT Hyderabad	300	96	204	84	48	66	102

26. Following common explanation we get ;

The number of Mechanical engineering student is the second highest in IIT Madras colleges

Hence, option (C) is correct.

27. Following common explanation we get ;

The highest percentage of students got selected are from the Civil engineering stream.

Hence, option (A) is correct.

28. Following common explanation we get ;

Number of boys selected = $\frac{65}{100} \times 80 = 52$

The number of boys = $52 \times \frac{100}{40} = 130$

The number of girls = 240 – 130 = 110

Reqd. % = $\frac{28}{110} \times 100 = 25.2\%$

Hence, option (A) is correct.

29. Following common explanation we get ;

The total number of student = 2630

The total selections = 899

The reqd. % = $\frac{899}{2630} \times 100 = 34.2\%$

Hence, option (D) is correct.

30. Following common explanation we get ;

Reqd. % = $\frac{108 + 60 + 55}{62 + 59 + 65} \times 100 = \frac{223}{186} \times 100 = 120\%$

Hence, option (C) is correct.

Common explanation : (Q. 31 to Q.35)

Class	Number of students	Number of boys	Number of girls
I	20	4	16
II	10	5	5
III	24	12	12
IV	16	8	8
V	30	6	24
VI	10	1	9
VII	20	4	16
VIII	10	4	6
IX	40	24	16
X	20	10	10

31. Following the common explanation we get ;
Number of student in group A = 20 + 10 + 24= 54
Number of student in group B = 16 + 30 + 10 = 86
Number of student in group C = 20 + 10 + 40 + 20 = 90
Total number of student = 200
N(S) = $^{200}C_3$ = 200 ……. (Data use from table III)
N(E) = $^{54}C_1 \times {}^{86}C_1 \times {}^{90}C_1 = 4 \times 5 \times 10 = 200$
P (E) = $\frac{N(E)}{N(S)} = \frac{200}{200} = 1$
Hence, option (A) is correct.

32. Following the common explanation we get ;

Number of student in group A = 20 + 10 + 24 = 54
Number of student in group B = 16 + 30 + 10 = 86
Number of student in group C = 20 + 10 + 40 + 20 = 90
Total number of student = 200
N(S) = $^{200}C_3$
3 student can be selected from 54(group A) + 90(group C) = 144 student in $^{144}C_3$
N(E) = $^{144}C_3$

$$P(E) = \frac{N(E)}{N(S)} = \frac{144}{200} = 0.72$$

Hence, option (B) is correct.

33. Following the common explanation we get ;

Number of student in group A = 20 + 10 + 24 = 54
Number of student in group B = 16 + 30 + 10 = 86
Number of student in group C = 20 + 10 + 40 + 20 = 90
Total number of student in class V = 30
Number of boys in class V = 6
Number of girls in class V = 24
Total number of arrangement = $^{30}P_{30}$ = 30!

Consider all the boys as one we have 24 girl + 1 boys = 25 person which can be arranged in 25! Ways i.e. 25!

But 6 boys can also be arranged in 6! Ways among themselves

So in 25! × 6! Ways can be person be arranged so that boys are together

$$= \frac{25! \times 6!}{30!} = \frac{25 \times 6}{300} = 0.5 = P \text{ (boys are together)}$$

∴ All boys are not together = 1 – 0.5 = 0.5

Hence option (A) is correct.

34. Following the common explanation we get ;

Total number of student in class IX = 40

Number of boys 24

Number of girls =16

$N(S) = {}^{40}C_2 = 780$

$N(E) = {}^{24}C_2 + {}^{16}C_2 = 276 + 120 = 396$

$$P(E) = \frac{N(E)}{N(S)} = \frac{396}{780} = 0.5$$

Hence, option (A) is correct.

35. Following the common explanation we get ;

Since there are two classes, each equally likely to be chosen, the probability of choosing either class is ½

If class II is chosen, the probability of selecting a boy $= \frac{1}{2} \times \frac{5C1}{10C1} = \frac{1}{4}$

Similarly, if class III, the probability of selecting a boy $= \frac{1}{2} \times \frac{12C1}{24C1} = \frac{1}{4}$

Since, the two event are mutually exclusive, we use addition therefore, the probability of selecting a boy from either class is

$$\frac{1}{4} + \frac{1}{4} = \frac{1}{2}$$

Hence, option (C) is correct.

36. From the pie-chart and bar graph,
Given, Total no. of people = 45000.
% of people attended the festival in place Agra = 12

So, the total no. of people attended the festival in place Agra $= 45000 \times \frac{12}{100} = 5400$

% of People from outside of the state attended the festival in place Agra = 18

Then, the no. of People from outside of the state attended the festival in place Agra $= 5400 \times \frac{18}{100} = 972$

% of people attended the festival in place Faizabad = 9

So, the total no. of people attended the festival in place Faizabad $= 45000 \times \frac{9}{100} = 4050$

% of People from outside of the state attended the festival in place Faizabad = 8
Then, the no. of People from outside of the state attended the festival in place Faizabad

$= 4050 \times \frac{8}{100} = 324$

∴ Ratio = 972 : 324 = 3 : 1

Hence option C is correct.

37. From the pie-chart and bar graph,
Given, Total no. of people attended = 45000.
% of people attended the festival in place Etawah = 16

So, the total no. of people attended the festival in place Etawah $= 45000 \times \frac{16}{100} = 7200$

% of People from outside of the state attended the festival in place Etawah = 35
Then, % of people from inside of the state attended the festival in place Etawah = 100 – 35 = 65
Hence, the no. of people from inside of the state attended the festival in place Etawah

$= 7200 \times \frac{65}{100} = 4680$

% of people attended the festival in place Chitakoot = 21

So, the total no. of people attended the festival in place Chitakoot $= 45000 \times \frac{21}{100} = 9450$

% of People from outside of the state attended the festival in place Chitakoot = 28
Then, % of people from inside of the state attended the festival in place Chitakoot = 100 – 28 = 72
Hence, the no. of people from inside of the state attended the festival in place Chitakoot

$= 9450 \times \frac{72}{100} = 6804$

∴ The required % $= \left[\left(\frac{4680}{6804}\right) \times 100\right]\% = 68.78\% \approx 69\%$

Hence, option A is correct.

38. From the pie-chart and bar graph,

Given, Total no. of people attended the festival in all six places = 45000.

Place	% of people attended the festival (X)	No. of total people attended the festival = X% of 45000
Agra	12	12% of 45000 = 5400
Doriae	32	32% of 45000 = 14400
Etawah	16	16% of 45000 = 7200
Faizabad	9	9% of 45000 = 4050

Now,

Place	No. total people attended the festival (Y)	% of people from outside of the state attended the festival (A)	No. of people from outside of the state attended the festival = Y × (A/100)
Agra	5400	18	18% of 5400 = 972
Doriae	14400	11	11% of 14400 = 1584
Etawah	7200	35	35% of 7200 = 2520
Faizabad	4050	8	8% of 4050 = 324

So, the total no. of people from outside of the state attended the festival in places Agra, Doriae, Etawah, Faizabad = 972 + 1584 + 2520 + 324 = 5400

∴ The average no. of people from outside of the state attended the festival in places Agra, Doriae, Etawah, Faizabad

$= \frac{5400}{4} = 1350$

Hence, option B is correct.

39. From the graph and bar graph,
Given, Total no. of people = 45000.
% of people attended the festival in place Doriae = 32

So, the total no. of people attended the festival in place Doriae = $45000 \times \frac{32}{100} = 14400$

% of People from outside of the state attended the festival in place Doriae = 11 % of People from inside of the state attended the festival in place Doriae = 100 – 11 = 89
Hence, the difference in the no. of people from inside and outside of the state attended the festival in place Doriae = $14400 \times (89 - 11)\% = 14400 \times \frac{78}{100} = 11232$.

Hence option A is correct.

40. From the pie-chart and bar graph,

Given, Total no. of people attended the festival in all six places = 45000.

Place	% of people attended the festival (X)	No. of total people attended the festival = 45000 × (X/100)
Agra	12	12% of 45000 = 5400
Banda	10	10% of 45000 = 4500
Chitrakoot	21	21% of 45000 = 9450
Doriae	32	32% of 45000 = 14400
Etawah	16	16% of 45000 = 7200
Faizabad	9	9% of 45000 = 4050

So, the total no. of people attended the festival in places

Agra, Chitrakoot, Etawah = 5400 + 9450 + 7200 = 22050

Then, the average no. of people attended the festival in places Agra, Chitrakoot, Etawah

$= \frac{22050}{3} = 7350$

And, the total no. of people attended the festival in places

Banda, Doriae, Faizabad = 4500 + 14400 + 4050 = 22950

Then, the average no. of people attended the festival in places Banda, Doriae, Faizabad

$= \frac{22950}{3} = 7650$

∴ The difference between the total no. of people attended the festival in places

Agra, Chitrakoot, Etawah and Banda, Doriae, Faizabad = 7650 – 7350 = 300.

Hence, option D is correct. .

41. The populations (in lakhs) of the subsidiary are tabulated below.

Subsidiary name	Populations (in lakhs)
ECL	(26.5 + 32.5) = 59.0
BCCL	(25.1 + 20.5) = 45.6
CCL	(32.5 + 30.2) = 62.7
WCL	(38.5 + 32.8) = 71.3
SCEL	(24.5 + 31.2) = 55.7
NCC	(38.7 + 24.9) = 63.6
NCL	(36.4 + 23.7) = 60.1
Total	418

The total population of the one by fourth part of the country = 418 lakhs

14.5% of the one by fourth part of the country's populations = (0.145 × 418) = 60.61 lakhs

The subsidiary which have less than 14.5% of the one by fourth part of the country's population, i.e., which have less than 60.61 lakhs are ECL, BCCL, SCEL and NCL.

Hence, number of subsidiary = 4

Hence, option D is correct.

42.

Subsidiary name	Number of males (in lakhs)	Number of females (in lakhs)	Number of females : Number of males
ECL	26.5	32.5	1.22
BCCL	25.1	20.5	0.81
CCL	32.5	30.2	0.92
WCL	38.5	32.8	0.85
SCEL	24.5	31.2	1.27
NCC	38.7	24.9	0.64
NCL	36.4	23.7	0.65
Total	222.2	195.8	0.88

The total number of males in the one by fourth part of the country = 222.2 lakhs
The total number of females in the one by fourth part of the country = 195.8 lakhs
Ratio of the number of females in the one by fourth part of the country to that of males = 0.88
We can observe from the table that for ECL and SCEL, the ratio is greater than 1
For CCL, the ratio is 0.92, which is greater than the required ratio.
For all the other subsidiary viz. BCCL, WCL, NCC and NCL, the ratio is less than 0.88
Hence number of subsidiary which has less than the ratio of the number of females to the number of males are four.
Hence, option D is correct.

43. Number of illiterates in subsidiary ECL = (0.4 × 26.5 + 0.6 × 32.5) = 30.1

Number of illiterates in subsidiary BCCL = (0.4 × 25.1 + 0.6 × 20.5) = 22.34

Number of illiterates in subsidiary CCL = (0.4 × 32.5 + 0.6 × 30.2) = 31.12

Number of illiterates in subsidiary WCL = (0.4 × 38.5 + 0.6 × 38.8) = 35.08

Number of illiterates in subsidiary SCEL = (0.4 × 24.5 + 0.6 × 31.2) = 28.52

Number of illiterates in subsidiary NCC = (0.4 × 38.7 + 0.6 × 24.9) = 30.42

Number of illiterates in subsidiary NCL = (0.4 × 36.4 + 0.6 × 23.7) = 28.78

Hence, the third highest number of illiterates are in NCC.

Hence, option B is correct.

44. In Subsidiary ECL, since there are 26.5 lakhs males and 32.5 lakhs females, there can be a maximum of 26.5 lakhs married couples, a total of (26.5 × 2) = 53 lakhs married persons. Hence, the remaining (32.5 – 26.5) = 6 lakhs persons will be unmarried. This is the minimum number of persons who will be unmarried.

Now,

Subsidiary name	Number of males (in lakhs)	Number of females (in lakhs)	Minimum Number of unmarried person	10% population of the subsidiary
ECL	26.5	32.5	6.0	5.90
BCCL	25.1	20.5	4.6	4.56
CCL	32.5	30.2	2.3	6.27
WCL	38.5	32.8	5.7	7.13
SCEL	24.5	31.2	6.7	5.57
NCC	38.7	24.9	13.8	6.36
NCL	36.4	23.7	12.7	6.01
Total	222.2	195.8	26.4	41.8

Comparing the Minimum Number of unmarried persons with 10% population of the subsidiary of each subsidiary, we can conclude that only in subsidiary CCL and subsidiary WCL has the number of unmarried persons are less than that of 10% of the population of the subsidiary.

Hence, option D is correct.

45. Total number of males in the one fourth part of the country = 222.2 lakhs

13.25% of total number of males in one fourth population of the country

$= \frac{222.2 \times 13.25}{100} = 29.44$ lakhs

Subsidiary name	Male populations (in lakhs)
ECL	26.5 (less than 29.44 lakhs)
BCCL	25.1 (less than 29.44 lakhs)
CCL	32.5
WCL	38.5
SCEL	24.5 (less than 29.44 lakhs)
NCC	38.7
NCL	36.4

From the table it is clear that ECL, BCCL and SCEL are fulfilling the required condition.

Hence, option E is correct.

Common explanation : (Q. 46 to Q.50)

Total number of employees in Central secretariat – Patna = 1000

Number of employees in AYUSH department $= \frac{1}{1+2+3+4} \times 1000 = 100$

Number of employees in Consumer Affairs department $= \frac{2}{1+2+3+4} \times 1000 = 200$

Number of employees in Farmer Welfare department $= \frac{3}{1+2+3+4} \times 1000 = 300$

Number of employees in Backward communities Development department $= \frac{4}{1+2+3+4} \times 1000 = 400$

The number of INDIAN Food Lover and Chinese Food Lover in the different departments is tabulated below.

Department	Indian Food Lover	Chinese Food Lover
AYUSH	(100 – 60) = 40	(100 × 0.6) = 60
Consumer Affairs	(200 × 0.25) = 50	(200 – 50) = 150
Farmer Welfare	450 – (40 + 50 + 120) = 240	550 – (60 + 150 + 280) = 60
Backward communities Development	(400 – 280) = 120	(400 × 0.7) = 280
Total	(1000 × 0.45) = 450	(1000 – 450) = 550

Table are calculated as per given information like

Number of Chinese Food Lover in AYUSH department = 0.6 × number of employees in AYUSH department = (0.6 × 100) = 60

Number of Indian Food Lover in AYUSH department = (100 – 60) = 40, and so on

46. Following common explanation we get :

The number of female employees who are Indian Food Lover in the Consumer Affairs department

$= 50 \times \frac{10}{100} = 5$

Number of male employees who are Indian Food Lover in the Consumer Affairs department = (50 – 5) = 45

Hence, option (D) is correct.

47. Following common explanation we get :

The highest number of Chinese Food Lover is in Backward communities Development Department.

The percentage of Indian Food Lover in Backward communities Development department

$= \frac{120}{450} \times 100 = 26.7\%$

Hence, option (A) is correct.

48. Following common explanation we get :

According to the question,

Number of employees of AYUSH department who has converted into Chinese Food Lover $= \frac{40 \times 5}{100} = 2$

Number of employees of Farmer Welfare Department who has converted into Chinese Food Lover

$= \frac{240 \times 20}{100} = 48$

Number of employees of Backward communities Development Department who has converted into Indian Food Lover $= \frac{280 \times 20}{100} = 56$

Number of employees of Consumer Affairs Department who has converted into Indian Food Lover

$= \frac{150 \times 20}{100} = 30$

Number of Indian Food Lover employees = 450 – (2 + 48) + (56 + 30) = 486
Number of Chinese Food Lover employees = 550 – (56 + 30) + (2 + 48) = 514

Reqd. % $= \frac{486}{514} \times 100 = 94.55\% = 95\%$ (approx.)

Hence, option (D) is correct.

49. Following common explanation we get :

Number of Indian Food Lover employees of AYUSH department and Backward communities Development department combined together = (40 +120) = 160

Number of Chinese Food Lover employees of Consumer Affairs department and Farmer Welfare department combined together = (150 + 60) = 210

Required ratio = 160 : 210 = 16 : 21

Hence, option (B) is correct.

50. Following common explanation we get :

Number of female Chinese Food Lover employees in Farmer Welfare department

$= \frac{60 \times 5}{100} = 3$

Number of male Chinese Food Lover employees in Farmer Welfare department = (60 – 3) = 57

Number of female Chinese Food Lover employees in AYUSH department $= \frac{60 \times 10}{100} = 6$

Number of male Chinese Food Lover employees in AYUSH department = (60 – 6) = 54

Number of female Chinese Food Lover employees in Backward communities Development department

$= \frac{280 \times 15}{100} = 42$

Number of male Chinese Food Lover employees in Backward communities Development department = (280 – 42) = 238

Number of female Chinese Food Lover employees in Consumer Affairs department

$= \frac{150 \times 20}{100} = 30$

Number of male Chinese Food Lover employees in Consumer Affairs department = (150 – 30) = 120

Number of male Chinese Food Lover employees = (57 + 54 + 238 + 120) = 469

The total Indian Food Lover employees = 450

Required percentage $= \frac{469}{450} \times 100 = 104\%$ (approx.)

Hence, option (E) is correct.