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General Aptitude

GATE - 2020/21

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GATE - 2020/2021

Part - 01

Quantitative Aptitude & Reasoning

CHAPTER 1

PERCENTAGE & RATIO PROPORTIONS

1.1 Which of the following is the largest number

(A) 20 % of 200 (B) 7 % of 500
(C) 1300% of 3 (D) 700% of 9

1.2 If 25% of a number is 75, then 45% of that number is

(A) 145 (B) 125
(C) 150 (D) 135\

1.3 If x% of a is the same as y% of b , then z% of b is

(A) xy/z% of a (B) yz/x% of a
(C) xz/y% of a (D) None of these

1.4 In an examination, 35% of the students passed and 455 failed. How many students appeared for examination?

(A) 490 (B) 700
(C) 845 (D) 1300

1.5 In an election between 2 candidates, Nobita gets 65% of the total valid votes. If the total votes were 6000, what is the number of valid votes that the other candidate Suniyon gets if 25% of the total votes were declared invalid?

(A) 1625 (B) 1575
(C) 1675 (D) 1525

1.6 A, B and C are three numbers in the ratio of 5:6:7. Their sum is 180.The difference between largest and smallest is

(A) 40 (B) 60
(C) 20 (D) None

1.7 4 times the Bhloo's salary is same as 6 times Laloo's salary which is 24 times Kaloo's salary. If Kaloo's salary is Rs. 500 less than Bhaloo's salary, then find the total salary of all the three

(A) 1200 (B) 1600
(C) 1100 (D) None

1.8 If three number are in the ratio of 1: 2: 3 and half the sum is 18, then the ratio of squares of the numbers is

(A) 6:12 : 13 (B) 1:2:4
(C) 36:144:324 (D) 3:5:7

1.9 The sum of three numbers is 98. If the ratio of the first to second is 2: 3 and that of the second to the third is 5: 8, then the second number is

(A) 20 (B) 30
(C) 48 (D) 58

1.10 What percentage of numbers from 1 to 70 has 1 or 9 in the unit's digit?

(A) 1 (B) 14
(C) 20 (D) 21

1.11 Fresh watermelons contain 90% water by weight whereas dry watermelons contain 20% water by weight. What is the weight of dry watermelon obtained from 20kgs of fresh watermelon?

(A) 2.4 kg (B) 2 kg
(C) 2.5 kg (D) None

1.12 What per cent of 2 kg will be 65 gm?

(A) 13/4 (B) 65/2

(C) 15/8 (D) 13/8

1.13 If the price of petrol is increased by 30%, by how much percent a car owner must reduce his consumption in order to maintain the same budget?

(A) 21% (B) 21 1/3%

(C) 23 1/13% (D) 33%

1.14 If the price of the pen in reduced by 20%, Babloo can buy 12 more pen for Rs. 1, 440. Find the original price of one pen.

(A) Rs 70 (B) Rs. 90

(C) Rs. 130 (D) Rs. 30

1.15 A cat takes 5 leaps for every 4 leaps of a dog, but 3 leaps of the dog are equal to 4 leaps of the cat. What is the ratio of the speed of the cat to that of the dog?

(A) 11 : 15 (B) 15 : 11

(C) 16 : 15 (D) 15 : 16

1.16 A beggar had ten paise, twenty paise and one rupee coins in the ratio 10: 17: 7 respectively at the end of day.If that day he earned a total of Rs. 57, how many twenty paisa coins did he have?

(A) 114 (B) 171

(C) 95 (D) 85

1.17 Seats for Mathematics, Physics and Biology in a school are in the ratio 5: 7: 8. There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the ratio of increased seats?

(A) 2: 3: 4 (B) 6 : 7: 8

(C) 6: 8: 9 (D) None of these

1.18 A factory employs skilled workers, unskilled workers and clerk in the proportion 8 : 5 : 1 and the wages of a skilled worker, an unskilled worker and a clerk are in the ratio 5 : 2 : 3. When 20 unskilled workers are employed, the total daily wages of all amount to Rs. 318. The wages paid to each category of workers are

(A) Rs. 240, Rs. 60 Rs. 18

(B) Rs. 200, Rs. 90, Rs. 28

(C) Rs. 150, Rs. 108, Rs. 60

(D) Rs. 250, Rs. 50, Rs. 18

1.19 If the length of a rectangular field is increased by 5% and breadth decreased by 10%, then what will be the difference in its area?

(A) 5.5% increase (B) 5.5% decrease

(C) 0.55% decrease (D) No change

1.20 A batsman scored 110 runs which included 3 boundaries and 8 sixes. What percent of his total score did he make by running between the wickets?

(A) 45% (B) $45\frac{5}{11}\%$

(C) $54\frac{6}{11}\%$ (D) 55%

1.21 Two students appeared at an examination. One of them secured 9 marks more than the other and his marks was 56% of the sum of their marks. The marks obtained by them are :

(A) 39, 30 (B) 41, 32

(C) 42, 33 (D) 43, 34

1.22 A fruit seller had some apples. He sells 40% apples and still has 420 apples. Originally, he had:

(A) 588 (B) 600

(C) 672 (D) 700

1.23 If 20% of a = b, then b% of 20 is the same as:

(A) 4% of a (B) 5% of a

(C) 20% of a (D) None of these

1.24 In a certain school, 20% of students are below 8 years of age. The number of students above 8 years of age is half of the number of students of 8 years of age which is 48. What is the total number of students in the school?

(A) 72 (B) 90

(C) 120 (D) 150

Answer Key : Percentage & Ratio Proportions

1.1	B	1.2	D	1.3	C	1.4	B	1.5	B
1.6	C	1.7	C	1.8	C	1.9	B	1.10	C
1.11	C	1.12	A	1.13	C	1.14	D	1.15	D
1.16	D	1.17	A	1.18	A	1.19	B	1.20	B
1.21	C	1.22	D	1.23	A	1.24	B		

CHAPTER 2

PROFIT & LOSS

2.1 A person incurs 5% loss by selling a watch for Rs. 1140. At what price should the watch be sold to earn 5% profit?

(A) Rs. 1200 (B) Rs. 1230
(C) Rs. 1260 (D) Rs. 1400

2.2 The CP of 21 articles is equal to SP of 18 articles.
Find the gain or loss percent.

(A) 10% (B) 16.66%
(C) 25% (D) 14.28%

2.3 A vendor bought potatoes at 6 for Rs.10 and sold them at 4 for Rs.6. Find his gain or loss percent.

(A) 10% gain (B) 10% loss
(C) 20% gain (D) 20% loss

2.4 A man bought pens at 3 for a rupee. How many for a rupee must he sell to gain 50%?

(A) 3
(B) 2
(C) 1
(D) Cannot be determined

2.5 In a certain store, the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit?

(A) 30% (B) 70%
(C) 100% (D) 250%

2.6 A man bought a number of clips at 3 for a rupee and an equal number at 2 for a rupee. At what price per dozen should he sell them to make a profit of 20%?

(A) Rs. 4 (B) Rs. 5
(C) Rs. 6 (D) Rs. 7

2.7 What will be the gain percent is adulteration is 33.33% and mixture is sold at cost price.

(A) 40% (B) 50%
(C) 60% (D) None of these

2.8 Despite giving a discount of 11.11% on the mark-up price, profit obtained is equal to 14.28%. What is the per cent mark up over CP?

(A) 14.28% (B) 28.56%
(C) 25% (D) 50%

2.9 A trader marked the price of his commodity so as to include a profit of 25%. He allowed discount of 16% on the market price. His actual profit was:

(A) 5% (B) 9%
(C) 16% (D) 25%

2.10 A person uses 1.2m scale which reads 1m while purchasing the cloth and uses 80 cm scale which also reads 1m while selling it. He sells at cost price and gives 10% discount. Find his gain or loss%.

(A) 35% gain (B) 10% loss
(C) 40% gain (D) 25% gain

2.11 By selling an umbrella for Rs. 300, a shopkeeper gains 20%. During a clearance sale, the shopkeeper allows a discount of 10% on the market price. His gain percent during the sale is

(A) 7 (B) 7.5
(C) 8 (D) 9

2.12 A trader marked his goods at 20% above the cost price. He sold half the stock at the marked price, one quarter at a discount of 20% on the marked price and the rest at a discount of 40% on the market price. His total gain is

(A) 2% (B) 4.5%
(C) 13.5% (D) 15%

2.13 A shopkeeper sold an article offering a discount of 5% and earned a profit of 23.5%. What would have been the percentage of profit earned if no discount was offered?

(A) 24.5 (B) 28.5
(C) Data Inadequate (D) None

2.14 Successive discounts of 10%, 12%, and 15% amount to a single discount of

(A) 40% (B) 32%
(C) 38% (D) None of these

2.15 A shopkeeper allows a discount of 10% on the marked price of an item but charges a sales tax of 8% on the discounted price. If the customer pays Rs. 680.40 as the price including the sales tax, then what is the marked price of the item?

(A) Rs. 630 (B) Rs. 700
(C) Rs. 780 (D) None of these

2.16 A shopkeeper professes to sell his goods at cost price but uses a weight of 800 gm. instead of kilogram weight. Thus, he makes a profit of

(A) 20% (B) 10%
(C) 12% (D) None of these

2.17 A shopkeeper cheats to the extent of 10% while buying as well as selling, by using false weights. His total gain is

(A) 10% (B) 11%
(C) 20% (D) None of these

2.18 A trader purchases a watch and a wall clock for Rs. 390. He sells them making a profit of 10% on the watch and 15% on the wall clock. He earns a profit of Rs. 51.50. The difference between the original prices of the wall clock and the watch is equal to

(A) Rs. 80 (B) Rs.100
(C) Rs. 110 (D) Rs.120

2.19 On selling a chair at 7% loss and a table at 17% gain, a man gains Rs. 296. If he sells the chair at 7% gain and the table at 12% gain, then he gains Rs. 400. The actual price of the table is

(A) Rs. 1600 (B) Rs. 1800
(C) Rs. 2200 (D) Rs. 2400

2.20 A man sells two flats at the rate of Rs. 1.995 lakhs each. On one he gains 5% and on the other, he loses 5%. His gain or loss percent in the whole transaction is

(A) 0.25% loss (B) 0.25% gain
(C) 2.5% loss (D) 25% loss

2.21 If loss is 10% of SP, the loss percentage is

(A) 10% (B) 20%
(C) 25% (D) None

2.22 If selling price is doubled, the profit triples. Find the profit percent.

(A) 120 (B) 100
(C) 200 (D) None

2.23 10% loss on selling price is what percent loss on the cost price?

(A) 9.09% (B) 10%
(C) 11.11% (D) None

2.24 A man purchased a box full of pencils at the rate of 7 for Rs. 9 and sold all of them at the rate of 8 for Rs. 11. In this transaction, he gained Rs. 10. How many pencils did the box contain?

(A) 100 (B) 112

(C) 114 (D) 115

2.25 A house worth Rs. 1, 50, 000 is sold by X to Y at 5% profit. Y sells the house back to X at 2% loss.

Then, in the entire transaction :

(A) X loses Rs. 1350

(B) X gains Rs. 3150

(C) X loses Rs. 4350

(D) X gains Rs. 4350

Answer Key : Profit & Loss

2.1	C	2.2	B	2.3	B	2.4	B	2.5	B
2.6	C	2.7	B	2.8	B	2.9	C	2.10	A
2.11	C	2.12	C	2.13	B	2.14	D	2.15	B
2.16	A	2.17	D	2.18	C	2.19	D	2.20	A
2.21	D	2.22	B	2.23	A	2.24	B	2.25	D

CHAPTER 3

WORK & TIME

3.1 16 men complete a work in 12 days working 14 hours a day. 28 men, working 12 hours a day, can complete it in?

(A) 8 days (B) 9 days
(C) 10 days (D) 12 days

3.2 If 16 men can reap a field of 23 hectares, in 25 days, how much large field will 20 men reap in 40 days?

(A) 46 hectares (B) 23 hectares
(C) 2.5 hectares (D) 69 hectares

3.3 An agency undertakes to lay a road of 12 km in 350 days and employs 45 men. After 200 days only 4 km of the road is completed. How many extra men must be employed to finish the work in time?

(A) 75 men (B) 100 men
(C) 120 men (D) 150 men

3.4 A certain number of people were supposed to complete a work in 24 days. The work however took 32 days since 9 people were absent throughout. How many people were supposed to be working originally?

(A) 32 (B) 27
(C) 36 (D) 30

3.5 A fort had provisions for 150 men for 45 days. After 10 days, 25 men left. How long will the food last at the same rate?

(A) 35 days (B) 42 days
(C) 37.5 days (D) 54days

3.6 A can do a piece of work in 20 days and B in 30 days. How long will they take to do the same work when working together?

(A) 10 (B) 16
(C) 12 (D) None of these

3.7 A can do a piece of work in 25 days and B can do it in 20 days. They work together for 5 days and then A goes away. In how many more days will B finish the work?

(A) 16 days (B) 11 days
(C) 13 3/4 days (D) 1 1/9 days

3.8 A can do a piece of work in 9 days and B in 18 days. They begin together, but A goes away 3days before the work is finished. The work is completed in

(A) 10.5 days (B) 8 days
(C) 12 days (D) 13. 5 days\

3.9 A and B can finish a piece of work in 50 days. B and C do it in 60 days, while C and A can finish it in 75 days. The number of days they will take to finish it together is

(A) 50 days (B) 25 days
(C) 40 days (C) 20 days

3.10 Pipe A can fill a tank in 4 minutes whereas pipes A & B together can fill the same tank in 3 minutes. How much time will pipe B take to fill the tank?

(A) 8 minutes (B) 10 minutes
(C) 12 minutes (D) 16 minutes

3.11 There are two pipes in tank. Pipe A is for filling the tank and Pipe B is for emptying the tank. If A can fill the tank in 10 hours and B can empty the tank in 15 hours then find how many hours will it take to completely fill a half empty tank?

(A) 30 hours (B) 15 hours
(C) 20 hours (D) 33.33 hours

3.12 Two pipes X and Y can fill a tank in 6 hours and 9 hours respectively. If they are turned on alternately for one hour each starting with X, then what is the time taken to fill the tank?

(A) 6.25 hours (B) 5.66 hours
(C) 7 hours (D) 8 hours

3.13 Three pipes A, B and C alone can fill a cistern in 15, 20 and 30 minutes respectively. They were all turned on at the same time. After 5 minutes the first two pipes were turned off. In how much more time will the cistern fill?

(A) 15/2 minutes (B) 25/2 minutes
(C) 10 minutes (D) 8 minutes

3.14 If 12 men and 16 boys can do a piece of work in 5 days and 13 men and 24 boys can do it in 4 days. Compare the daily work done by a man with that done by a boy.

(A) 3: 10 (B) 1: 2
(C) 2: 1 (D) 10: 3

3.15 A piece of work can be done by A and B in 10 days, by B and C in 15 days and by C and A in 20 days. All three worked for 6 days and then A withdrew. B and C worked for another 4 days and then B stopped working. How many more days will C take to complete the remaining work?

(A) 12 (B) 12.5
(C) 10.33 (D) 10

3.16 A can do some work in 24 days. B can do it in 32 days and C can do it in 60 days. They start working together. A left after 6 days and B left after working for 8 days. How many more days are required to complete the whole work?

(A) 30 (B) 25
(C) 22 (D) 20

3.17 If 6 tractors or 10 pairs of bull can plough a field in 2 days, find how long 5 tractors and 5 pairs of bull will take to do the same work.

(A) 2.5 days (B) 2 days
(C) 1.5 days (D) 1 day

3.18 A completes 2/3 of a certain job in 6 days. B can complete 1/3 of the same job in 8 days and C can complete ¾ of the work in 12 days. All of them work together for 4 days and then A and C quit. How long will it take for B to complete the remaining work alone?

(A) 3.8 days (B) 3.33 days
(C) 2.22 days (D) 4.3 days

3.19 A can do a work in 9 days. If B is 50% more efficient than A, then in how many days can B do the same work?

(A) 13.5 (B) 4.5
(C) 6 (D) 3

3.20 A is thrice as good a workman as B and can therefore finish a work in 60 days less than B. Find the time in which they can do it working together.

(A) 45 days (B) 30 days
(C) 22.5 days (D) 27 days

3.21 A, B and C can do a job alone in 15 days 10 days and 30 days respectively. A is helped by B and C every third day. In how many days will the job be completed?

(A) 9 days (B) 8 1/3days
(C) 8 days (D) 6 1/3days

3.22 Two typists of varying skills can do a job in 6 minutes if they work together. If the first typist typed alone for 4 minutes and then the second typist typed alone for 6 minutes, they would be left with 1/5 of the whole work. How many minutes would it take the slower typist to complete the typing job working alone?

(A) 10 minutes (B) 15 minutes
(C) 12 minutes (D) 20 minutes

3.23 Gattu can do 50% more work than Lattu in the same time. Lattu can do a piece of work in 30 hours. Lattu starts working and he had already worked for 12 hours when Gattu joins him. How many hours should Lattu and Gattu work together to complete the remaining work?

(A) 6 (B) 12
(C) 4.8 (D) 9.6

3.24 A cistern can be filled separately by two pipes P and Q in 45 min and 35 min respectively. A tap R at the bottom can empty the full cistern in 30 min. If the tap R is opened 7 min after the two pipes P and Q are opened then after what time from the opening of pipe P and Q the cistern becomes full?

(A) 40th min (B) 61st min
(C) 37th min (D) None

3.25 Three pipes A, B and C are attached to a cistern. A and B can fill it in 20 & 30 minutes respectively, while C can empty it in 15 min. If A, B & C are kept open successively for 1 min each, how soon would the cistern be filled?

(A) 160 min (B) 155 min
(C) 167 min (D) 57 min

Answer Key : Work & Time

3.1	A	3.2	B	3.3	A	3.4	C	3.5	B
3.6	C	3.7	B	3.8	B	3.9	C	3.10	C
3.11	B	3.12	C	3.13	A	3.14	C	3.15	C
3.16	C	3.17	A	3.18	B	3.19	C	3.20	C
3.21	A	3.22	B	3.23	D	3.24	D	3.25	C

CHAPTER 4

SPEED TIME & DISTANCE

4.1 A man is running at the speed of 36km/h, then how many meters does he cover in 40 sec?

(A) 400 m (B) 300 m
(C) 2,400 m (D) 100 m

4.2 A car travels a certain distance taking 7 hrs in forward journey, during the return journey increases speed by 12km/hr takes the time 5 hrs. What is the distance travelled?

(A) 30 km (B) 20 km
(C) 210 km (D) 120 km

4.3 Walking at ¾ of his normal speed, Chotu is 16 minutes late in reaching his office. The usual time taken by him to cover the distance between his home and his office is

(A) 48 min (B) 60 min
(C) 42 min (D) 62 min

4.4 When the speed of a train is increased by 20%, it takes 20 min less to cover the same distance. What is the time taken to cover the same distance with the actual speed?

(A) 2h (B) 1h
(C) 1.5h (D) 2.5h

4.5 Chingu, during his journey, travels for 20 min at a speed of 30km/h, another 30 min at a speed of 50 km/h, and 1 hour at a speed of 50 km/h and 1hr at a speed of 60 km/h. What is the average speed?

(A) 51.18 km/h (B) 63 km/h
(C) 39 km/h (D) 48 km/h

4.6 A hero goes after a Villain who is 200 m before him. Where will the hero catch the villain when they run at the rates of 11 and 10kms per hour respectively?

(A) 2.2 km (B) 8.8 km
(C) 2.8 km (D) 8.2 km

4.7 Two persons, 27 km apart, start at the same time and are together in 9h if they walk in the same direction. But if they walk in the opposite directions they are together in 3h. What are their speeds (in km/h)?

(A) 5, 4 (B) 4, 3
(C) 6, 3 (D) 8, 7

4.8 The speed of a train is 20 m/s. The time it takes to cross a telephone pole is 10 se(C) What is the length of the train?

(A) 100 m (B) 1.5 km
(C) 150 m (D) 200 m

4.9 A train of length 200 m crosses a pole in 15s and crosses a platform in 60s. What is the length of the platform?

(A) 450 m (B) 600 m
(C) 800 m (D) None

4.10 A train, 225m long, is running at 45km/h. In what time does it cross a man running at 18 km/h in the same direction?

(A) 20 s (B) 30 s
(C) 25 s (D) 15 s

4.11 What is the speed of a train, which overtakes a cow walking at a speed of 5km/h in 30s, if the train is 274mlong?

(A) 51.88 km/h (B) 27.88 km/h
(C) 37.88 km/h (D) 21.67 km/h

4.12 A train can travel 50% faster than a car. Both start from point A at the same time and reach point B 75kmsaway from A at the same time. On the way, however, the train lost about 12.5 minutes while stopping at the stations. The speed of the car is

(A) 100 kmph (B) 110 kmph
(C) 120 kmph (D) 130 kmph

4.13 Excluding stoppages, the speed of a bus is 54 kmph and including stoppages, it is 45 kmph. For how many minutes does the bus stop per hour?

(A) 9 (B) 10
(C) 12 (D) 20

4.14 In a flight of 600 km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200 km/hr and the time of flight increased by30 minutes. The duration of the flight is

(A) 1 hour (B) 2 hours
(C) 3 hours (D) 4 hours

4.15 A man complete a journey in 10 hours. He travels first half of the journey at the rate of 21 km/hr and second half at the rate of 24 km/hr. Find the total journey in km.

(A) 220 km (B) 224 km
(C) 230 km (D) 234 km

4.16 In covering a distance of 30 km, Abhay takes 2 hours more than Sameer. If Abhay doubles his speed, then he would take 1 hour less than Sameer. Abhay's speed is

(A) 5 kmph (B) 6 kmph
(C) 6.25 kmph (D) 7.5 kmph

4.17 It takes eight hours for a 600 km journey, if 120 km is done by train and the rest by car. It takes 20 minutes more, if 200 km is done by train and the rest by car. The ratio of the speed of the train to that of the cars is

(A) 2 : 3 (B) 3 : 2
(C) 3 : 4 (D) 4 : 3

4.18 A man covered a certain distance at some speed. Had he moved 3 kmph faster, he would have taken 40 minutes less. If he had moved 2 kmph slower, he would have taken 40 minutes more. The distance (in km) is

(A) 35 (B) 36 2/3
(C) 37 1/2 (D) 40

4.19 A train requires 7 seconds to pass a pole while it requires 25 seconds to cross a stationary train which is 378metres long. Find the speed of the train.

(A) 75.6 km/h (B) 75.4 km/h
(C) 76.2 km/h (D) 21 km/h

4.20 A railway passenger counts the telegraph poles on the rail road as he passes them. The telegraph poles are at a distance of 50 meters. What will be his count in 4hours, if the speed of the train is 45 km per hour?

(A) 600 (B) 2500
(C) 3600 (D) 5000

4.21 Two trains running in opposite directions cross a man standing on the platform in 27 seconds and 17 seconds respectively and they cross each other in 23 seconds. The ratio of their speeds is

(A) 1 : 3 (B) 3 : 2
(C) 3 : 4 (D) None of these

4.22 Two trains of equal length are running on parallel lines in the same direction at 46 km/hr and 36 km/hr. The faster train passes the slower train in 36 seconds. The length of each train is

(A) 50 m (B) 72 m
(C) 80 m (D) 82 m

4.23 A train overtakes two persons who are walking in the same direction in which the train is going, at the rate of 2kmph and 4kmph and passes them completely in 9 and 10 seconds respectively. The length of the train is

(A) 45 m (B) 50 m
(C) 54 m (D) 72 m

4.24 Two stations A and B are 110 km apart on a straight line. One train starts from A at 7 a.m. and travels towards B at 20kmph. Another train starts from B at 8 a.m. and travels towards A at a speed of 25kmph. At what time will they meet?

(A) 9 a.m. (B) 10 a.m.
(C) 10.30 a.m. (D) 11 a.m.

4.25 An ant climbing up a vertical pole ascends 12metres and slips down 5metres in every alternate hour. If the pole is 63metres high how long will it take it to reach the top?

(A) 18 hours
(B) 17 hours
(C) 16 hours 35 minutes
(D) 16 hours 40 minutes

4.26 A person can row a distance of one km upstream in 10 min and downstream in 4 min. What is the speed of the stream?

(A) 4 km/h (B) 9 km/h
(C) 5.6 km/h (D) 4.5 km/h

4.27 A man can row half a km against the current in 12 min and returns in 6 min. find the speed of the current.

(A) 1.25 km/h (B) 1.5 km/h
(C) 2.5 km/h (D) 3 km/h

4.28 On a river, Q is the mid-point between two points P and R on the same bank of the river. A boat can go from P to Q and back in 12 hours and from P to R in 16 hours 40 min. How long would it take to go from R to P?

(A) 3.5 (B) 7.3
(C) 6.2 (D) None

4.29 A man rows a boat a certain distance upstream and then returns to the same place. If the time taken by him in going upstream is twice the time taken in rowing downstream, find the ratio of the speed of the boat in still water and the speed of the stream.

(A) 2 : 1 (B) 3 : 2
(C) 5 : 3 (D) 3 : 1

4.30 Subbu can row 6 km/h in still water. When the river is running at 1.2 km/h, it takes him 1hours to row to a place and back. How far in the place?

(A) 2.88 km (B) 2.00 km
(C) 3.12 km (D) 2.76 km

4.31 In 100 m race, A covers the distance in 36 seconds and B in 45 seconds. In this race A beats B by

(A) 20 m (B) 25 m
(C) 22.5 m (D) 9 m

4.32 In a 200metres race A beats B by 35 m or 7 seconds. A's time over the course is

(A) 40 sec (B) 47 sec
(C) 33sec (D) None

4.33 In a race of 200 m, A can beat B by 31 m and C by 18 m. In a race of 350 m, C will beat B by

(A) 22.75 m (B) 25 m
(C) 19.5 m (D) 7 m

4.34 In a 100 m race, A can give B a start of 10 m and C 28 m. In the same race B can give C a start of

(A) 18 m (B) 20 m
(C) 27 m (D) 9 m

4.35 In a game of 100 points, A can give B 20 points and C 28 points. Then, B can give C

(A) 8 points (B) 10 points
(C) 14 points (D) 40 points

4.36 In a 500 m race, the ratio of the speeds of two contestants A and B is 3 : 4. A has a start of 140 m. Then, A wins by

(A) 60 m (B) 40 m
(C) 20 m (D) 10 m

4.37 In a 100 m race, A beats B by 10 m and C by 13 m. In a race of 180 m, B will beat C by

(A) 5.4 m (B) 4.5 m
(C) 5 m (D) 6 m

4.38 At a game of billiards, A can give B 15 points in 60 and A can give C to 20 points in 60. How many points can B give C in a game of 90?

(A) 30 points (B) 20 points
(C) 10 points (D) 12 points

4.39 In a 100 m race, A can beat B by 25 m and B can beat C by 4 m. In the same race, A can beat C by

(A) 21 m (B) 26 m
(C) 28 m (D) 29 m

4.40 A runs 1.5 times as fast as B. If A gives B a start of 80 m, how far must the winning post be so that A and B might reach it at the same time?

(A) 200 m (B) 300 m
(C) 270 m (D) 160 m

4.41 Two friends Raj & Rahul start a race on circular track of 240 m from same point in same direction at same time. Speed of the Raj is 20 m/s & that of Rahul is 25 m/s. After how much time will they meet for first time?

(A) 10 s (B) 12 s
(C) 24 s (D) 36 s
(E) 48 s

4.42 In above question, what would be time taken if they are running in opposite direction?

(A) 3.33 s (B) 5.33 s
(C) 8.33 s (D) 10 s
(E) 12 s

4.43 Two person X & Y start from the same point and move along a circular track of 60 m. Speed of X is 5 m/s & speed of Y is 7 m/s. After how much time will they meet for the first time?

(A) 30 s (B) 15 s
(C) 12 s (D) 16 s
(E) Cannot be determined

4.44 Two friends Raj & Rahul start a race on circular track of 500 m from same point in same direction at same time. Speed of the Raj is 20 m/s & that of Rahul is 25 m/s. After how much time will they meet for first time at starting point?

(A) 20 s (B) 25 s
(C) 100 s (D) 200 s
(E) 500 s

4.45 In above question, what would be time taken to meet for first time at starting point if they are moving along circular track in opposite direction?

(A) 20 s (B) 25 s
(C) 100 s (D) 200 s
(E) 500 s

4.46 If X, Y & Z are starts their race by moving along a circular track of length 120 m from same point at same time in same direction. Find the time taken for them to meet for first time if speed of X is 2m/s, Y is 3m/s & that of Z is 5 m/s.

(A) 40 s (B) 60 s
(C) 100 s (D) 120 s
(E) 240 s

4.47 In above question, what time they will meet for first time at starting point?

(A) 40 s (B) 60 s
(C) 100 s (D) 120 s
(E) 240 s

4.48 In a stream, B lies in between A and C such that it is equidistant from both A and (C) A boat can go from A to B and back in 6 h 30 minutes while it goes from A to C in 9 h. How long would it take to go from C to A?

(A) 3.75 h (B) 4 h
(C) 4.25 h (D) 4.5 h

4.49 A motorboat, whose speed in 15 km/hr in still water goes 30 km downstream and comes back in a total of 4 hours 30 minutes. The speed of the stream (in km/hr) is

(A) 4 (B) 5
(C) 6 (D) 10

4.50 In one hour, a boat goes 11 km/hr along the stream and 5 km/hr against the stream. The speed of the boat in still water (in km/hr) is

(A) 3 km/hr (B) 5 km/hr
(C) 8 km/hr (D) 9 km/hr

4.51 A boat takes 90 minutes less to travel 36 miles downstream than to travel the same distance upstream. If the speed of the boat in still water is 10 mph, the speed of the stream is

(A) 2 mph (B) 2.5 mph
(C) 3 mph (D) 4 mph

4.52 A man can row three-quarters of a kilometre against the stream in 11 1/4 minutes and down the stream in 7 1/2 minutes. The speed (in km/hr) of the man in still water is

(A) 2 (B) 3
(C) 4 (D) 5

4.53 A man rows 750 m in 675 seconds against the stream and returns in 7 and half minutes. His rowing speed in still water is

(A) 3 km/hr (B) 5 km/hr
(C) 4 km/hr (D) 6km/hr

4.54 A man can row a boat at 10 kmph in still water. If the speed of the stream is 6 kmph, the time taken to row a distance of 80 km down the stream is

(A) 8 hours (B) 10 hours
(C) 5 hours (D) 20 hours

4.55 A boat takes 90 minutes less to travel 36 miles downstream than to travel the same distance upstream. If the speed of the boat in still water is 10 mph, the speed of the stream is

(A) 2 mph (B) 2.5 mph
(C) 3 mph (D) 4 mph

Answer Key : Speed Time & Distance

4.1	A	4.2	C	4.3	A	4.4	A	4.5	A
4.6	A	4.7	C	4.8	D	4.9	B	4.10	D
4.11	C	4.12	C	4.13	C	4.14	B	4.15	B
4.16	B	4.17	C	4.18	B	4.19	B	4.20	C
4.21	B	4.22	B	4.23	B	4.24	B	4.25	C
4.26	D	4.27	A	4.28	B	4.29	D	4.30	A
4.31	B	4.32	C	4.33	A	4.34	B	4.35	B
4.36	B	4.37	C	4.38	B	4.39	C	4.40	C
4.41	E	4.42	B	4.43	E	4.44	C	4.45	C
4.46	D	4.47	D	4.48	B	4.49	C	4.50	C
4.51	B	4.52	C	4.53	D	4.54	B	4.55	C

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CHAPTER 5

AVERAGE & ALLEGATION

5.1 The average of 24 students and the principal is 15 years. When the principal's age is excluded, the average are decreases by 1 year. What is the age of the principal?

(A) 38 (B) 40
(C) 39 (D) 37

5.2 The average weight of 3 men A, B and C is 84 kg. Another man D joins the group and the average now becomes 80 kg. If another man E, Whose weight is 3 kg more than that of D, replaces A then the average weight of B, C, D and E becomes 78 kg. The weight of A is

(A) 70 kg (B) 72 kg
(C) 79 kg (D) 78 kg

5.3 The mean temperature of Monday to Wednesday was 37 C and of Tuesday to Thursday was 34 . If the temperature on Thursday was 4/5 that of Monday, the temperature on Thursday was

(A) 38 (B) 36
(C) 40 (D) 39

5.4 Three years ago, the average age of A, B and C was 27 years and that of B and C 5 years ago was 20 years. A's present age is

(A) 30 years (B) 35 years
(C) 40 years (D) 48 years

5.5 Ajit Tendulkar has a certain average for 9 innings. In the tenth inning, he scores 100 runs thereby increasing his average by 8 runs. His new average is

(A) 20 (B) 24
(C) 28 (D) 32

5.6 The average of the first five multiples of 7 is

(A) 20 (B) 21
(C) 28 (D) 30

5.7 There are three fractions A, B and (C) If A = 5/7 and B = 1/2 and the average of A, B and C is 1/12. What is the value of C?

(A) –1/2 (B) –1/6
(C) –1/3 (D) –1/4

5.8 The average temperature of Wednesday, Thursday and Friday was 40(C) The average for Thursday, Friday and Saturday was 41C. If the temperatures on Saturday was 42C, what was the temperature on Wednesday?

(A) 39C (B) 44
(C) 38 (D) 41C

5.9 The average weight of a class of 29 students is 40kg. If the weight of the teacher be included, the average rises by 500 gm. What is the weight of the teacher?

(A) 40.5 kg (B) 50.5 kg
(C) 45 kg (D) 55 kg

5.10 The average of 3 numbers is 17 and that of the first two is 16. Find the third number.
(A) 15 (B) 16
(C) 17 (D) 19

5.11 The age of Shaurya and Kauravki is in the ratio 2:6. After 5 years, the ratio of their ages will become 6:8. Find the average of their ages after 10 years.
(A) 12 (B) 13
(C) 17 (D) 24

5.12 If 5 kg of salt costing Rs. 5/kg and 3 kg of salt costing Rs. 4/kg are mixed, find the average cost of the mixture per kilogram.
(A) Rs. 4.5 (B) Rs. 4.625
(C) Rs. 4.75 (D) Rs. 4.125

5.13 Two varieties of rice at Rs. 10 per kg and Rs. 12 per kg are mixed together in the ratio 1:2. Find the average price of the resulting mixture.
(A) Rs. 11 per kg
(B) Rs. 11.33 per kg
(C) Rs. 11.44 per kg
(D) None

5.14 Two types of oils having the rates of Rs. 4/ kg and Rs. 5/kg respectively are mixed in order to produce a mixture having the rate of Rs. 4.60/kg. What should be the amount of the second type of oil if the amount of the first type of oil in the mixture is 40 kg?
(A) 75 kg (B) 50 kg
(C) 60 kg (D) 40 kg

5.15 A mixture of 125 gallons of wine and water contains 20% water. How much water must be added to the mixture in order to increases the percentage of water to 25% of the new mixture?
(A) 10 gals (B) 8.5 gals
(C) 8 gals (D) 8.33 gals

5.16 A cistern contains 50litres of water; 5litres of water is taken out of it and replaced by wine. The process is repeated again. Find the proportion of wine and water in the resulting mixture.
(A) 1 : 4 (B) 41 : 50
(C) 19 : 81 (D) 81 : 19

5.17 400 students took a mock exam in Delhi. 60% of the boys and 80% of the girls cleared the cut off in the examination. If the total percentage of students qualifying is 65% how many girls appeared in the examination?
(A) 100 (B) 120
(C) 150 (D) 300

5.18 How many kilograms of sugar worth Rs. 3.60 per kg should be mixed with 8 kg of sugar worth Rs. 4.20 per kg, such that by selling the mixture at Rs. 4.40 per kg, there may be a gain of 10%?
(A) 6 kg (B) 3 kg
(C) 2 kg (D) 4 kg

5.19 A mixture of 70litres of alcohol and water contains10% of water. How much water must be added to the above mixture to make the water 12.5% of the resulting mixture?
(A) 1 litre (B) 1.5 litre
(C) 2 litres (D) 4 litres

5.20 In what ratio should water be mixed with soda costing Rs. 12 per liter so as to make a profit of 25%by selling the diluted liquid at Rs. 13.75 per liter?
(A) 10 : 1 (B) 11 : 1
(C) 1 : 11 (D) 12 : 1

5.21 The price of a pen and a pencil is Rs. 35. The pen was sold at a 20% profit and the pencil at a 10% loss. If in the transaction a man gains Rs. 4, how much is cost price of the pen?
(A) Rs. 10 (B) Rs. 25
(C) Rs. 20 (D) None

5.22 The average salary per head of all employees of a company is Rs. 600. The average salary of 120 officers is Rs. 4000. If the average salary per head of the rest of the employees is Rs.560, find the total number of workers in the company.

(A) 10200 (B) 10320
(C) 10500 (D) 10680

5.23 Two solutions of 90% and 97% purity are mixed resulting in 21litres of mixture of 94% purity. How much is the quantity of the first solution in the resulting mixture?

(A) 15 litres (B) 12 litres
(C) 9 litres (D) 6 litres

5.24 Two vessels contain a mixture of spirit and water. In the first vessel the ratio of spirit to water is 8:3 and in the second vessel the ratio is 5:1. A 35litre cask is filled from these vessels so as to contain a mixture of spirit and water in the ratio of 4:1. How many liters are taken from the first vessel?

(A) 11litres (B) 22 litres
(C) 16.5 litres (D) 17.5 litres

5.25 In what proportion must water be mixed with milk so as to gain 20% by selling the mixture at cost price of the milk? (Assume that water is freely available)

(A) 1:4 (B) 1:5
(C) 1:6 (D) 1:12

5.26 The average of 13 papers is 40. The average of the first 7 paper is 42 and of the last seven papers are 35. Find the marks obtained in the 7th paper.

(A) 23 (B) 38
(C) 19 (D) 39

5.27 The average score of a cricketer in three matches is22 runs and in two other matches, it is 17 runs. Find the average in all the five matches

(A) 20 (B) 19.6
(C) 21 (D) 19.5

5.28 Average marks obtained by a student in 3 papers is 52 and in the fourth paper be obtains 60 mark. Find his new average.

(A) 54 (B) 52
(C) 55 (D) 53.5

5.29 The average height of 30 girls out of a class of 40 is160 cm and that of the remaining girls is 156 cm. The average height of the whole class is

(A) 158 cm (B) 158.50 cm
(C) 159 cm (D) 157 cm

5.30 The average age of three boys is 15 years. If their ages are in the ration 3: 5: 7, the age of the youngest boy is

(A) 21 years (B) 18 years
(C) 15 years (D) 9 years

5.31 The average of the first ten natural numbers is

(A) 5 (B) 5.5
(C) 6.5 (D) 6

5.32 The average of the first ten whole numbers is

(A) 4.5 (B) 5
(C) 6.5 (D) 6

5.33 Two types of oils having the rates of Rs. 4/kg and Rs. 5/kg respectively are mixed in order to produce a mixture having the rate of Rs. 4.60/kg. What should be the amount of the second type of oil if the amount of the first type of oil in the mixture is 40 kg?

(A) 75 kg (B) 50 kg
(C) 60 kg (D) 40 kg

5.34 A vessel is filled with liquid, 3 parts of which are water and 5 parts syrup. How much of the mixture must be drawn off and replaced with water so that the mixture may be half water and half syrup?

(A) 1/3 (B) 1/4
(C) 1/5 (D) 1/7

5.35 In what ratio should water be mixed with soda costing Rs. 12 per liter so as to make a profit of 25% by selling the diluted liquid at Rs. 13.75 per liter?

(A) 10: 1 (B) 11:1
(C) 1: 11 (D) 12:1

5.36 Tea worth Rs. 126 per kg and Rs. 135 per kg are mixed with a third variety in the ratio 1 : 1 : 2. If the mixture is worth Rs. 153 per kg, the price of the third variety per kg will be

(A) Rs. 169.50 (B) Rs. 170
(C) Rs. 175.50 (D) Rs. 180

5.37 A can contains a mixture of two liquids A and B is the ratio 7: 5. When 9 liters of mixture are drawn off and the can is filled with B, the ratio of A and B becomes 7: 9. How many liters of liquid A was contained by the can initially?

(A) 10 (B) 20
(C) 21 (D) 25

5.38 A milk vendor has 2 cans of milk. The first contains 25% water and the rest milk. The second contains 50% water. How much milk should he mix from each of the containers so as to get 12 liters of milk such that the ratio of water to milk is 3 :5?

(A) 4 litres, 8 litres
(B) 6 litres, 6 litres
(C) 5 litres, 7 litres
(D) 7 litres, 5 litres

5.39 In what ratio must a grocer mix two varieties of pulses costing Rs. 15 and Rs. 20 per kg respectively so as to get a mixture worth Rs. 16.50 kg?

(A) 3 : 7 (B) 5 : 7
(C) 7 : 3 (D) 7 : 5

5.40 In what ratio must water be mixed with milk to gain? 16 2/3% on selling the mixture at cost price?

(A) 1: 6 (B) 6: 1
(C) 2: 3 (D) 4: 3

5.41 In what ratio must a grocer mix two varieties of tea worth Rs. 60 a kg and Rs. 65 a kg so that by selling the mixture at Rs. 68.20 a kg he may gain 10%?

(A) 3 : 2 (B) 3 : 4
(C) 3 : 5 (D) 4 : 5

5.42 Find the ratio in which rice at Rs. 7.20 a kg be mixed with rice at Rs. 5.70 a kg to produce a mixture worth Rs.6.30 a kg.

(A) 1 : 3 (B) 2 : 3
(C) 3 : 4 (D) 4 : 5

5.43 A merchant has 1000 kg of sugar, part of which he sells at 8% profit and the rest at 18% profit. He gains 14% on the whole. The quantity sold at 18% profit is

(A) 400 kg (B) 560 kg
(C) 600 kg (D) 640 kg

5.44 8 litres are drawn from a cask full of wine and is then filled with water. This operation is performed three more times. The ratio of the quantity of wine now left in cask to that of water is 16: 65. How much wine did the cask hold originally?

(A) 18 litres (B) 24 litres
(C) 32 litres (D) 42 litres

5.45 The average weight of 16 boys in a class is 50.25 kg and that of the remaining 8 boys is 45.15 kg. Find the average weights of all the boys in the class.

(A) 47.55 kg (B) 48 kg
(C) 48.55 kg (D) 49.25 kg

5.46 A library has an average of 510 visitors on Sundays and 240 on other days. The average number of visitors per day in a month of 30 days beginning with a Sunday is

(A) 250 (B) 276
(C) 280 (D) 285

5.47 If the average marks of three batches of 55, 60 and 45 students respectively is 50, 55, 60, then the average marks of all the students is

(A) 53.33 (B) 54.68
(C) 55 (D) None of these

5.48 A pupil's marks were wrongly entered as 83 instead of 63. Due to that the average marks for the class got increased by half (1/2). The number of pupils in the class is

(A) 10 (B) 20
(C) 40 (D) 73

5.49 The average weight of A, B and C is 45 kg. If the average weight of A and B be 40 kg and that of B and C be 43 kg, then the weight of B is

(A) 17 kg (B) 20 kg
(C) 26 kg (D) 31 kg

5.50 The average monthly income of P and Q is Rs. 5050. The average monthly income of Q and R is Rs. 6250 and the average monthly income of P and R is Rs. 5200. The monthly income of P is

(A) 3500 (B) 4000
(C) 4050 (D) 5000

5.51 A car owner buys petrol at Rs.7.50, Rs. 8 and Rs.8.50 per liter for three successive years. What approximately is the average cost per liter of petrol if he spends Rs. 4000 each year?

(A) Rs. 7.98 (B) Rs. 8
(C) Rs. 8.50 (D) Rs. 9

5.52 In the first 10 overs of a cricket game, the run rate was only 3.2. What should be the run rate in the remaining 40 overs to reach the target of 282 runs?

(A) 6.25 (B) 6.5
(C) 6.75 (D) 7

5.53 The average of 20 numbers is zero. Of them, at the most, how many may be greater than zero?

(A) 0 (B) 1
(C) 10 (D) 19

5.54 The average weight of 8 person's increases by 2.5 kg when a new person comes in place of one of them weighing 65 kg. What might be the weight of the new person?

(A) 76 kg
(B) 76.5 kg
(C) 85 kg
(D) Data inadequate

Answer Key : Average & Allegation

5.1	C	5.2	C	5.3	B	5.4	A	5.5	C
5.6	B	5.7	C	5.8	C	5.9	D	5.10	D
5.11	B	5.12	C	5.13	A	5.14	C	5.15	D
5.16	D	5.17	A	5.18	B	5.19	B	5.20	B
5.21	B	5.22	B	5.23	C	5.24	A	5.25	C
5.26	B	5.27	D	5.28	B	5.29	B	5.30	B
5.31	C	5.32	D	5.33	C	5.34	A	5.35	B
5.36	C	5.37	C	5.38	C	5.39	A	5.40	B
5.41	C	5.42	B	5.43	C	5.44	B	5.45	B
5.46	C	5.47	B	5.48	C	5.49	C	5.50	B
5.51	B	5.52	C	5.53	D	5.54	B		

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CHAPTER 6

COMPOUND INTEREST & SIMPLE INTEREST

6.1 The simple interest on a sum of money is 1/9 of the principal and the number of years is equal to the rate percentage per annum. Find the rate percentage.

(A) 3% (B) $3\frac{1}{3}$%

(C) 10% (D) 9%

6.2 The difference between the CI and SI on a certain sum of money at 5% per annum for 2 years is Rs.1.50. Find the sum.

(A) Rs 600 (B) Rs 120

(C) Rs 260 (D) Rs 230

6.3 A fixed deposit of Rs 8,000 grows on a CI at 5% per annum. The deposit becomes Rs 8,820 in

(A) 1 year (B) 1.5 years

(C) 4 years (D) 2 years

6.4 The simple interest on a certain sum of money at 4% per annum for 4 years is Rs 80 more than the simple interest on the same sum of money for 3 years at 5% per annum. Find the sum.

(A) 24,000 (B) 28,000

(C) 24,030 (D) None of these

6.5 Find the simple interest on 2500 for 5 years at 10 percent per annum.

(A) 2500 (B) 2125

(C) 2250 (D) 1250

6.6 In what time will Rs2, 000 amount to Rs2, 500 at 10% per annum simple interest?

(A) 2.5 years (B) 1.5 years

(C) 2 years (D) 5 years

6.7 A sum invested at 4% simple interest p.a. grows to Rs648 in 5 years. In two years the same amount at 10% simple interest p.a. will grow to

(A) 2600 (B) 2650

(C) 2648 (D) 2594

6.8 A sum of money amount to Rs1,200 after 3 years and to 21,800 after 6 years, the interest being compounded annually. Find the sum

(A) Rs 1,800 (B) Rs 1,600

(C) Rs 400 (D) Rs 800

6.9 Ravi borrowed 25,000 for 10 years at the rate of 3% per annum SI from Raj. How much interest will Raj earn at the end of this period?

(A) 11,500 (B) 21,000

(C) 215,000 (D) 21507

6.10 If a sum of money at a certain rate of simple interest doubles in 5 years and at a different rate of simple interest becomes three times in 12 years, the better rate of interest is in

(A) case-1

(B) case-2

(C) equal in both cases

(D) none of these

6.11 A certain amount of money compounded annually at r% becomes Rs 1,440 and Rs 1,728 after 2 and 3 years respectively. Find the value of r.
(A) 5% (B) 10%
(C) 15% (D) 20%

6.12 An amount of money becomes 24,840 in 2 years and 25,324 in 3 years on Cl. Find the rate percentage per annum.
(A) 10% (B) 15%
(C) 12% (D) 8%

6.13 In what time does a sum of money become four times at simple interest rate of 5% per annum?
(A) 60 years (B) 61 years
(C) 63 years (D) 65 years

6.14 The SI on Rs982 for 8 months at 6% per annum is (approximately)
(A) Rs 35.68 (B) Rs 40
(C) Rs 32 (D) Rs 39.28

6.15 If a sum on compound interest becomes three times in 4 years, then with the same interest rate, the sum will become 81 times in
(A) 16 years (B) 8 years
(C) 12 years (D) 24 years

6.16 What sum of money will produce Rs150 interest in 5 years at 2.5% p.a. simple interest?
(A) Rs 1500 (B) Rs 1,200
(C) Rs 1,000 (D) Rs 800

6.17 A sum of money at simple interest amount to Rs 1,045 in 5 years and to 1,111 in 6 years. The sum is
(A) Rs 945 (B) Rs 715
(C) Rs 845 (D) Rs 775

6.18 A sum of Rs 1,200 amount to 11,380 in 3 years at simple interest. If the interest rate is increased by 3%, then it would amount to
(A) Rs 1,390 (B) 11,488
(C) Rs 1,428 (D) 11,448

6.19 Divide 11,105 between A and B, so that the amount of A after 5 years is equal to the amount of B after 7 years, the interest being compounded at 10% per annum.
(A) Rs 705, Rs 400
(B) Rs 605, Rs 500
(C) Rs 650, 1455 (D) None of these

6.20 Divide Rs 3 650 into two parts such that the SI on the first part at 6% for 2 years is equal to the SI on the second part at 4% in 3 years. Find the two parts.
(A) Rs 1,900, Rs 1,750
(B) Rs 1,825, Rs 1,825
(C) Rs 2,000, Rs 1,650
(D) Rs 1,800, Rs 1,850

6.21 The population of a town increases 10% half-yearly. What is the population after one and half years, if the initial population is 1,000?
(A) 1210 (B) 1100
(C) 1331 (D) 1300

6.22 The difference between two years and three years interest on a certain sum at 5% CI is Rs 110.25. Find the sum.
(A) Rs 1,000 (B) Rs 2,250
(C) Rs 2,500 (D) Rs 2,000

6.23 A bank offers 5% per annum CI calculated on half-yearly basis. A customer deposited Rs 1,600 each on January 1 and July 1 of a year. The interest he would have gained at the end of the year is
(A) 120 (B) 244
(C) 121 (D) 81

6.24 The difference between the compound interest and the simple interest accrued on an amount of 21,500 in 2 years was 215. What was the rate of interest p.a.?
(A) 20% (B) 10%
(C) 5% (D) None of these

6.25 The rate of interest for the first 2 years is 6% per annum, for the next 3 years is 16% per annum, and for the period beyond 5 years is 20% per annum. If a man gets 26,080 as a simple interest for 6 years, then how much amount did he deposit?

(A) 8,000 (B) 6,400
(C) 7,600 (D) 7,200

6.26 A man borrows 6,720 to be paid back with compound interest at the rate of 10% per annum by the end of 2 years in two equal yearly installments. How much will each installment be?

(A) 3,608 (B) 3,902
(C) Rs 3, 872 (D) 4,048
(E) None of these

6.27 From a sum, one-third is invested at 3%, one-sixth at 6% and the rest at 8%. If the simple interest for 2 years from all these investments isRs600, find the sum.

(A) Rs 4, 000 (B) Rs 5, 000
(C) Rs 5, 400 (D) Rs 8, 400
(E) Rs 6, 000

6.28 The CI and SI on a certain sum for 2 years is Rs 40.80 and Rs 40 respectively. And the rate of interest per annum and the sum

(A) 3%, 425 (B) 4%, Rs 500
(C) 5%, Rs 600 (D) 2%, Rs 620
(E) 4%, Rs 425

6.29 A sum of money doubles itself at compound interest in 10 years. In how many years will it become sixteen times?

(A) 50 years (B) 32 years
(C) 38 years (D) 40 years
(E) None of these

6.30 A sum of money is borrowed and paid back in two annual installments of 21,440 each allowing 20% compound interest. The sum borrowed was

(A) 2,150 (B) 2,200
(C) 2,400 (D) 2,500
(E) None of these

6.31 Find the simple interest on 72,000 at $12\frac{1}{2}$% per annum for 8 months.

(A) 6,000 (B) 7,200
(C) 6,600 (D) 7,800
(E) 27,500

6.32 Manish took a loan from a bank at the rate of 9% p.a. simple interest. After 5 years Manish had to pay 23,600 interest for the period. The principal amount borrowed by him was

(A) 6,800 (B) 7,700
(C) 9,000 (D)8,000
(E) 7,500

6.33 Find compound interest on 212,500 at 6% per annum for two years, compounded annually.

(A) 1,745 (B) 1,240
(C) 1,545 (D) 1,648
(E) 1,345

6.34 If the simple interest on a sum of money at 10% per annum for 2 years is 21,000, then find the compounded interest on the same sum for the same period at the same rate.

(A) 2200 (B) 22050
(C) 12800 (D) 10500
(E) 10000

6.35 A man borrows 36,500 to be paid back with compound interest at the rate of 8% per annum by the end of 2 years in two equal yearly installments. How much will each installment be?

(A) 3,675 (B) 3,645
(C) 3,965 (D) 3,550
(E) 3,735

6.36 The simple interest on a certain sum of money for $4\frac{1}{2}$ years at 12% p.a. is 230 less than the simple interest on the same sum for $5\frac{1}{2}$ years at 10% p.a. Find the sum.

(A) Rs. 2,800 (B) Rs. 4,500
(C) Rs. 3,500 (D) Rs. 4,100
(E) Rs. 3,000

6.37 Find the compound interest on 22 000 for 2 years at 4% p.a., the interest being compounded half-yearly.

(A) 2112 (B) 2157.55
(C) 2158 (D) 2164.86
(E) 2161.27

6.38 If 2400 amounts to 2441 in two years compounded annually, find the rate of interest per annum.

(A) 4% (B) 10%
(C) 5% (D) 8%
(E) 6%

6.39 A sum of money doubles itself at compound interest in 8 years. In how many years will it become eight times?

(A) 40 years (B) 16 years
(C) 32 years (D) 12 years
(E) 24 years

6.40 A sum of money is borrowed and paid back in two annual installments of 21,694 each, with compound, interest at the rate of 10% per annum. The sum borrowed was

(A) 2,740 (B) 2,860
(C) 2,940 (D) 3,050
(E) None of these

6.41 Find the compound interest on 4,500 for 9 months at 16% p.a. compounded quarterly.

(A) 432.85 (B) 561.88
(C) 616.44 (D) 2714.22
(E) None of these

6.42 The difference between the compound interest and simple interest on a certain sum at 10% per annum for 2 years is Rs105, find the sum.

(A) 10,500 (B) 12,050
(C) 20,050 (D) 15,000
(E) 17,500

6.43 The SI on a sum of money is $\frac{9}{16}$ of the principal. Find the rate percent and time, if both are numerically equal.

(A) 6%, 6 years 1
(B) 5 ½ %, $5\frac{1}{2}$ years
(C) $6\frac{1}{2}$%, $6\frac{1}{2}$ years
(D) 8%, 8 years
(E) $7\frac{1}{2}$%, $7\frac{1}{2}$ years

6.44 In what time will 2100 becomes Rs.121 at 10% p.a. compounded annually?

(A) 1.5 years (B) 3 years
(C) 2.5 years (D) 4 years
(E) 2 years

6.45 The compound interest on 5,000 for 4 years at 2% for 1st year 4 % for 2nd year, 8% for 3rd year and 12% for 4th year, will be?

(A) 1,415 (B) 1,055
(C) 1,111 (D) 1,223
(E) 1,714

6.46 The difference between CI (Compound Interest) and SI (Simple Interest) on a sum of Rs.4,000 for 2 years at 5% p.a. payable yearly is

(A) 20 (B) 10
(C) 50 (D) 60
(E) None of these

6.47 The rate of simple interest at which a sum of money becomes three times in 25 years is

(A) 8 % (B) 5 %
(C) 4 % (D) 6 %
(E) None

6.48 If 5,000 becomes 5,700 in a year's time, what will 27,000 become at the end of 5 years at the same rate of simple interest?

(A) 105000 (B) 119000
(C) 127000 (E) None of these
(D) 77000

6.49 A sum of money placed at compound interest doubles itself in 4 years. In how many years will it amount to four times itself?

(A) 12 years (B) 13 years
(C) 8 years (D) 16 years
(E) None of these

6.50 800 becomes 956 in 3 years at a certain rate of simple interest. If the rate of interest is increased by 4%, what amount will 800 become in 3 years?

(A) 1,020.80 (B) 1,025
(C) 1,052 (D) 1,050
(E) None of these

6.51 A and B invest in a business in the ratio 3 : 2. If 5% of the total profit goes to charity and A's share is Rs. 855, the total profit is

(A) Rs. 1425 (B) Rs. 1500
(C) Rs. 1537.50 (D) Rs. 1576

6.52 A, B and C jointly thought of engaging themselves in a business venture. It was agreed that A would invest Rs. 6500 for 6 months, B, Rs. 8400 for 5 months and C, Rs. 10,000 for 3 months. A wants to be the working member for which, he was to receive 5% of the profits. The profit earned was Rs. 7400. Calculate the share of B in the profit.

(A) Rs. 1900 (B) Rs. 2660
(C) Rs. 2800 (D) Rs. 2840

6.53 A, B, C rent a pasture. A puts 10 oxen for 7 months, B puts 12 oxen for 5 months and C puts 15 oxen for 3 months for grazing. If the rent of the pasture is Rs. 175, how much must C pay as his share of rent?

(A) Rs. 45 (B) Rs. 50
(C) Rs. 55 (D) Rs. 60

6.54 A and B started a business in partnership investing Rs. 20,000 and Rs. 15,000 respectively. After six months, C joined them with Rs. 20,000. What will be B's share in total profit of Rs. 25,000 earned at the end of 2 years from the starting of the business?

(A) Rs. 7500 (B) Rs. 9000
(C) Rs. 9500 (D) Rs. 10,000

6.55 Aman started a business investing Rs. 70,000. Rakhi joined him after six months with an amount of Rs. 1,05,000 and Sagar joined them with Rs. 1.4 lakhs after another six months. The amount of profit earned should be distributed in what ratio among Aman, Rakhi and Sagar respectively, 3 years after Aman started the business?

(A) 7 : 6 : 10 (B) 12 : 15 : 16
(C) 42 : 45 : 56

6.56 Arun, Kamal and Vinay invested Rs. 8000, Rs. 4000 and Rs. 8000 respectively in a business. Arun left after six months. If after eight months, there was a gain of Rs. 4005, then what will be the share of Kamal?

(A) Rs. 890 (B) Rs. 1335
(C) Rs. 1602 (D) Rs. 1780

6.57 Arun, Kamal and Vinay invested Rs. 8000, Rs. 4000 and Rs. 8000 respectively in a business. Arun left after six months. If after eight months, there was a gain of Rs. 4005, then what will be the share of Kamal?

(A) Rs. 890 (B) Rs. 1335
(C) Rs. 1602 (D) Rs. 1780

6.58 Simran started a software business by investing Rs. 50,000. After six months, Nanda joined her with a capital of Rs. 80,000. After 3 years, they earned a profit of Rs. 24,500. What was Simran's share in the profit?

(A) Rs. 9,423 (B) Rs. 10,250

(C) Rs. 12,500 (D) Rs. 10,500

6.59 A and B entered into partnership with capitals in the ratio 4 : 5. After 3 months, A withdrew 1/4 of his capital and B withdrew 1/5 of his capital. The gain at the end of 10 months was Rs. 760. A's share in this profit is

(A) Rs. 330 (B) Rs. 360

(C) Rs. 380 (D) Rs. 430

6.60 A, B and C enter into a partnership in the ratio 7/2 :4/3 :6/5 . After 4 months, A increases his share 50%. If the total profit at the end of one year be Rs. 21,600, then B's share in the profit is

(A) Rs. 2100 (B) Rs. 2400

(C) Rs. 3600 (D) Rs. 4000

Answer Key : Compound Interest & Simple Interest

6.1	B	6.2	A	6.3	D	6.4	B	6.5	D
6.6	A	6.7	B	6.8	B	6.9	B	6.10	B
6.11	C	6.12	B	6.13	C	6.14	D	6.15	A
6.16	*	6.17	C	6.18	C	6.19	B	6.20	D
6.21	C	6.22	C	6.23	C	6.24	B	6.25	B
6.26	D	6.27	B	6.28	A	6.29	D	6.30	D
6.31	B	6.32	C	6.33	D	6.34	D	6.35	D
6.36	B	6.37	C	6.38	D	6.39	E	6.40	D
6.41	C	6.42	D	6.43	C	6.44	C	6.45	D
6.46	C	6.47	C	6.48	D	6.49	C	6.50	D
6.51	B	6.52	C	6.53	D	6.54	A	6.55	C
6.56	D	6.57	A	6.58	C	6.59	A	6.60	C

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CHAPTER 7

NUMBER SYSTEM

7.1 The fractional equivalent of 3.23232.....is

(A) $\frac{32}{10}$ (B) $\frac{32}{9}$

(C) $\frac{320}{99}$ (D) $\frac{32}{11}$

7.2 There are four consecutive odd numbers written in ascending order. The product of the first three is 693 and that of the last three is 1287. The first number is

(A) 5 (B) 7

(C) 11 (D) 13

7.3 The least value of X. So that the number 7653X1 is divisible by 9 is

(A) 7 (B) 5

(D) 4 (D) 1

7.4 The least value of X + Y, so that the number 4X1Y0 is divisible by 44 is

(A) 7 (B) 1

(C) 9 (D) 5

7.5 The least value of X so that the number 12121X is divisible by both 7 and 13 is

(A) 2 (B) 9

(C) 4 (D) 7

7.6 The last digit of the number 7^{71} is

(A) 7 (B) 9

(C) 1 (D) 3

7.7 The number in the unit's place of $(788)^{94}$ is

(A) 2 (B) 6

(C) 4 (D) 8

7.8 The digit at the unit's place of the product $(97)^{40} \times (98)^{41} \times (99)^{42}$ is

(A) 8 (B) 6

(C) 4 (D) 2

7.9 If x is a single digit natural number, then digit at unit's place of x^5 is

(A) x-1 (B) x

(C) x+2 (D) x+5

7.10 The digit in the unit place of $(3^3)^{4N} + 1$, where N is any natural number is

(A) 1 (B) 2

(C) 7 (D) 9

7.11 What is the unit's digit in $(37)^{11} \times (6)^{11} \times (18)^6$?

(A) 4 (B) 2

(C) 6 (D) 0

7.12 Find the value $(0.\overline{63} + 0.\overline{37})$

(A) $\frac{6}{23}$ (B) $\frac{100}{99}$

(C) $\frac{99}{100}$ (D) None

7.13 In listing down the numbers from 1 to 1000, how many times the digit 2 is used?

(A) 290 (B) 300

(C) 310 (D) None of these

7.14 What is the unit's digit of $3^{2002} - 2^{2002}$?

(A) 1 (B) 3

(C) 5 (D) 7

7.15 The unit digit in the sum of $264^{102} + 264^{106}$, is

(A) 2 (B) 0
(C) 8 (D) 6

7.16 What is the unit digit is $1237^{125!}$?

(A) 7 (B) 9
(C) 3 (D) 1

7.17 The unit digit in the expression

$(25^{6251} + 36^{528} + 73^{54})$

(A) 4 (B) 0
(C) 6 (D) 5

7.18 How many 3 digit number are completely divisible by 6?

(A) 149 (B) 150
(C) 151 (D) 166

7.19 If the product 4864 x 9 P 2 is divisible by 12, then the value of P is

(A) 2 (B) 5
(C) 6 (D) 1

7.20 If the number 97215 * 6 is completely divisible by 11, then the smallest whole number in place of * will be

(A) 3 (B) 2
(C) 1 (D) 5

7.21 If the number 42573 * is exactly divisible by 72, then the minimum value of * is

(A) 4 (B) 5
(C) 6 (D) 7

7.22 If the number 481 * 673 is completely divisible by 9, then the smallest whole number in place of * will be

(A) 2 (B) 5
(C) 6 (D) 7

7.23 Which natural number is nearest to 9217, which is completely divisible by 88?

(A) 9152 (B) 9240
(C) 9064 (D) 9184

7.24 The largest 4 digit number exactly divisible by 88 is

(A) 9944 (B) 9768
(C) 9988 (D) 8888

7.25 The least positive number that must be subtracted from 200 so that it becomes exactly divisible by 7 is

(A) 3 (B) 13
(C) 4 (D) None of these

7.26 The product of the least common multiple and the greatest common divisor of 90 and 600 is

(A) 2700 (B) 27000
(C) 30000 (D) 54000

7.27 The least number which when divided by 15, 27, 35 & 42 leaving in each case a remainder 7, is

(A) 1987 (B) 1897
(C) 1797 (D) 1977

7.28 The least number which when divided by 35, 45 and 55 leaving the remainders 18, 28 and 38 respectively, is

(A) 3848 (B) 3448
(C) 4338 (D) 4838

7.29 The greatest number that will divide 2629 and 2483 leaving the remainders 4 & 8 respectively, is

(A) 55 (B) 60
(C) 70 (D) 75

7.30 The greatest number that will divide 578, 503 and 528 leaving the same remainder is

(A) 25 (B) 30
(C) 35 (D) 40

7.31 A merchant has three different kinds of milk; 435litres, 493litres and 551litres. Find the least number of cask of equal size required to store all the milk without mixing

(A) 51 (B) 61
(C) 47 (D) 45

7.32 In a school, 408 boys and 312 girls are divided into equal section of either boys or girls alone. The maximum number of boys or girls in a section and the total number of sections, respectively are

(A) 12, 24 (B) 16, 60
(C) 24, 30 (D) 60, 12

7.33 Five bells begin to chime simultaneously. They chime at intervals of 4, 6, 8, 9 & 10 seconds. After what time will they chime again simultaneously?

(A) 240 s (B) 360 s
(C) 480 s (D) 320 s

7.34 Let N be the greatest integer multiple of 8, no two of whose digits are same. The remainder when N is divided by 1000 is

(A) 12 (B) 120
(C) 0 (D) 240

7.35 Let a, b, c, be distinct digits. Consider a two-digit number 'ab' and a three-digit number 'ccb', both defined under the usual decimal number system, if (ab)2 = ccb> 300, then the value of b is

(A) 6 (B) 0
(C) 5 (D) 1

7.36 A 'nice' number is equal to the product of its proper divisors (positive) excluding 1 and the number itself. The sum of the first 10 nice numbers is

(A) 182 (B) 216
(C) 196 (D) 228

7.37 What least number must be subtracted from 893564 so that the resultant number becomes divisible by 144?

(A) 44 (B) 64
(C) 22 (D) None of these

7.38 The sides of a triangular field are of length 2646m, 5157 m and 5634m. The greatest length of the tape by which the three sides may be measured completely is

(A) 27 m (B) 9 m
(C) 18 m (D) 8 m

7.39 The least number, which will leave a remainder of 9when divided by 105, 112, 126 and 168 is

(A) 5049 (B) 5051
(C) 5031 (D) 4095

7.40 What is the remainder when $15 \times 16 \times 17$ is divided by 11?

(A) 10 (B) 9
(C) 8 (D) 7

7.41 What is the remainder when 4^{1000} is divided by 7?

(A) 1 (B) 2
(C) 3 (D) 4

7.42 What is the remainder when 2^{256} is divided by 17?

(A) 1 (B) 2
(C) 8 (D) 4

7.43 Find the number of zeroes in 27!.

(A) 5 (B) 3
(C) 6 (D) 8

7.44 Which is the highest power of 5 which can divided N =(22! + 17894!)?

(A) 4 (B) 8
(C) 16 (D) 24

7.45 A no. X when divided by 289 leaves 18 as the remainder. The same number when divided by 17 leaves Y as the remainder. Find Y.

(A) 2 (B) 1
(C) 3 (D) 7

7.46 Find the greatest fraction out of 2/5, 5/6, 11/12, 7/8.

(A) 2/5 (B) 5/6
(C) 11/12 (D) 7/8

7.47 The remainder when $7^{13}+1$ is divided by 6, is

(A) 2 (B) 1

(C) 3 (D) 4

7.48 The number of zeros in 29! is

(A) 4 (B) 3

(C) 6 (D) 7

7.49 The highest power of 9 dividing 99! completely is

(A) 20 (B) 24

(C) 22 (D) 11

7.50 The reminder when $(2851)^1 \times (2862)^2 \times (2873)^3$ is divided by 23 is

(A) 18 (B) 17

(C) 10 (D) 5

7.51 What is the remainder left after dividing 1! + 2! + 3!+ ..... + 100! by 7?

(A) 0 (B) 5

(C) 21 (D) 14

7.52 A number when divided by 765 leaves a reminder 42. What will be the remainder if the number is divided by 17?

(A) 8 (B) 7

(C) 6 (D) 5

7.53 A number when divided by 145 leaves the remainder 58. What is the remainder if it is divided by 29?

(A) 9 (B) 2

(C) 0 (D) 5

7.54 What least number must be added to 1056, so that the sum is completely divisible by 23?

(A) 2 (B) 3

(C) 18 (D) 21

7.55 The difference of two numbers is 1365. On dividing the larger number by the smaller, we get 6 as quotient and the 15 as remainder. What is the smaller number?

(A) 240 (B) 270

(C) 295 (D) 360

7.56 If n is a natural number, then $(6n^2 + 6n)$ is always divisible by

(A) 6 only (B) 6 and 12 both

(C) 12 only (D) by 18 only

7.57 What will be remainder when $(67^{67} + 67)$ is divided by 68?

(A) 1 (B) 63

(C) 66 (D) 67

7.58 On dividing a number by 56, we get 29 as remainder. On dividing the same number by 8, what will be the remainder?

(A) 4 (B) 5

(C) 6 (D) 7

7.59 A number when divided by 296 leaves 75 as remainder. When the same number is divided by 37, the remainder will be

(A) 1 (B) 2

(C) 8 (D) 11

7.60 In a division sum, the divisor is 10 times the quotient and 5 times the remainder. If the remainder is 46, what is the dividend?

(A) 4236 (B) 4306

(C) 4336 (D) 5336

7.61 When a number is divided by 13, the remainder is 11. When the same number is divided by 17, then remainder is 9. What is the number?

(A) 339

(B) 349

(C) 369

(D) Data inadequate

Answer Key : Number System

7.1	C	7.2	B	7.3	B	7.4	D	7.5	C
7.6	D	7.7	B	7.8	C	7.9	B	7.10	B
7.11	B	7.12	B	7.13	B	7.14	C	7.15	A
7.16	A	7.17	C	7.18	C	7.19	D	7.20	C
7.21	A	7.22	D	7.23	C	7.24	C	7.25	B
7.26	C	7.27	B	7.28	B	7.29	D	7.30	A
7.31	A	7.32	C	7.33	A	7.34	B	7.35	D
7.36	B	7.37	*	7.38	A	7.39	D	7.40	A
7.41	D	7.42	A	7.43	C	7.44	*	7.45	D
7.46	B	7.47	A	7.48	C	7.49	B	7.50	D
7.51	B	7.52	A	7.53	C	7.54	D	7.55	B
7.56	A	7.57	D	7.58	B	7.59	A	7.60	C
7.61	B								

CHAPTER 8

PERMUTATION, COMBINATION & PROBABILITY

8.1 Find the number of different ways in which 4 boys can sit on three different benches.

(A) 9 (B) 12
(C) 24 (D) 28

8.2 How many three digit numbers can be formed using 1, 2, 3, 4, 5 (without repetition)?

(A) 60 (B) 10
(C) 120 (D) 20

8.3 How many numbers which are divisible by 5 and lying between 3000 and 4000 can be formed from the digits 3,4,5,6,7 and 8 (without repetition)?

(A) 6 (B) 12
(C) 24 (D) 48

8.4 There are 10 boys and 10 girls in a class, in how many ways (i) a CR can be selected (ii) a team of 2 students can be selected having 1 boy and 1 girl.

(A) 10, 20 (B) 20, 100
(C) 20, 40 (D) 10, 190

8.5 How many different words that can be formed with the letters of the word MISSISSIPPI?

(A) 45360 (B) 34650
(C) 56340 (D) 65430

8.6 Of the different words that can be formed from the letters of word EXPOUND, how many will begin with E and end with D?

(A) 120 (B) 240
(C) 720 (D) 840

Directions for question 8.7 to 8.12 : Answer the question on the basis of the information given below.

Number of words that can be formed using the letters of the word FIGHTER.

8.7 Using all letters without repetition?

(A) 6 (B) 7^2
(C) 7! (D) 1

8.8 Starting with E.

(A) 6 (B) 5
(C) 6! (D) 5!

8.9 Having terminal letters are F and R

(A) 60 (B) 120
(C) 720 (D) 240

8.10 Having vowels together.

(A) 1440 (B) 120
(C) 24 (D) 48

8.11 Such that F occurs before R.

(A) 7! (B) $7! \times 2$
(C) 7!/2! (D) $6! \times 2$

8.12 Such that F occurs before R and R occurs before E.

(A) $\frac{7!}{3!}$ (B) $7! \times 3!$
(C) $6! \times 3!$ (D) $\frac{8!}{3!}$

8.13 Suppose there are 11 trains from Bablopur to Dholupur and 7 buses from Dholupur to Sharmilapur and 5 taxis from Sharmilapur to Paglapur. In how many different ways a tourist can travel from Bablopur to Paglapur?

(A) 385 (B) 236
(C) 576 (D) 787

Directions for question 8.14 to 8.16 : Answer the question on the basis of the information given below.

There are 8 Men, 10 Women and 12 Children. Then, in how many ways can we make a group?

8.14 Containing 5 Men, 5 Women and 5 Children.

(A) ${}^{8}P_5 + {}^{10}P_5 + {}^{12}P_5$

(B) ${}^{8}C_5 + {}^{10}C_5 + {}^{12}C_5$

(C) ${}^{8}P_5$ X ${}^{10}P_5$ X ${}^{12}P_5$

(D) ${}^{8}C_5$ X ${}^{10}C_5$ X ${}^{12}C_5$

8.15 Containing 10 members.

(A) ${}^{30}P_{10}$ (B) ${}^{30}C_{10}$

(C) 30 (D) 10

8.16 Group of 10 containing at least 6 Men

(A) ${}^{8}C6$ X ${}^{22}C4 + {}^{8}C7$ X ${}^{22}C3 + {}^{8}C8$ X ${}^{22}C2$

(B) ${}^{8}C6$ X ${}^{22}C4$

(C) ${}^{8}P6$ X ${}^{22}P$ 4 + ${}^{8}P$ 7 X ${}^{22}P$ 3 + ${}^{8}C8$ X ${}^{22}P2$

(D) ${}^{8}C6$ X ${}^{22}C2$

8.17 Out of 10 consonants and 4 vowels, how many words can be formed, each containing 3 consonants and 2 vowels?

(A) 86400 (B) 6840

(C) 4800 (D) 720

8.18 If there are 5 different Pinky books ; 6 different Chacha Choudhry books and 8 different Billu books , taking 3 Pinky , 3 Chacha Choudhry and 4 Billu books are arranging in a book shelf.

I. A big book shelf having 1 compartment only, they can be arranged in

II. A book shelf having 3 compartments and we have to arrange Pinky books in 1st compartment; Chacha Choudhry in 2nd and Billu in 3rd.

(A) ${}^{5}P_3$ X ${}^{6}P_3$X${}^{8}P_4$, ${}^{5}P_3$ X ${}^{6}P_3$X${}^{8}P_3$X3!

(B) ${}^{5}C_3$ X ${}^{6}C_3$X${}^{8}C_3$X10!,${}^{5}C_3$ X ${}^{6}C_3$X${}^{8}C_4$X3!

(C) ${}^{5}P_3$ X ${}^{6}P_3$X${}^{8}P_4$, ${}^{5}C_3$ X ${}^{6}C_3$X${}^{8}C_4$X10!

(D) ${}^{5}C_3$ X ${}^{6}C_3$X${}^{8}C_4$X10!,${}^{5}P_3$ X ${}^{6}P_3$X${}^{8}P_4$

Directions for question 8.19 and 8.20 : Answer the question on the basis of the information given below.

Given digits 1, 2, 3, 4, 5, 6, 7, 8, 9. How many different numbers of 5 digits can be formed (without repetition) which are

8.19 Divisible by 2

(A) ${}^{9}P_5$ (B) ${}^{9}C_5$

(C) 4 X ${}^{5}P_4$ (D) 4 X ${}^{8}C_4$

8.20 Divisible by 25

(A) 9P5 (B) 9C5

(C) 2 X 7C3 (D) 2 X 7P3

8.21 How many 3 digit numbers can be formed from the digits 2, 3, 5, 6, 7 and 9 which are divisible by 5 (Without repetition)?

(A) 5 (B) 10

(C) 15 (D) 20

8.22 A dispatch clerk prepared 10 letters & 10 addresses envelopes. What are the total number of ways that exactly 4 letters went into their intended envelope?

(A) 200 (B) 190

(C) 150 (D) None

8.23 Find the number of non-negative integral solutions of the equations.

$$x_1 + x_2 + x_3 + x_4 = 7$$

(A) 3990 (B) 1540

(C) 1995 (D) None

8.24 In how many different ways can the letters of the word SIGNATURE be arranged so that vowels may occupy only the odd positions?

(A) 2100 (B) 5760

(C) 1440 (D) 1728

8.25 How many different ways can the letters of the word OPTICAL be arranged so that the vowels always come together.

(A) 120 (B) 720
(C) 4320 (D) 2160

8.26 All the odd numbers from 1 to 9 are written in every possible order. How many numbers can be formed if repetition is not allowed?

(A) 60 (B) 120
(C) 150 (D) 180

8.27 After group discussion and interview 6 candidates were selected for admission in a college. But unfortunately the number of seats left is 2. So it was left to the principal to select 2 candidates out of them. In how many ways can he select 2 candidates? 6!

(A) 6P2 (B) 6!/2!
(C) 15 (D) 20

8.28 In how many ways can 2 cards be drawn from a full pack of 52 cards such that both the cards are red?

(A) 275 (B) 325
(C) 350 (D) 375

8.29 Ram buys 7 novels from a book fair. Shyam buys 8 novels from the fair, none of which is common with those bought by Ram. They decide to exchange their books one for one. In how many ways can they exchange their books for the first time?

(A) 7! X 8! (B) 7 X 8!
(C) 7! X 8 (D) 56

8.30 How many different words can be made from the word 'EDUCATION' so that all the vowels are always together? (Do not bother about many meaningless words.)

(A) 12,320 (B) 13,460
(C) 14,400 (D) 16,200

8.31 In a cultural festival, 6 programmers are to be staged, 3 on a day for 2 days. In how many ways could the programmers be arranged?

(A) 320 (B) 360
(C) 675 (D) 720

8.32 How many committees of 5 members each can be formed from 8 official and 4 non-official members such that each committee consists of 3 official and 2 non-official members?

(A) 360 (B) 180
(C) 336 (D) 160

8.33 How many committees of 5 members each can be formed from 8 official and 4 non-official members such that a particular official member is never included?

(A) 840 (B) 462
(C) 380 (D) 490

8.34 In an entrance test, a candidate is required to attempt a total of 4 questions which are to be attempted from 2 sections each containing 5 questions. The maximum number of questions that he can attempt from any section is 3. In how many ways can he answer in the test?

(A) 150 (B) 175
(C) 200 (D) 250

8.35 A palindrome is a number that reads the same left to right as it does from right to left, such as 131. How many 6-digit palindromes are there which are even?

(A) 900 (B) 500
(C) 9 x 105 (D) 400

8.36 16 persons are to be seated along two sides of a rectangular table with eight chairs on either side of these A, B, C, D

will sit on one side and E, F will sit on other. Find the number of arrangements possible.

(A) 20 (B) 60
(C) 30 (D) 40

8.37 There are 5 letters and 5 directed envelopes. The number of ways in which all the letters can be put in wrong envelope is

(A) 119 (B) 44
(C) 59 (D) None

8.38 In how many ways can a mixed double tennis game can be arranged from eight married couples if two husband and wife play in the same game.

(A) 192 (B) 96
(C) 174 (D) None of these

8.39 The number of ways in which 5 boys and 5 girls can form a circle such that the boys and girls are alternate is

(A) 5!.5! (B) 4!.5!
(C) 4!.4! (D) None of these

8.40 The probabilities of three mutual exclusive events A, B and C are 2/3, 1/4 and 1/6 respectively. The statement

(A) is true
(B) is false
(C) could be either true or false
(D) cannot be determined

8.41 What is the probability of getting a 2 in the roll of 2 fair dice, given that the sum is 7?

(A) 2/3 (B) 25/36
(C) 11/ 36 (D) 1/3

8.42 In an urn there are 6 red, 4 black and 3 white balls. 3 balls are drawn out of it simultaneously. What is the probability that all the three are of the same color?

(A) 7/220 (B) 9/44
(C) 25/286 (C) 35/286

8.43 A bag contains 8 white and 5 red balls. Three balls are drawn at random. The probability that all the drawn balls are white, is

(A) 8/39 (B) 25/143
(C) 1/15 (D) None of these

8.44 The probability that a leap year selected at random will contain 53 Sundays, is

(A) 1/7 (B) 2/7
(C) 7/366 (D) 26/183

8.45 A box contains 20 electric bulbs, out of which 4 are defective. Two bulbs are chosen at random from this box. The probability that at least one of these is defective, is

(A) 12/19 (B) 7/19
(C) 91/95 (D) None

8.46 N cadets have to stand in a row. If all possible permutations are equally likely, the probability of two particular cadets standing side by side is

(A) 4/N (B) $3/N^2$
(C) 1/2N (D) 2/N

8.47 Two events are mutually exclusive and exhaustive and if the chance of one is 2/3 of the other, then odds in favor of the other are

(A) 2: 3 (B) 1: 3
(C) 3: 1 (D) 3: 2

8.48 If A and B are two events such that P(B)≠ 1, then $P(\bar{A}\,|\bar{B}) =$

(A) 1 — P(A | B)
(B) 1— P(A U B) / P($\bar{B}$)
(C) 1—P($\bar{A}$ | B)
(D) P($\bar{A}$)/P($\bar{B}$)

8.49 The odds against a husband who is 45-year-old, living till 70 is 7: 5 and the odds against his wife who is 36, living till 61 is 5: 3. The probability that at least one of them will be alive 25 years hence, is

(A) 61/96 (B) 5/32
(C) 13/64 (D) None of these

8.50 The probability that an event A occurs in one trial of an experiment, is 0.4. Three independent trials of experiment are performed. The probability that A occurs at least once is

(A) 0.936 (B) 0.784
(C) 0.964 (D) None of these

8.51 A 5-digit number is formed by the digits 1, 2, 3, 4 and 5 without repetition. What is the probability that the number formed is a multiple of 4?

(A) 1/5 (B) 3/5
(C) 2/5 (D) 4/5

8.52 There are 4 envelopes with addresses and 4 concerning letters. The probability that none of the letters go into concerned envelope, is

(A) 19/24 (B) 21/23
(C) 23/24 (D) 9/24

8.53 The probability that a bullet fired from a point will hit the target is 1/3. Three such bullets 3 are fired simultaneously towards the target from that very point. What is the probability that the target will be hit?

(A) 1/27 (B) 1/8
(C) 19/27 (D) 8/27

8.54 Of cigarette smoking population, 70% are men and 30% are women. 10% of these men and 20% of women smoke Wills brand of cigarette. Probability that a person seen smoking a Wills brand to be male is 7

(A) 1/5 (B) 7/13
(C) 5/13 (D) 7/10

8.55 For two events A and B, P(A n B) is

I. not less than P(A) + P(B) - 1
II. not greater than P(A) + P(B)
III. equal to P(A) + P(B) - P(A U B)
IV. equal to P(A) + P(B) + P(A U B)

Which among the following is correct?

(A) Only II and III are true
(B) Only Ill and IV are true
(C) Only I, II and III are true
(D) All of the above are true

8.56 How many arrangements are possible for 4 men and 5 women in a row, so that men occupy the even places

(A) 2! x 4! x 5! (B) 9!
(C) 4! x 5! (D) None of these

8.57 How many signals ran be ni3de using five different flags by raising any number at a time?

(A) 240
(B) 5!
(C) 325
(D) 5! x 4! x 3! x 2!

8.58 Find the number of ways in which 7 persons can be arranged in a line.

(A) 2 x 7! (B) 7!
(C) 8! (D) 6! x 8

8.59 In how many ways a committee of 4 players can be selected from 5 men and 6 women so that men are in majority?

(A) 11C4 (B) 65
(C) 5C2 x 6C2 (D) 125

8.60 In how many ways can 7 letters be posted in 4 letter boxes?

(A) 74 (B) 47
(C) 7P4 (D) 7C4

8.61 In how many ways can we choose a captain and a vice captain assuming from a team of 11 players, one player cannot hold more than one position?

(A) 11C2 (B) 100
(C) 121 (D) 110

8.62 In how many ways a committee of 4 persons can be made out of 3 men and 4 women?

(A) 35 (B) 42
(C) 70 (D) 21

8.63 In how many ways 4 cards can be drawn cut of a deck of 52 cards so that each selection of 4 cards has exactly one king?

(A) 4C4 x 52C3 (B) 4C1 x 53C3
(C) 152005 (D) 69184

8.64 In how many ways 11 different beads can be wronged to form a necklace?

(A) 10!/2 (B) 10!
(C) 11!/2 (D) 11!

8.65 There are 11 distinct articles. Find out the number of ways of selecting at least one out of them.

(A) $2^{11} + 1$ (B) 2^{11}
(C) 11! – 1 (D) $2^{11} - 1$

8.66 How many five-digit numbers are there, when the repetition of the digits is allowed?

(A) 90000 (B) 9000
(C) 900 (D) 90!

8.67 Out of five boys and two girls, a group of 4 is to be selected. If group contains three boys and one girl, then the number of ways to select the group is

(A) 10 (B) 30
(C) 35 (D) 20

8.68 In how many ways a committee of 5 people can be made out of 9 people?

(A) 15120 (B) 45
(C) 126 (D) 120

8.69 In how many ways the letters of the word OPTIONS' can be arranged so that ail the vowels always come together?

(A) 5! x 31 2! (B) 4! + 3!/2!
(C) 7!/2! (D) 71 – 3!/2!

8.70 In how many ways 6 kites can be selected from 5 green kites, 4 red kites and 4 blue kites so that each selection consists of 2 kites of each color?

(A) 22 (C) 1716
(B) 360 (D) 60

8.71 A group consists of 5 boys and 4 girls. In how many ways a team of 4 members can be selected so that the team has at least one boy and one girl?

(A) 420 (B) 120
(B) 60 (D) 180

8.72 How many 7-digit telephone numbers can be formed using the digits 0 to 9 if each number starts with 57 and digits are not repeated?

(A) 336 (B) 720
(C) 6720 (D) 2520

8.73 What is the number of ways of choosing 4 cards belonging to four different suits from a pack of 52 playing cards?

(A) 52 (B) 48
(C) $(12)^4$ (D) $(13)^4$

8.74 In how many ways 16 different things can be divided equally among 4 persons? 16!

(A) 16!/4! (B) 16!/4
(C) 4 x 4! (D) $16!/(4!)^4$

8.75 How many 5 letter words can be formed using the letter of the word 'TALENT' which contain both Ts?

(A) 120 (B) 360
(C) 240 (D) 300

8.76 How many words can be formed using all the letters of the word SIMULTANEOUS'?

(A) 10! (B) 10!/(2!*2!)
(C) 12!/(2!X2!) (D) 12!

8.77 Four different blue balls and three different red balls are kept in a bag. In how many different ways four balls can be chosen from the bag?

(A) 30 (B) 40
(C) 25 (D) 35

8.78 Fourteen persons are to be seated around two circular tables having 8 chairs and 6 chairs respectively. In how many different ways 14 persons can be seated? 14!

(A) 14!
(B) 14!/(8!6!)
(C) 8! x 6!
(D) 14!/(8!6!)X7!X5!

8.79 Sixteen persons are to be seated around a square table having four chairs placed equidistant along each side. Find the number of ways in which they can sit.

(A) 16! (B) 15!
(C) 16!/4! (D) 4! x 4!

8.80 In how many different ways can the letters of the word 'ARRANGEMENT' be arranged?

(A) 11!
(B) 11!/8!
(C) 11!/(2!x 2!x 2! x 2!)
(D) 10!
(E) None of these

8.81 A group of 10 students comprises of 5 boys and 5 girls. In how many ways could they be arranged in a row so that the boys and girls occupy alternate positions?

(A) 10! (C) 8! x 2!
(C) None of these (B) 5! x 5! x 2
(D) 16!

8.82 Everybody in a room shakes hands with each other. The total number of handshakes is 66. The total number of persons in the room is

(A) 10 (C) 12
(E) 17 (B) 11
(D) 13

8.83 There are 8 chairs named A, B, C, D, E, F, G and H placed around the circular table. In how many ways can 8 people be arranged in these chairs?

(A) 8! (B) 7!
(C) 4! (D) 9!
(E) 7!/2

8.84 In how many ways 5 blue, 4 pink and 2 white balloons can be arranged in a row if balloons of similar color are indistinguishable?

(A) 11! (B) 40
(C) 11!/(5! + 4! + 2!) (D) 6930

8.85 In how many ways can 8 people be seated in a row on a bench of 6 seats such that no seats is left unoccupied?

(A) 19440 (B) 6720
(C) 720 (D) 48

8.86 In how many ways 6 boys and 4 girls can be seated in a row so that no two girls are together?

(A) 6! x 7C4 (B) 6! x 4!
(C) 10!/4! (D) 4!x 10C4

Directions for questions 8.87 to 8.89 : Answer the questions on the basis of the information given below. In a group, there are 6 men, 5 women and 4 children.

8.87 In how many ways a committee of 3 persons can be made so that all are women?

(A) 10 (B) 20
(C) 60 (D) 15

8.88 In how many ways a committee of 3 persons can be made so that 2 are men and 1 is child?

(A) 19 (B) 36
(C) 24 (D) 180
(E) None of these

8.89 In how many ways a committee of 4 persons can be made?

(A) 1440 (B) 720
(C) 1365 (D) 1155
(E) None of these

8.90 All the odd numbers from 1 to 9 are written in every possible order. How many five digit numbers can be formed if repetition is not allowed?

(A) 120 (B) 7500
(C) 720 (D) 15120

8.91 How many different words can be made from the word 'EDUCATION' so that all the vowels are always together?

(A) 91 (B) 9!/5!
(C) 5!x 5! (D) 5! x4!
(C) 9!/(5! x 5!)

8.92 How many committees of 5 members each can be formed from 8 official and 4 non-official members such that a particular official member is never included?

(A) 12C5 – 11C1 (B) 11C6
(C) 462 (D) 12C6
(E) 12C5 – 1

8.93 In an entrance test, a candidate is required to attempt a total of 4 questions which are to be attempted from 2 sections each containing 5 questions. The maximum number of questions that he can attempt from any section is 3. In how many ways can he answer the test?

(A) 150 (B) 100
(C) 200 (D) 250
(E) 450

8.94 How many committees of 5 members each can be formed from 8 official and 4 non-official members if each committee consisting of 3 official and 2 non-official members?

(A) 360 (B) 180
(C) 336 (D) 160
(E) 240

8.95 The number of ways in which 5 boys and 5 girls can form a circle such that the boys and girls are alternate is

(A) 51x 5! (B) 4! x 5!
(C) 41 x 4! (D) 2 x x 4!
(E) None of these

8.96 How many 2 digit even numbers can be formed from the digits 0, 1, 2, 3, 4, 5, 6 and 7 if the digits can be repeated?

(A) 28 (B) 18
(C) 16 (D) 24
(E) 32

8.97 In how many ways 4 men and 4 women can be seated along a circular table for lunch so that they are alternate?

(A) 144 (B) 36
(C) 576 (D) 5040
(E) 288

8.98 If there are 7 points in a plane out of which 3 are collinear, then the number of straight lines formed by joining them, are

(A) 21 (B) 20
(C) 19 (D) 18
(E) 12

Directions for questions 8.99 to 8.103 : Answer the questions on the basis of the information given below.

Some groups have to be formed from a collection of men teachers and women teachers. The distribution of men teachers and women teachers are as per the following table.

	Men teachers	Women teachers
Mathematics	5	3
Physics	4	2
Chemistry	3	3
Total	12	8

Find the number of ways based on the conditions given in each of the following question. Each man teacher and woman teacher teach exactly one subject.

8.99 A group of 5 persons that has only mathematics teachers.

(A) 5! (B) 8! — 3!
(C) 56 (D) 336
(E) None of these

8.100 A group of 8 that has equal number of men teachers and women teachers.

(A) 12P4 x 8P4 (B) 12C4X8C4
(C) 20C8 (B) 12P4 + 8P4
(D) 12C4 x 8C4

8.101 A group of 4 chemistry teachers that has at least a woman teacher.

(A) 12 (B) 15
(C) 27 (D) 30
(E) 81

8.102 A group of 6 that has 3 mathematics teachers, 2 physics teachers and a chemistry teacher.

(A) 5040 (B) 4050
(C) 38760 (D) 77
(E) None of these

8.103 A group of 3 physics teachers, which has 2 men teachers and a woman teacher.

(A) 20 (B) 24
(C) 12 (D) 14
(E) None of these

8.104 What is the probability of getting exactly 2 tails in a single throw of three coins?

(A) 1/8 (B) 3/8
(C) 5/8 (D) 7/8

8.105 Two fair dice are thrown. Find the probability of getting the sum as

I. A number divisible by 2 or 4
II. A number divisible by 2 and 4

(A) 2/3, ¾ (B) ½, ¼
(C) ¾, 2/3 (D) 2/3, ½

8.106. Three dice are thrown together. The probability that some of all faces up will be more than 15 is?

(A) 5/108 (B) 5/6
(C) 1/54 (D) 5/18

8.107 A card is selected from pack of 52 cards. What is the probability that

I. It is not a club?
II. It is a king or a diamond?
II. It is a heart or a jack or a queen.

(A) 3/4, 4/13, 19 /52
(B) 1/4, 5/13, 21/ 52
(C) 3/4, 6/13, 17/ 5
(D) 1/4, 6 /13, 17/52

8.108 A box contains 2 purple, 3 red and 4 orange balls. Three balls are drawn in succession with replacement. Find the probability that

I. The first is purple, second is red and third is orange.
II. None are yellow

(A) 7/243, 5/27 (B) 8/243, 5/27
(C) 7/243, 1 (D) 8/243, 1

8.109 In the above question, answer the above questions when the balls are drawn in succession without replacement?

(A) 1/21, 5/21 (B) 1/21, 1
(C) 2/21, 1 (D) 2/21, 3/7

8.110 A locker has 3 numbered rings, each ring is marked from 0 to 9, what is the probability of getting the lock opened by randomly choosing a number from each ring?

(A) 3/1000 (B) 1/1000
(C) 7/1000 (D) 9/1000

8.111 A number is chosen from numbers 1 to 200 (both inclusive). Find the probability that it is divisible by 4 or 6.

(A) 61/2000 (B) 67/200
(C) 71/200 (D) 73/200

8.112 The odds against A solving a certain problem are 4 to 3 and odds in favor of B solving the same problem are 7 to 5. Find the probability that the problem will be solved.

(A) 2/23 (B) ¾
(C) 15/84 (D) 16/21

8.113. The ratio of number of dancers and singers in academy A and B are 3:1 and 2:5 respectively. A person is selected to play a lead role in a forthcoming movie. The chance that the person is selected from A is 2/3 . Find the probability that the lead role will be played by a dancer?

(A) 29/56 (B) 17/42
(C) 25/42 (D) None of these

8.114 Arpit can take a maximum of 4 shots to hit a bird in the sky. The probability of hitting the bird at first, second, third and forth shots is 0.4, 0.3, 0.2 and 0.1 respectively. Find the probability that the gun hits the bird.

(A) 0.0024 (B) 0.9976
(C) 0.3024 (D) 0.6976

8.115 If on an average 1 bulb out of every 10 is broken, find the chance that out of every 5 bulb expected, at least four will light up?

(A) 5/18 (B) 7/18
(C) 207/210 (D) None of these

8.116 In a certain industry, a worker has 25% chance of getting an occupational disease. What is the probability that out of 5 workers

I. All will get the disease
II. 4 will get the disease
III. 4 or more will get the disease

(A) 3/1024, 17/1024, 9/64
(B) 5/1024, 13/1024, 7/64
(C) 1/1024, 15/1024, 1/64
(D) 7/1024, 19/1024, 3/64

8.117 A bag contains 5 stripes and 3 solid balls, and 4 are successively drawn out and not replaced. What is the chance that they are alternately of different pattern?

(A) 1/6 (B) 1/5
(C) 1/4 (D) 1/7

8.118 In an exam, there are 500 candidates. 150 pass the first paper and 350 pass the second paper. 50 candidates pass both the papers. Find out the probability that a candidate selected at random has failed in both the papers.

(A) 1/5 (B) 1/10
(C) 3/10 (D) None of these

8.119 2 coins are to be picked from a carry bag having 6 one rupee coins and 9 two rupee coins. Find the probability that both of them are two rupee coin.

(A) 17/49 (B) 27/35
(C) 12/35 (D) None of these

8.120 A dart is thrown to a square target ABCD. What is the probability that it lies within the circle touching all the sides of the square, if it is given that the dart hits the target?

(A) π (B) 2π
(C) $\pi/4$ (D) $\pi/2$

Directions for question 8.121 to 8.123 : Answer the question on the basis of the information given below.

Two dice are thrown. Find the probability of getting

8.121 A sum less than 5 or a sum of 8.

(A) 30/36 (B) 6/36
(C) 5/36 (D) 11/36

8.122 A sum of 8 or both the numbers is even.

(A) 14/36 (B) 9/36
(C) 5/36 (D) 11/36

8.123 A sum less than 5 or both the numbers are even.

(A) 14/36 (B) 7/36
(C) 9/36 (D) 11/36

8.124 In a lottery, there are 10 prizes and 25 blanks. A lottery is drawn at random. What is the probability of getting a prize?

(A) 1/10 (B) 2/5
(C) 2/7 (D) 5/7

8.125 A box contains 5 green, 4 yellow and 3 white marbles. 3 marbles are drawn at random. What is the probability that they are not of same color.

(A) 3/44 (B) 3/55
(C) 2/55 (D) 41/44

8.126 In a class, 30% opted French, 20% offered opted German and 10% both, what is the probability that he has opted French or German?

(A) 2/5 (B) ¾
(C) 3/5 (D) 3/10

8.127 Cards numbered 1 to 20 are mixed up and then a card is drawn at random. What is the probability that the card drawn bears a number which is multiple of three?

(A) 3/10 (B) 3/20
(C) 2/5 (D) 1/2

8.128 A box contains 20 LEDs, out which 4 are defectives. 2 are chosen at random. Find the probability that at least one of them is defective, is:

(A) 4/19 (B) 7/19
(C) 12/19 (D) 21/95

Answer Key : Permutation & Combination and Probability

8.1	C	8.2	C	8.3	C	8.4	B	8.5	C
8.6	C	8.7	C	8.8	C	8.9	D	8.10	B
8.11	C	8.12	A	8.13	A	8.14	D	8.15	B
8.16	A	8.17	A	8.18	A	8.19	D	8.20	D
8.21	C	8.22	C	8.23	B	8.24	C	8.25	D
8.26	C	8.27	C	8.28	D	8.29	B	8.30	C
8.31	D	8.32	B	8.33	D	8.34	B	8.35	B
8.36	C	8.37	B	8.38	C	8.39	B	8.40	C
8.41	C	8.42	B	8.43	B	8.44	C	8.45	B
8.46	B	8.47	B	8.48	C	8.49	B	8.50	A
8.51	B	8.52	D	8.53	B	8.54	D	8.55	A
8.56	C	8.57	C	8.58	D	8.59	C	8.60	D
8.61	D	8.62	C	8.63	B	8.64	A	8.65	D
8.66	B	8.67	C	8.68	D	8.69	A	8.70	D
8.71	B	8.72	D	8.73	D	8.74	A	8.75	B
8.76	C	8.77	B	8.78	C	8.79	B	8.80	B
8.81	A	8.82	E	8.83	D	8.84	A	8.85	C
8.86	B	8.87	C	8.88	D	8.89	B	8.90	A
8.91	B	8.92	A	8.93	E	8.94	D	8.95	B
8.96	C	8.97	B	8.98	D	8.99	B	8.100	B
8.101	C	8.102	D	8.103	A	8.104	C	8.105	C
8.106	B	8.107	A	8.108	B	8.109	B	8.110	C
8.111	C	8.112	B	8.113	C	8.114	B	8.115	B
8.116	C	8.117	C	8.118	B	8.119	C	8.120	C
8.121	D	8.122	C	8.123	B	8.124	B	8.125	C
8.126	B	8.127	C	8.128	B				

CHAPTER 9

DATA INTERPRETATION

Directions for Q. 1 to 7 : Refer to the following information for the questions. Loan distributed by 5 banks (in lakhs)

Banks	2010	2011	2012	2013	2014
X	18	23	45	30	70
Y	27	33	18	41	37
Z	29	29	22	17	11
W	31	16	28	32	43
R	13	19	27	34	42
Total	118	120	140	154	203

9.1 What was the percentage increase of disbursement of loans of bank X from 2011 to 2012?

(A) > 50%

(B) < 50%

(C) 50 %

(D) cannot be determined

9.2 In which year was the disbursement of the loan of all the banks put together least compared to the average disbursement of loans over the year?

(A) 2011 (B) 2014

(C) 2010 (D) 2013

9.3 For which of the bank did the loan disbursement continuously decreased over the years.

(A) X (B) Y

(C) Z (D) W

9.4 If the minimum target for a year is 20% of the total disbursement of loans in the previous year, how many banks chase the target in 2012?

(A) 4 (B) 2

(C) 3 (D) 5

9.5 In which of the banks was disbursement of loan was more than 40% of the disbursement of all banks together in 2013?

(A) 1 (B) 2

(C) 3 (D) None of these

9.6 In which year was the total loan disburse by banks X and Y is equal to that of W and R?

(A) 2010 (B) 2011

(C) 2014 (D) None of these

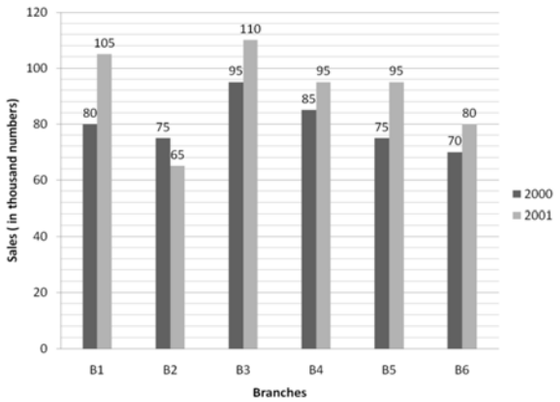
9.7 What is the average percentage growth for the bank R from 2010 to 2014?

(A) 30% (B) 16.66 %

(C) 43% (D) None of these

Directions for Q. 8 to 12: The bar graph given below shows the sales of books (in thousand number) from six branches of a publishing company during two consecutive years 2000 and 2001.

Sales of Books (in thousand numbers) from Six Branches - B1, B2, B3, B4, B5 and B6 of a publishing Company in 2000 and 2001.



9.8 What is the ratio of the total sales of branch B2 for both years to the total sales of branch B4 for both years?

(A) 2:3 (B) 3:5
(C) 4:5 (D) 7:9

9.9 Total sale of branch B6 for both the years is what percent of the total sales of branches B3 for both the years?

(A) 68.54% (B) 71.11%
(C) 73.17% (D) 75.55%

9.10 What percent of the average sales of branches B1, B2 and B3 in 2001 is the average sales of branches B1, B3 and B6 in 2000?

(A) 75% (B) 77.5%
(C) 82.5% (D) 87.5%

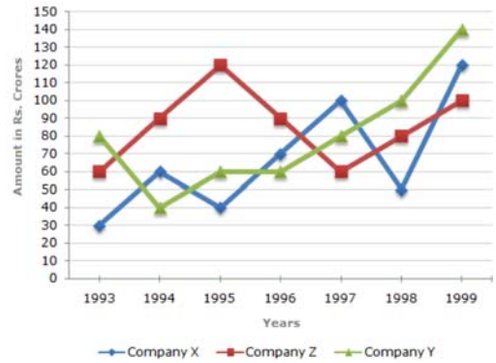
9.11 What is the average sale of all the branches (in thousand numbers) for the year 2000?

(A) 73 (B) 80
(C) 83 (D) 88

9.12 Total sales of branches B1, B3 and B5 together for both the years (in thousand numbers) is?

(A) 250 (B) 310
(C) 435 (D) 560

Directions for Q 13 to 17: Study the following line graph and answer the questions. Exports from Three Companies over the Years (in Rs. crore)



9.13 For which of the following pairs of years the total exports from the three Companies together are equal?

(A) 1995 and 1998
(B) 1996 and 1998
(C) 1997 and 1998
(D) 1995 and 1996

9.14 Average annual exports during the given period for Company Y is approximately what percent of the average annual exports for Company Z?

(A) 87.12% (B) 89.64%
(C) 91.21% (D) 93.33%

9.15 In which year was the difference between the exports from Companies X and Y the minimum?

(A) 1994 (B) 1995
(C) 1996 (D) 1997

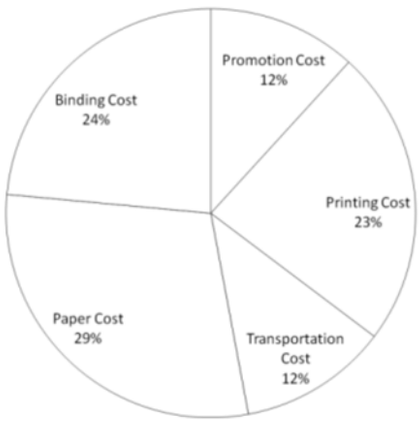
9.16 What was the difference between the average exports of the three Companies in 1993 and the average exports in 1998?

(A) Rs. 15.33 crores
(B) Rs. 18.67 crores
(C) Rs. 20 crores
(D) Rs. 22.17 crores

9.17 In how many of the given years, were the exports from Company Z more than the average annual exports over the given years?

(A) 2 (B) 3
(C) 4 (D) 5

Directions for Q. 18 to 22: The following pie-chart shows the percentage distribution of the expenditure incurred in publishing a book. Study the pie-chart and the answer the questions based on it.



9.18 If for a certain quantity of books, the publisher has to pay Rs. 30,600 as printing cost, then what will be amount of promotion cost to be paid for these books? (approx.)

(A) Rs. 19,450 (B) Rs. 21,200
(C) Rs. 16,500 (D) None

9.19 What is the central angle of the sector corresponding to the expenditure incurred on promotion cost?

(A) 42.3° (B) 47°
(C) 43.2° (D) None of these

9.20 The price of the book is marked 20% above the (C)P. If the marked price of the book is Rs. 180, then what is the cost of the paper used in a single copy of the book?

(A) Rs. 36 (B) Rs. 37.50
(C) Rs. 43.5 (D) None of these

9.21 If 5500 copies are published and the transportation cost on them amounts to Rs. 82500, then what should be the selling price of the book so that the publisher can earn a profit of 25%?

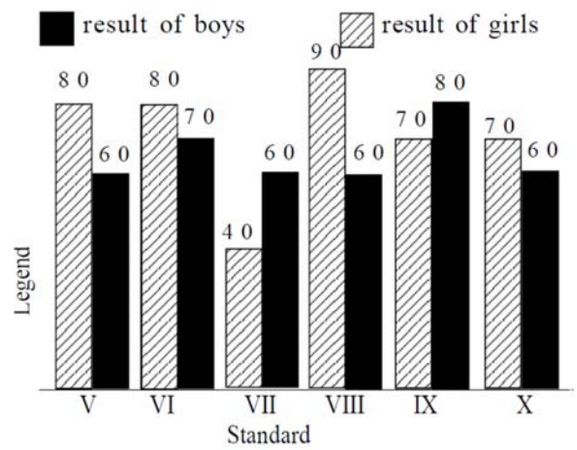
(A) Rs. 187.50 (B) Rs. 156.25
(C) Rs. 175 (D) None of these

9.22 Promotion cost on the book is less than the printing cost by

(A) 5% (B) 33.5%
(C) 45% (D) None of these

Directions for Q. 23 to 24: Study the following graph and answer the questions given

Result of Annual Examination in a High School



9.23 In which standard is the difference between the results of girls and boys maximum?

(A) V (B) VII
(C) X (D) VIII

9.24 In which standard is the result of boys more than the average result of the girls?

(A) VII (B) IX
(C) X (D) VIII

9.25 In which pair of standards the results of girls and boys in inverse proportion?

(A) V & X (B) VI & IX
(C) VI & VIII (D) V & IX

9.26 In which standard is the result of the girls less than the average result of the boys of the school?

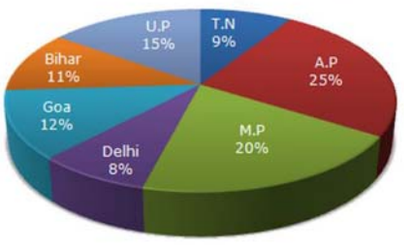
(A) IX (B) VIII
(C) VI (D) VII

9.27 In which standard is the failure of girls lowest?

(A) IX (B) VII
(C) VIII (D) V

Directions for Q 28 to 32: Study the following graph and the table and answer the questions given below. Data of different states regarding population of states in the year 1998

Data of different states regarding population of states in the year 1998



Total population of the given States = 3276000.

States	Sex and Literacy wise Population Ratio			
	Sex		Literacy	
	M	F	Literate	Illiterate
A.P	5	3	2	7
M.P	3	1	1	4
Delhi	2	3	2	1
Goa	3	5	3	2
Bihar	3	4	4	1
U.P.	3	2	7	2
T.N.	3	4	9	4

9.28 What will be the percentage of total number of males in U.P., M.P. and Goa together to the total population of all the given states?

(A) 25% (B) 27.5%
(C) 28.5% (D) 31.5%

9.29 What was the total number of illiterate people in AP and M.P. in 1998?

(A) 876040 (B) 932170
(C) 981550 (D) 1161160

9.30 What is the ratio of the number of females in T.N. to the number of females in Delhi?

(A) 7: 5 (B) 9: 7
(C) 13: 11 (D) 15: 14

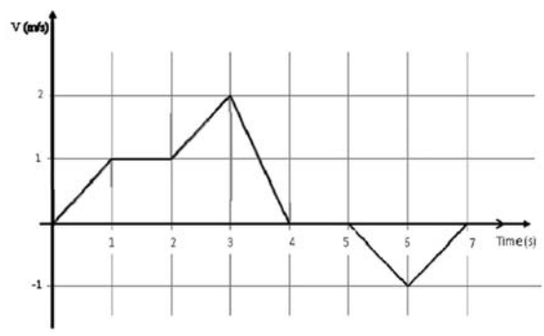
9.31 What was the number of males in U.P. in the year 1998?

(A) 254650 (B) 294840
(C) 321470 (D) 341200

9.32 If in the year 1998, there was an increase of 10% in the population of U.P. and 12% in the population of M.P. compared to the previous year, then what was the ratio of populations of U.P. and M.P. in 1997?

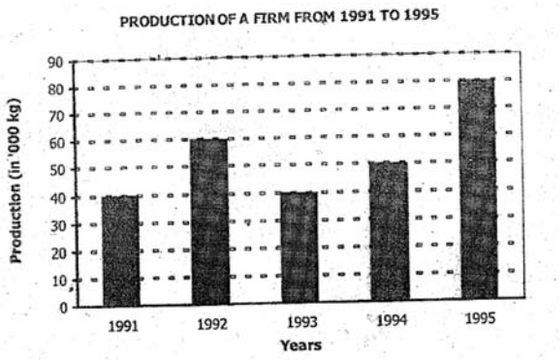
(A) 42: 55 (B) 48: 55
(C) 7: 11 (D) 4: 5

9.33 The velocity V of a vehicle along a straight line is measured in m/s and plotted as shown with respect to time in seconds. At the end of the 7 seconds how much will the odometer reading increase by (in m)?



(A) 0 (B) 3
(C) 4 (D) 5

Directions for Q. 34 to 38: Study the following graph and answer the questions given



9.34 The average annual percentage increase in production in 1995 over 1991 is

(A) 25% (B) 30%
(C) 50% (D) 40%

9.35 For how many of the given years is production greater than the average production for the given period?

(A) 2 (B) 3
(C) 4 (D) 1

9.36 If the cost of production is Rs. 10/kg in 1991 and increases @ 10% p.a., then what is the total coat of production in 1993? (inRs. lakh)

(A) 4.84 (B) 5.63
(C) 3.68 (D) 4.12

9.37 If all that is produced is sold, what is the total value of sales (in Rs. lakh) in 1992 if the sale value per kg in 1992 is 150% of production cost per kg in 1992?

(A) 9 (B) 11
(C) 13 (D) 9.9

9.38 The showing maximum percentage change in production over any preceding year is

(A) 1992 (B) 1993
(C) 1994 (D) 1995

Directions (39 to 42) : The following table shows the data for few companies for the year 1994. Refer to the table to answer the questions that follow

Recruitment	Company							
	A		B		C		Total	
	E	T	E	T	E	T	E	T
Manager		4			5	5		
Employer	20		10	6				15
Total			25		5	10	60	30

9.39 How many Managers were recruited?

(A) 10 (B) 20
(C) 30 (D) 35

9.42 How many Employees were terminated in Type A companies?

(A) 2 (B) 3
(C) 4 (D) 5

9.40 What was the overall increase in recruitment (New employment-Terminations) in Type A companies

(A) 30 (B) 19
(C) 20 (D) 22

9.41 If the total number of Managers at the beginning of 1994 ware 65, then what was the percentage increase in it during 1994?

(A) 21% (B) 23%
(C) 6% (D) 8%

9.42 In which of the: Mowing categories did the maximum Net Recruitment take place? (Net Recruitment = Employment - Termination)

(A) A, Employee (B) B, Manager
(C) A, Manager (D) C, Employee

Directions (43 – 47) : The following tables shows the educational background of 600 couples. Refer to the table to answer the questions that below.

Husband \ Wife	Post Graduate	Graduate	10-12 class	Less than 10th class	Total
Post Graduate	30	65	35	20	150
Graduate	35	85	50	30	200
10-12 class	40	17	38	45	140
Less than 10th class	07	15	38	50	110
Total	112	182	161	145	600

9.43 For how many couples, the educational level of both the spouses are equal?

(A) 195 (B) 203

(C) 200 (D) 207

9.44 The number of husbands who had lower qualifications than their wives is ___ % of the couples surveyed.

(A) 33.4 (B) 32.1

(C) 28.2 (D) 25.3

9.45 The average number of husbands in any category whose wives are post graduates is

(A) 27 (B) 30

(C) 28 (D) 31

9.46 Among the husbands with educational background of 10 — 12 class, in which category is the number of wives less than the average number of husbands in the given category?

(A) Post graduate

(B) Graduate

(C) 10-12 class

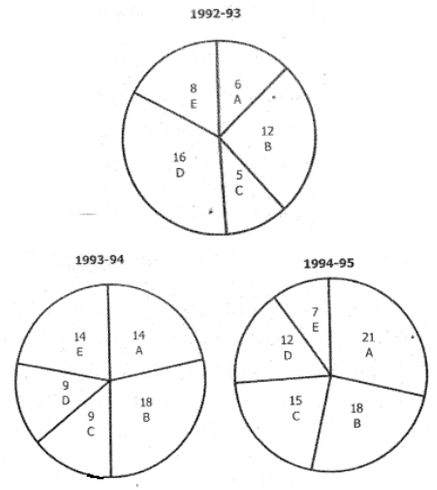
(D) Less than 10th class

9.47 The number of husbands in a particular category which has more than the average number of husbands in any category, bears a ratio of _____ to the total number of husbands.

(A) 1: 3 (B) 1: 4

(C) 1: 5 (D) 2: 5

Directions (48 – 52) : The following pie charts show the number of cotton bales (in lakhs) produced by five states A, B, C, D and E during 3 years. Study the following pie charts carefully and answer the questions given below:



9.48 The production of state D in. 1993-94 was how many times its production in 1994-957

(A) 1.33 (B) 0.75

(C) 0.56 (D) 1.77

9.49 In which of the states there is a steady increase in the production of cotton during the given period?

(A) A and B (B) A and C

(C) B only (D) D and E

9.50 If each bale of cotton weights 100kg, how many tons of cotton was produced by state E during the given period?

(A) 2900 (B) 290000

(C) 29000 (D) 2900000

9.51 How many states showing below average production i.e. (average of 1992-93, 1993-94, and 1994-95) in 1992-93 showed above average production in 1993-94?

(A) 4 (B) 5

(C) 3 (D) 1

9.52 Which of the following statements is false?

(a) States A and E showed the same production in 1993-94.

(b) There was no improvement in the production of cotton in the state B during' 1993-94, and 1994-95.

Answer Key : Data Interpretation

9.1	A	9.2	C	9.3	C	9.4	C	9.5	C
9.6	B	9.7	B	9.8	D	9.9	B	9.10	C
9.11	D	9.12	C	9.13	D	9.14	D	9.15	C
9.16	B	9.17	C	9.18	B	9.19	C	9.20	C
9.21	B	9.22	B	9.23	D	9.24	B	9.25	C
9.26	D	9.27	C	9.28	C	9.29	C	9.30	C
9.31	C	9.32	C	9.33	D	9.34	C	9.35	B
9.36	B	9.37	B	9.38	D	9.39	C	9.40	C
9.41	B	9.42	A	9.43	D	9.44	C	9.45	D
9.46	C	9.47	C	9.48	C	9.49	C	9.50	B
9.51	C	9.52	B						

CHAPTER 10

BLOOD RELATION

10.1 Tina told Math, "The girl I met yesterday at the beach was the youngest daughter of the brother-in-law of my friend's mother." How is the girl related to Tina's friend?

(A) Cousin (B) Daughter
(C) Niece (D) Friend
(E) Anut

10.2 A woman going with a boy is asked by another woman about the relationship between them. The woman replied, "My maternal uncle and the uncle of his maternal uncle is the same." How is the lady related with that boy?

(A) Grandmother and Grandson
(B) Mother and Son
(C) Aunt and Nephew
(D) None of these

10.3 A's father's brother's father is D. How is D related to A?

(A) Father (B) Grandfather
(C) Uncle (D) Son

10.4 A's father's wife's mother is C, whose only child is D. How is D related to A's brother?

(A) Grandmother (B) Aunt
(C) Sister (D) Mother

10.5 Pointing to, a photograph Ramesh said, “she is the sister of my father's mother's only child's son.” How is the person in the photograph related to Ramesh?

(A) Sister (B) Aunt
(C) Mother (D) Cousin

10.6 Introducing Reena, Monika said, “She is the only daughter of my father's only daughter.” How is Monika related to Reena?

(A) Aunt
(B) Niece
(C) Cousin
(D) Data inadequate
(E) None of these

10.7 B's father's father is the husband of C's mother's mother. How is B related to C?

(A) Brother
(B) Sister
(C) Cousin
(D) Cannot be determined

10.8 Pointing towardsa girl in the picture, Sarita said. "She is the mother of Neha whose father is my son." HowSarita related to the girl in the picture?

(A) Mother
(B) Aunt
(C) Cousin
(D) Data inadequate
(E) None of these

10.9 Pointing to a woman, Naman said, "She is the daughter of the only child of my grandmother." How is the woman related to Naman?

(A) Sister
(B) Niece
(C) Cousin
(D) Data inadequate
(E) None of these

10.10 A and B are brothers. C and D are sisters. A's son is D's brother. How is B related to C?

(A) Father (B) Grandfather
(C) Brother (D) Uncle
(E) None of these

10.11 A, B and C are sisters. D is the brother of E and E is the daughter of B.How is A related to D?

(A) Sister (B) Cousin
(C) Niece (D) Aunt

Directions (10.12-10.14) : Read the following information and answer the questions given below it:

A is the father of C. But C is not his son. E is the daughter of C. F is the spouse of A. B is the brother of C. D is the son of B. G is the spouse of B. His the father of G.

10.12 Who is the grandmother of D?

(A) A (B) C
(C) F (D) H

10.13 Who is the son of F?

(A) B (B) C
(C) D (D) E

10.14 C is A's father's nephew: D is A's, cousin but not the brother of C. How is D related to C?

(A) Father (B) Mother
(C) Aunt Directions

Directions (10.15-10.18) : Read the information given below and answer the questions that follow:

(i) In a family of six persons. A, B, C, D, E and F, there are two married couples.
(ii) D is grandmother of A and mother of B.
(iii) C is wife of B and mother of F.
(iv) F is the granddaughter E.

10.15 What is C to A?

(A) Daughter
(B) Grandmother
(C) Mother
(D) Cannot be determined
(E) None of these

10.16 How many male members are there in the family?

(A) Two
(B) Three
(C) Four
(D) Cannot be determined
(E) None of these

10.17 Which of the following is tine?

(A) A is brother of F
(B) A is sister of F
(C) D has two grandsons
(D) B has two daughters
(E) None of these

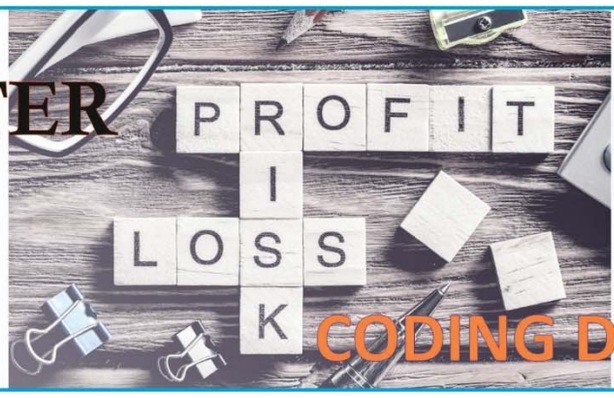
10.18 Who among the following is one of the couples?

(A) CD (B) DE
(C) EB (D) EB
(E) Cannot be determined

Answer Key : Blood Relation

10.1	B	10.2	B	10.3	A	10.4	C	10.5	C
10.6	B	10.7	C	10.8	B	10.9	B	10.10	D
10.11	B	10.12	C	10.13	D	10.14	B	10.15	B
10.16	B	10.17	B	10.18	B				

CHAPTER 11



CODING DECODING

Directions for questions 11.1 to 11.10 : In each of the following questions, find the missing number in the series.

11.1 3, 5, 7, 11, 13, 17, ____.
(A) 19 (B) 21
(C) 23 (D) 25

11.2 1, 2, 6, 15, 31, 56, 92, ____.
(A) 150 (B) 128
(C) 141 (D) 149

11.3 64, 32, 92, 46, 102, 51, 122, 61, 148, ____.
(A) 74 (B) 78
(C) 82 (D) 88

11.4 1, 1, 2, 4, 3, 9, 4, 16, 5, 25, 6, ___.
(A) 35 (B) 42
(C) 49 (D) 36

11.5 25, 216, 49, 512, 81, ____.
(A) 1000 (B) 729
(C) 100 (D) 121

11.6 2, 4, 6, 8, 10, 12, 22, 120, 14, 16, ___ , ____.
(A) 224, 30 (B) 18, 20
(C) 30,224 (D) 26, 160

11.7 4, 4, 12, 16, 36, 36, 108, ___.
(A) 64 (B) 66
(C) 82 (D) 86

11.8 0, 24, 120, 336, ____.
(A) 729 (B) 738
(C) 672 (D) 720

11.9 4, 36, 140, 364, _____.
(A) 728 (B) 810
(C) 928 (D) 756

11.10 21, 9, 21, 11, 21, 13, 21, ____.
(A) 14 (B) 15
(C) 21 (D) 23

Directions for questions 11.11 to 11.15 : In each of the following questions, various terms of a letter series are given, with one or more terms missing. Choose the missing term from the given alternatives.

11.11 A, Z, X, B, V, T, C, R, ___ , ____.
(A) P, D (B) E, O
(C) O, Q (D) Q, E

11.12 V, I, T, G, P, C, J, ____.
(A) K (B) W
(C) V (D) O

11.13 AZ, BY, CX, ___.
(A) EF (B) IJ
(C) TU (D) DW

11.14 CE, GI, KM, OQ, ____.
(A) SU (B) TV
(C) RT (D) TW

11.15 a___cb___ac___b___bc___ca___ab
(A) a b c a b c (B) b c a a b c
(C) b c a b c a (D) a b c b c a

Directions for questions 11.16 to 11.20 : The two terms given on the left side of:: are related to each other in some ways. Find the missing term on the right hand side of : : which will form the same relationship with the given term.

11.16 BEGK: ADFJ :: PSVY : ?
(A) ROUX (B) ORUX
(C) LQUT (D) LOQT

11.17 AZBY: CXDW :: EVFU : ?
(A) GTHS (B) GHTS
(C) GSTH (D) TGSH

11.18 ACEG: IKMO :: QSUW : ?
(A) YZCE (B) YACD
(C) YACE (D) YBCE

11.19 2: 4: : 5: ___.
(A) 7 (B) 10
(C) 25 (D) All the above

11.20 6: 18: : 4: ?
(A) 2 (B) 6
(C) 8 (D) 16

11.21 If in a certain language, MADRAS is coded as NBESBT, how is BOMBAY coded in that code?
(A) CPNCBX (B) CPNCBZ
(C) CPOCBZ (D) CQOCBZ

11.22 In a certain code, TRIPPLE is written as SQHOOKD. How is DISPOSE written in that code?
(A) CHRONRD (B) DSOESPI
(C) ESJTPTF (D) ESOPSID

11.23 In a certain code, CONDENSER is written as CNESR. How is MIGRATION written in that code?
(A) MAGNI (B) MGANI
(C) MGAIN (D) MIAGN

11.24 In a certain code, 'FLEPS' is written as UOVKH. How is MEDALS written in that code?
(A) NWVOZH (B) NVWZOH
(C) NVZWHO (D) NVWHOZ

11.25 If PALAM could be given the code number 43, what code number can be given to SANTACRUZ?
(A) 75 (B) 85
(C) 120 (D) 123

11.26 If Z = 52 and ACT = 48, then BAT will be equal to
(A) 39 (B) 41
(C) 44 (D) 46

11.27 If white is called blue, blue is called red, red is called yellow, yellow is called green, green is called black, black is called violet and violet is called orange, what would be the color of human blood?
(A) Red (B) Green
(C) Yellow (D) Violet

11.28 If MASTER is coded as 411259, then POWDER will be coded as
(A) 765439 (B) 765439
(C) 765459 (D) 765549

11.29 In a certain code language, '743' means 'mangoes are good'; '657' means 'eat good food' and '934' means 'mangoes are ripe'. Which digit means 'ripe' in that language?
(A) 9 (B) 4
(C) 5 (D) 7

11.30 In a certain code language, '123' means 'hot filtered coffee' ; '356' means 'very hot day' and '589' means 'day and night'. Which digit stands for 'very'?
(A) 9 (B) 5
(C) 8 (D) 2
(E) 6

11.31 Arrange the given words Alphabetical Order and choose the one that comes first.
(A) Wasp (B) Waste
(C) War (D) Wrinkle
(E) Wrist

11.32 Arrange the given words Alphabetical Order and choose the one that comes first.

(A) Praise (B) Practical
(C) Prank (D) Prayer
(E) Practices

11.33 If the words in the sentence, "She showed several sample snaps" are rearranged in the alphabetical order, which will be the middle word?

(A) snaps (B) sample
(C) several (D) showed
(E) she

11.34 In the following question, arrange the given words in the sequence in which they occur in the dictionary and then choose the correct sequence.

1. Preach 2. Praise
3. Precinct 4. Precept
5. Precede

(A) 2, 1, 5, 4, 3 (B) 2, 1, 3, 4, 5
(C) 2, 5, 1, 4, 3 (D) 1, 2, 5, 4, 3

11.35 How many letters are there in the word 'CREATIVE' which have as many letters between them in the word as in the alphabet?

(A) 1 (B) 2
(C) 3 (D) 4
(E) None of these

11.36 The following question is based on the following alphabet series.

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z

Which letter is exactly midway between H and S in the given alphabet?

(A) L (B) M
(C) N (D) O
(E) No such letter

11.37 Find the next term of the following series:

(i) 2, 3, 5, 7, 11, _____, 17
(A) 9 (B) 15
(C) 13 (D) 14

(ii) 43, 44, 48, 57, 73, ____
(A) 98 (B) 97
(C) 87 (D) 99

(iii) 291, 170, ____, 40, 15, 6
(A) 76 (B) 112
(C) 89 (D) 100

11.38 Find the wrong term :

(i) 2, 3, 10, 38, 172
(A) 192 (B) 10 (C) 38
(D) 2 (E) 3

(ii) 8 19 52 151 447
(A) 19 (B) 8 (C) 52
(D) 447 (E) 151

(iii) 4 2 3 7.5 26.75
(A) 26.75 (B) 7.5 (C) 3
(D) 2 (E) 4

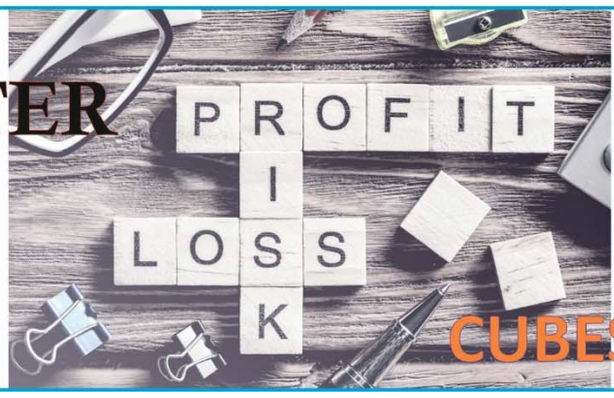
(iv) 2 3 10 40 172 885 5346
(A) 3 (B) 885 (C) 40
(D) 172 (E) 10

(v) 15 18 20 29 45 70 106
(A) 18 (B) 20 (C) 29
(D) 45 (E) 70

Answer Key : Coding Decoding

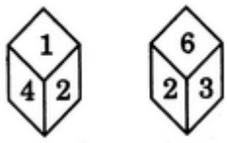
11.1	A	11.2	C	11.3	A	11.4	D	11.5	A
11.6	C	11.7	A	11.8	D	11.9	D	11.10	B
11.11	A	11.12	D	11.13	C	11.14	D	11.15	D
11.16	C	11.17	B	11.18	C	11.19	B	11.20	C
11.21	D	11.22	C	11.23	D	11.24	D	11.25	C
11.26	A	11.27	C	11.28	C	11.29	C	11.30	D
11.31	E	11.32	E	11.33	B	11.34	D	11.35	C
11.36	D	11.37	D, B, C	11.38	C, D, D, D, E				

CHAPTER 12



CUBES & DICES

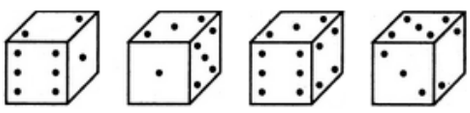
12.1 What will be the number at the bottom, if 5 is at the top; the two positions of the dice being as given below?



(i) (ii)

(A) 1 (B) 2
(C) 3 (D) 6

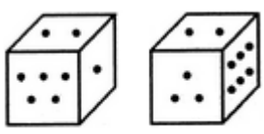
12.2 If the total number of dots on opposite faces of a cubical block is always 7, find the figure which is correct.



(1) (2) (3) (4)

(A) Fig.1 (B) Fig.2
(C) Fig.3 (D) Fig.4

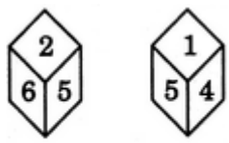
12.3 Two positions of a block are given below. When 1 is at the top, which number will be at the bottom?



(i) (ii)

(A) 2 (B) 3
(C) 4 (D) 6

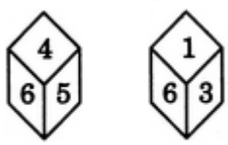
12.4 What number is opposite 3 in the figure shown below? The given two positions are of the same dice whose each surface bears a number among 1, 2, 3, 4, 5 and 6.



(i) (ii)

(A) 2 (B) 4
(C) 5 (D) 6

12.5 Two positions of a dice are shown below. Identify the number at the bottom when the top is '3'?



(i) (ii)

(A) 2 (B) 4
(C) 5 (D) 6

12.6 Three different positions X, Y and Z of a dice are shown in the figures given below. Which number lies at the bottom face in position X?

(X) (Y) (Z)

(A) 2
(B) 3
(C) 6
(D) cannot be determined

12.7 A dice is numbered from 1 to 6 in different ways. If 2 is opposite to 3 and adjacent to 4 and 6, then which of the following statements is necessarily true?

(A) 1 is opposite to 5

(B) 4 is opposite to 6

(C) 4 is adjacent to 2 and 6

(D) 1 is adjacent to 2 and 3

12.8 Two positions of a dice are shown below. When number 1 is on the top, what number will be at the bottom?

(i) (ii)

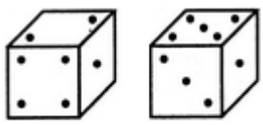
(A) 2

(B) 3

(C) 5

(D) Cannot be determined

12.9 Two positions of a cube are shown below. When the number 4 will be at the bottom, then which number will be at the top?



(i) (ii)

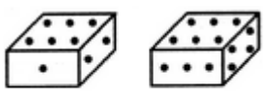
(A) 3

(B) 5

(C) 6

(D) Cannot be determined

12.10 Two positions of a block are shown below: When six is at the bottom, what number will be at the top?



(i) (ii)

(A) 1 (B) 2

(C) 4 (D) 5

Directions (12.11 – 12.15) : A wooden cube is painted blue on all the four adjoining sides and green on two opposite sides i.e. top and bottom. It is then cut at equal distances at right angles four times vertically and two times horizontally. Study the diagram and answer the following questions.

12.11 How many cubes will have one face painted only in Blue?

(A) 2 (B) 1

(C) 4 (D) 3

12.12 How many cubes will have one face painted only in Green?

(A) 1 (B) 2

(C) 3 (D) 4

12.13 How many cubes arte formed in all?

(A) 24 (B) 32

(C) 27 (D) None

12.14 How many cubes will have at least three sides painted.

(A) 6 (B) 2

(C) 3 (D) None

12.15 How many cubes will have no face painted at all?

(A) 5 (B) 3

(C) 2 (D) None

Directions (12.16 – 12.20) : A cube is colored red on two opposite faces. Blue on two adjacent faces and yellow on the two remaining faces. It is then cut into two halves along the plane parallel to the red faces. One piece is then cut into four equal cubes and the other one into 32 equal cubes.

12.16 How man cubes do not have any colored face?

(A) 2 (B) 4

(C) 8 (D) None

12.17 How many cubes do not have any red face?

(A) 16 (B) 24
(C) 20 (D) None

12.18 How many cubes have at least two colored faces?

(A) 20 (B) 24
(C) 28 (D) None

12.19 How many cubes have each a yellow face with other faces blank?

(A) 16 (B) 14
(C) 17 (D) None

12.20 How many cubes have at least one blue face?

(A) 14 (B) 20
(C) 16 (D) None

Directions (12.21 – 12.25) : A cube is painted red on two adjacent faces and black on the faces opposite to the red faces and green on the remaining faces is cut into sixty-four smaller cubes of equal size.

12.21 How many cubes are there which have no face painted?

(A) 0 (B) 4
(C) 8 (D) None

12.22 How many cubes have only one face painted?

(A) 8 (B) 16
(C) 24 (D) None

12.23 How many cubes have less than three faces painted?

(A) 8 (B) 24
(C) 28 (D) None

12.24 How many cubes are there with three faces painted?

(A) 8 (B) 4
(C) 16 (D) None

12.25 How many cubes have one face green and one of the adjacent faces black or red?

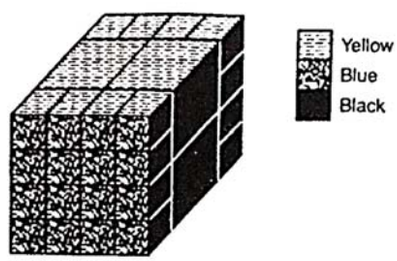
(A) 8 (B) 24
(C) 28 (D) None

12.26 A cube is painted red on two adjacent faces and on one opposite face, yellow on two opposite faces and green on the remaining face. It is then cut into 64 equal cubes.

How many cubes have only one red colored face?

(A) 8 (B) 16
(C) 4 (d) None

Directions (12.27 – 12.36) : A solid cube has been painted yellow, blue and black on pairs of opposite face. The cube is the cut into 36 smaller cubes such that 32 cubes are of the same size while 4 others are of bigger size. Also no face of any of the bigger cubes is painted blue.



12.27 How many cubes have at least one face painted blue?

(A) 0 (B) 16
(C) 8 (D) None

12.28 How many cubes have only one face painted.

(A) 12 (B) 4
(C) 0 (D) None

12.29 How many cubes have at least two faces painted?

(A) 8 (B) 20
(C) 24 (D) None

12.30 How many cubes have two or more faces painted.

(A) 36 (B) 28
(C) 24 (D) None

12.31 How many cubes only three faces painted?

(A) 8 (B) 2
(C) 4 (D) None

12.32 How many cubes do not have any of their faces painted yellow?

(A) 0 (B) 8
(C) 16 (D) None

12.33 How many cubes have at least one of their faces painted black?

(A) 0 (B) 16
(C) 20 (D) None

12.34 How many cubes have at least one of their fares painted yellow or blue?

(A) 36 (B) 32
(C) 16 (D) None

12.35 How many cubes have no face painted?

(A) 0 (B) 12
(C) 8 (D) 16

12.36 How many cubes have two faces painted yellow and black respectively?

(A) 0 (B) 12
(C) 8 (D) 16

Directions (12.37 and 12.38) : A cube is painted blue on all faces is cut into 125 cubes of equal size. Now, answer the following questions

12.37 How many cubes are not painted on any face?

(A) 8 (B) 18
(C) 27 (D) None

12.38 How many cubes are painted on one face only?

(A) 8 (B) 36
(C) 16 (D) None

Directions (12.39 – 12.43) : A cuboid of dimensions (4 cm x 3 cm x 3 cm). The block is painted yellow on the pair of opposite surfaces of dimensions (4 cm x 3cm). Remaining two opposite surfaces of dimensions (4 cm x 3 cm) are painted red. And two surfaces of dimensions (3 cm x 3 cm) are painted with green colors. Now the block is divided among cubes of dimensions (1 cm x 1 cm 1 cm)?

12.39 Flow many smaller cubes will have one surface painted?

(A) 16 (B) 14
(C) 12 (D) None

12.40 How many cubes will have no surfaces painted?

(A) 1 (B) 2
(C) 4 (D) None

12.41 In how many cubes all the three colors appear?

(A) 24 (B) 20
(C) 8 (D) None

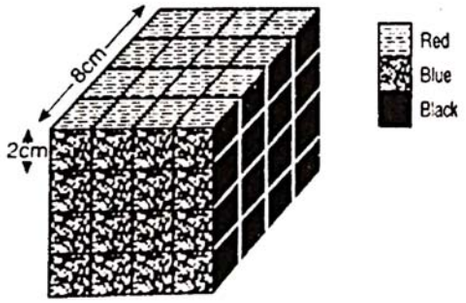
12.42 How many cubes will have only two surfaces painted?

(A) 12 (B) 20
(C) 16 (D) None

12.43 How many cubes will have at least one surface painted?

(A) 32
(B) 18
(C) 24
(D) None of these

Directions (12.44 – 12.50) : A solid cube each side 8 cm has been painted red, blue and black on pairs of opposite faces. It is then cut into cubical block of each side 2 cm.



12.44 How many cubes have no face painted?

(A) 0 (B) 4

(C) 8 (D) None

12.45 How many cubes have only one face painted?

(A) 8 (B) 24

(C) 36 (D) None

12.46 How many cubes have only two faces?

(A) 16 (B) 28

(C) 16 (D) None

12.47 How many cubes have three faces painted?

(A) 0 (B) 4

(C) 6 (D) 8

12.48 How many cubes have three faces painted with different colors?

(A) 0 (B) 4

(C) 8 (D) 12

12.49 How many cubes have two faces painted red and black and all other faces unpainted?

(A) 4 (B) 8

(C) 16 (D) 32

12.50 How many cubes have only one face painted red and all other faces unpainted?

(A) 4 (B) 8

(C) 12 (D) 16

Answer Key : Cubes and Dices

12.1	D	12.2	A	12.3	B	12.4	A	12.5	B
12.6	B	12.7	B	12.8	B	12.9	C	12.10	C
12.11	C	12.12	C	12.13	C	12.14	D	12.15	B
12.16	B	12.17	C	12.18	C	12.19	C	12.20	D
12.21	A	12.22	B	12.23	C	12.24	B	12.25	C
12.26	B	12.27	C	12.28	C	12.29	B	12.30	D
12.31	A	12.32	C	12.33	B	12.34	C	12.35	D
12.36	C	12.37	C	12.38	B	12.39	C	12.40	C
12.41	C	12.42	D	12.43	C	12.44	A	12.45	B
12.46	C	12.47	B	12.48	C	12.49	C	12.50	D

CHAPTER 13

DIRECTION SENSE

Directions : The given questions are pertaining to movement of a person or of a vehicle in a given direction using sense of direction, you are required to determine the location of the person or vehicle, after the person or vehicle has covered a certain distance, taking turns towards right or left.

13.1 Suchit travels 7 km north, then turns right and walks 3 km. He again turns to his right and move-a 7 km forward. How many km is Suchit away from the place of his starting the journey?

(A) 7 km (B) 3 km
(C) 6 km (D) 14 km

13.2 Riyaz drives to North of her place of stay at A and find after travelling 25 km that she has driven in the wrong direction. She then turns to the right and travels 2 km and then again turns right and drives straight another 25 km. How much distance she has now to cover to go back to the point from where she started?

(A) 25 km (B) 2 km
(C) 4 km (D) 50 km

13.3 Rachit travels 10 km North turns left and travels 4 km and then again turns right and covers another 5 km. He then turns to right and travels another 4 km. How far is he from the point of starting his journey?

(A) 15 km (B) 4 km
(C) 5 km (D) 10 km

13.4 Sparsh and Rabee both start from a point towards North. Sparsh turns to left after walking 10 km. Rabee turns to right after walking the same distance. Sparsh waits for some time and then walks another 5 km, whereas Rabee walks only 3 km. They both then return to the South and walk 15 km forward. How far is Sparsh from Rabee?

(A) 15 km (B) 10 km
(C) 8 km (D) 12 km

13.5 A taxi driver commenced his journey from a point and drove 10 km towards North and turned to his left and drove another 5 km. After waiting to meet one of his friends, he turned to his right and continued to drive another 10 km. He has covered a distance of 26 km so far but in which direction is he now heading?

(A) North (B) East
(C) West (D) South

13.6 There is a ring road connecting points A, B. C and D. The road is in a complete circular form but having several approach roads leading to the center.

Exactly in the center of the ring road there is a tree which is 20 km from point A on the circular road. You have taken a round of the circular road starting from point A and finish at the same point after touching points B. C and D. You then drive 20 km interior towards the tree from point A and from there reach somewhere in between B and C on the ring road. How much distance you have to travel from the tree to reach the point between B and C on the ring road?

(A) 20 km (B) 15 km
(C) 80 km (D) 40 km

13.7 A tourist drives 10 km towards East and turns to right hand aide and takes a drive of another 3 km. He then drives towards West (turning to his right) another 3 km. He then turns to his left and walks another 2 km. afterwards, he turns to his right and travels 7 km. How far is he from his starting point and in which direction?

(A) 10 km East (B) 9 km North
(C) 8 km West (D) 5 km South

13.8 Rachit walks 30 m towards south. Then turns to his right and starts walking straight till he completes another 30 in. Then again turtling to his left he walks for 20 m. He then turns to his left and walks for 30 m. How far is he from his initial position?

(A) 50 m (B) 30 m
(C) 10 m (D) 60 m

13.9 Vishakha drove her car for 30 km due North. Then she turned left and drove for 40 km. She then turned left again and drove yet another 30 km. Again she turned left and drove her car 50 km. How far she actually drove her car from the initial position?

(A) 40 km (B) 50 km
(C) 30 km (D) None of these

13.10 Sankar ran 20 m to the east. then he turned left and walked for 15 m. then turned right and went 25 m and then turned right again and went 15 m. How far was Sankar from the starting point?

(A) 45 m (B) 35 m
(C) 25 m (D) 15 m

13.11 If you start running from a point towards north and after covering 4 km you turn to your left and run 5 km and then again turn to left and run 5 km and then turn to left again and run another 6 km and before finishing you take another left turn and run 1 km. How many km are you from the place you started?

(A) 1 km (B) 2 km
(C) 3 km (D) 4 km

13.12 The door of Adil's house faces the East. From the back side of his house, he walks straight 50m, then turns to the right and walks 50 m again, finally, he turns towards left and stops after walking 25m. Now Adil is in which direction from the starting point?

(A) South-East (B) North-East
(C) South-West (D) North-West

13.13 Two buses start from the opposite points of a main road, 150 km apart. The first bus runs of 25 km and takes a' right and then runs for 15 km. It then turns left and runs for another 25 km and takes the direction back to reach the main road. In the meantime, due to a minor breakdown, the other bus has run only 35 km along the main road. What would

be the distance between the two buses at this point?

(A) 65 km (B) 75 km
(C) 80 km (D) 85 km

13.14 Kushal walks 10 km towards North. From here he walks 6 km towards south. Then, he walks 3 km towards East. How far and in which direction is he with reference to his starting point?

(A) 5 km West
(B) 7 km West
(C) 7 km East
(D) 5 km North-East

13.15 If A is to the south of B and C is to the East of B, in what direction is A with respect to C?

(A) North-East (B) North-West
(C) South-East (D) South-West

13.16 A is 10 in South-West of B. C is 40m south-East of B. Then. C is in which direction of A?

(A) East (B) West
(C) North-East (D) South

13.17 A child is looking for his father. He went 90 meters in the East before turning to his right. He went 20 meters before turning to his right again to look for his father at his uncle's place 30 meters from this point. His father was not there. From here he went 100 meters to the North before meeting his father in a street. What is the smallest distance between the starting point and his father's position?

(A) 80 meters (B) 100 meters
(C) 140 meters (D) 260 meters

13.18 Nishant walks 30 meter in the north direction, after that he took a right turn and walks 40 meter. After that he took a right turn and walks 40 meter more and finally he took a right turn and stop after walking 40 meter. Find the distance of Nishant from the initial position?

(A) 5 (B) 10
(C) 15 (D) 20
(E) None of these

13.19 A man walks 40 meters towards north. Then turning to his right, he walks 50 meter. Then turning to his left, he walks 30 meters. Again he turns to his left and walks 40 meters. How far is he from initial position?

(A) $40\sqrt{2}$ (B) $50\sqrt{2}$
(C) $60\sqrt{2}$ (D) $50\sqrt{3}$
(E) None of these

13.20 Riya goes 30 km towards North from a fixed point, then after turning to her right she goes 15 km. After this she goes 30 km after turning to her right. How far and in what direction is she from her starting point?

(A) 10 m east (B) 15 m east
(C) 20 m east (D) 25 m east
(E) None of these

13.21 A person starts walking from his home in west direction and after walking 20 meter he took a left turn and walk 30 meters. Now he took a right turn and walks 10 meter to reach the bus stand. Find the distance between home and stand

(A) $20\sqrt{2}$ (B) $30\sqrt{2}$
(C) $40\sqrt{2}$ (D) $50\sqrt{2}$
(E) None of these

13.22 A girl rides her bicycle southwards, then turned right and rode 2 km and again turned right and rode 4 km. She found himself exactly 2 km east from the

starting point. How far did she ride southwards initially?

(A) 2 km (B) 3 km
(C) 4 km (D) 6 km
(E) None of these

13.23 One day raj left home and walked 5 km northwards, turned right and walked for 10km and turned left and walked 5 km more and finally turned left and walked 10km. How many kilometres will he have to walk to reach his home straight?

(A) 15 km (B) 10 km
(C) 5 km (D) 20 km
(E) None of these

Direction (13.24 – 13.28) : There are 5 friends A, B, C, D and E standing randomly. B is to the northeast of E. D is 2km to the east of E, who is 6km to the west of A. C is to the northwest of D and in the line of EB. D is 4km the south of B.

13.24 In which direction is C with respect to A?

(A) South west (B) South east
(C) Northeast (D) Northwest
(E) None of these

13.25 In which direction is A with respect to B?

(A) Southeast (B) Southwest
(C) Northwest (D) Northeast
(E) None of these

13.26 What is the distance between D and A?

(A) 5 km (B) 4 km
(C) 6 km (D) 3 km
(E) None of these

13.27 What is the shortest distance between B and A?

(A) $5\sqrt{7}$km (B) $4\sqrt{2}$km
(C) $6\sqrt{2}$km (D) $3\sqrt{5}$km
(E) None of these

13.28 What is the shortest distance between B and E?

(A) $2\sqrt{7}$km (B) $5\sqrt{2}$km
(C) $7\sqrt{2}$km (D) $2\sqrt{5}$km
(E) None of these

Direction (13.29 and 13.30) : Bala walked 25km towards west, took a left turn and walked 15km. He again took a left turn and walked 30km. He then took a right turn and stopped.

13.29 Now he was facing which direction ?

(A) West (B) East
(C) South (D) North
(E) None of these

13.30 Instead of turning right at the end if he took left and walked 20km, what is the shortest distance to his starting point?

(A) $3\sqrt{7}$km (B) $2\sqrt{5}$km
(C) $7\sqrt{2}$km (D) $5\sqrt{2}$ km
(E) None of these

13.31 Raghav starts walking in south direction and walks a distance of 7 meters. Now he tooks a left turn and walk 6m. Again he takes a left turn and walk 15m and reached a point P. Find the distance between starting point and P and in which direction is the person from the initial point.

(A) 10 m, south east
(B) 10 m, north east
(C) 20 m, North West
(D) 20 m, south west
(E) None of these

13.32 Dheepthi started from point A in south direction. After walking for 4 m she turned to her right and walked 5 m. Now she turned to her left and walked 3 m after which she turned to her right. Now she walked 4 m and turned to her right

again and walked 15 m. Now finally she turned to her right and after walking for 7 m, she stopped at point B. What is the distance AB?

(A) $2\sqrt{34}$ m (B) 34 m

(C) $3\sqrt{17}$ m (D) $2\sqrt{17}$ m

(E) None of these

13.33 Riya started from her home to office. She started in east direction. After walking for 4 m she turned to her left and walked 8 m, now she turned left and walked 2 m. After this she turned to right walked 4 m. Now after turning to her right she walked 13 m and reached office. Find the shortest distance between her office and home.

(A) 87 m (B) $9\sqrt{41}$ m

(C) 26 m (D) $3\sqrt{41}$ m

(E) None of these

Answer Key : Direction Sense

13.1	B	13.2	C	13.3	C	13.4	D	13.5	A
13.6	C	13.7	D	13.8	C	13.9	B	13.10	D
13.11	B	13.12	C	13.13	B	13.14	D	13.15	B
13.16	A	13.17	C	13.18	D	13.19	B	13.20	D
13.21	B	13.22	B	13.23	B	13.24	C	13.25	B
13.26	B	13.27	B	13.28	B	13.29	C	13.30	C
13.31	C	13.32	D	13.33	B				

❖❖❖❖

CHAPTER 14

CLOCKS & CALENDARS

14.1 If the minutes hand and seconds' hand of a clock are 25 minutes apart. What will be the angle formed between them?
(A) 110° (B) 120°
(C) 135° (D) 150°

14.2 At 25 minutes past 10 in the night, find the angle formed between the two hands of the clock.
(A) 120° (B) 126.45°
(C) 146.5° (D) 162.5°

14.3 A clock gains 20 seconds for every 3 hours of time. If a clock is set at a correct time of 2 am on Friday, what would it indicate at 6:30 pm, Saturday?
(A) 6.32.00 pm (B) 6.32.46 pm
(C) 6.34.30 pm (D) 6.38.56 pm

14.4 Find the time in the clock between 7 am and 8 am when the hours hand and minutes hand will coincide.
(A) 33 5/12 minutes past 7 am
(B) 38 2/11 minutes past 7 am
(C) 32 1/11 minutes before 8 am
(D) 35 7/11 minutes past 8 am

14.5 Find the time between 8am and 9am when the hours and minutes hand would form a 90 degree angle between themselves.
(A) 25 7/11 minutes past 8 am
(B) 27 3/11 minutes past 8 am
(C) 29 8/11 minutes past 8 am
(D) 24 5/11 minutes before 9 am

14.6 To ensure that he is not late for exam, Ram's teacher asked him to set the alarm for Monday 11 am. He sets it correctly at 1 am on Sunday but wasn't aware about the fault in the clock. The clock gained 20 minutes for every 24 hours. What would be the actual time when the alarm would go off?
(A) 28 minutes 20 seconds before 10 am
(B) 31 minutes 40 seconds past 10 am
(C) 28 minutes 20 seconds past 11 am
(D) 31 minutes 40 seconds past 11 am

14.7 At what time between 6 a.m. and 7 a.m. will the minute hand and hour hand of a clock make an angle closest to 60°.
(A) 6:22 am (B) 6:27 am
(C) 6:38 am (D) 6:45 am

14.8 At what time between 7 and 8'o clock will the hands of a clock in the same straight line but, not together?
(A) 5 min. past 7
(B) 5 2/11 min. past 7
(C) 5 3/11min. past 7
(D) 5 5/11min. past 7

14.9 A watch gains 5 seconds in 3 minutes and was set right at 8 AM. What time will it show at 10 PM on the same day?
(A) 10 : 20 : 20 PM
(B) 10 : 23 : 20 PM
(C) 10 : 20 : 23 PM
(D) 11 : 30 PM

14.10 By how many degrees does the minute hand move in the same time, in which the hour hand move by 280?

(a) 168 (B) 336

(C) 196 (D) 376

14.11 It was Sunday on Jan 1, 2006. What was the day of the week Jan 1, 2010?

(A) Sunday (B) Saturday

(C) Friday (D) Wednesday

14.12 What was the day of the week on 28th May, 2006?

(A) Thursday (B) Friday

(C) Saturday (D) Sunday

14.13 What will be the day of the week 15th August, 2010?

(A) Sunday (B) Monday

(C) Tuesday (D) Friday

14.14 Today is Monday. After 61 days, it will be :

(A) Wednesday (B) Saturday

(C) Tuesday (D) Thursday

14.15 If 6th March, 2005 is Monday, what was the day of the week on 6th March, 2004?

(A) Sunday (B) Saturday

(C) Tuesday (D) Wednesday

14.16 On what dates of April, 2001 did Wednesday fall?

(A) 1st, 8th, 15th, 22nd, 29th

(B) 2nd, 9th, 16th, 23rd, 30th

(C) 3rd, 10th, 17th, 24th

(D) 4th, 11th, 18th, 25th

14.17 How many days are there in x weeks x days?

(A) 7x2 (B) 8x

(C) 14x (D) 7

14.18 On 8th Feb, 2005 it was Tuesday. What was the day of the week on 8th Feb, 2004?

(A) Tuesday (B) Monday

(C) Sunday (D) Wednesday

14.19 The calendar for the year 2007 will be the same for the year :

(A) 2014 (B) 2016

(C) 2017 (D) 2018

14.20 Which of the following is not a leap year?

(A) 700 (B) 800

(C) 1200 (D) 2000

14.21 On 8th Dec, 2007 Saturday falls. What day of the week was it on 8th Dec, 2006?

(A) Sunday (B) Thursday

(C) Tuesday (D) Friday

14.22 January 1, 2008 is Tuesday. What day of the week lies on Jan 1, 2009?

(A) Monday (B) Wednesday

(C) Thursday (D) Sunday

14.23 January 1, 2007 was Monday. What day of the week lies on Jan. 1, 2008?

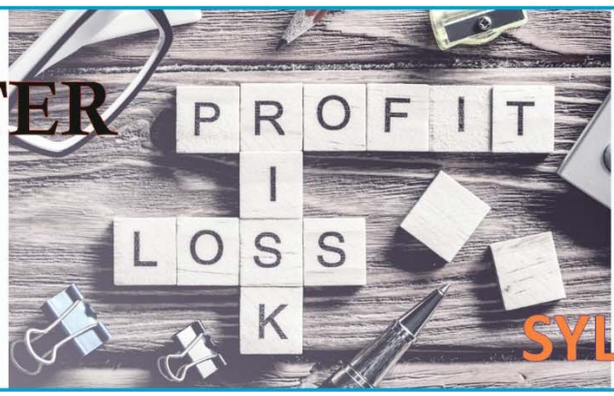
(A) Monday (B) Tuesday

(C) Wednesday (D) Sunday

Answer Key : Clocks & Calendars

14.1	B	14.2	B	14.3	C	14.4	C	14.5	B
14.6	C	14.7	B	14.8	C	14.9	D	14.10	B
14.11	B	14.12	B	14.13	C	14.14	D	14.15	B
14.16	B	14.17	C	14.18	D	14.19	C	14.20	B
14.21	D	14.22	B	14.23	C				

CHAPTER 15



Directions for Questions 15.1 to 15.25 : Given in each question below are two Statements followed by two Conclusions numbered I and II. Decide which of the two Conclusions follows logically from the two given Statements. Make your answer :

(A) If only Conclusion (I) follows
(B) If only Conclusion (II) follows
(C) If both (I) and (II) follows
(D) If neither I nor II follows

15.1 **Statements :** All Toys are Bats
All Bats are Gift
Conclusion : (I) All Toys are Gift
(II) Some Gifts are Toys

15.2 **Statements :** All Pots are Dots
All Dots are Tweets
Conclusion : (I) Some Pots are Tweets
(II) Some Tweets are Pots

15.3 **Statements :** All Socks are Hocks
Some Socks are Anchors
Conclusion : (I) Some Hocks are Anchors
(II) All Anchors are not Hocks

15.4 **Statements :** All Moons are Blue
Some Moons are Mars
Conclusion : (I) All Blues are Mars
(II) All Mars are Blue

15.5 **Statements :** All Tigers are Bengali
All Bengalis are Greats
Conclusion : (I) All Tigers are Greats
(II) Some Greats are Tigers

15.6 **Statements :** All Puppies are Dogs
No Dog is Trained
Conclusion : (I) No Puppy is Trained
(II) Some Puppies are Trained

15.7 **Statements :** All Dogs are Owl
No Owl is Foul
Conclusion : (I) All Dogs are Foul
(II) All Foul are not Dogs

15.8 **Statements :** All Socialists are Frivolous
No Socialist is Intelligent
Conclusion : (I) Some Intelligent are not Frivolous
(II) Some Frivolous are not Intelligent

15.9 **Statements :** All Pappus are Babloos
No Babloo is Chotu
Conclusion : (I) No Pappu is Chotu
(II) Some Chotus are not Pappus

15.10 **Statements :** Some Apple are Saur
No Saur is Eatable
Conclusion : (I) Some Apple are not Eatable
(II) No Eatable is Apple

15.11 **Statements :** Some Skies are Dark
No Colorful is Sky
Conclusion : (I) All Colorful are not Dark
(II) Some Dark are not Colorful.

15.12 **Statements :** All Men are Dangerous
Some GentleMen are not Dangerous
Conclusion : (I) Some GentleMen are not Men
(II) Some Men are GentleMen

15.13 **Statements :** Some Malls are not Calls
Some Calls are Rolls
Conclusion : (I) Some Malls are not Rolls
(II) Some Rolls are not Malls

15.14 **Statements :** Some Beautiful are Dazzling
Some Females are Beautiful
Conclusion : (I) Some Females are Dazzling
(II) Some Dazzling are Females

15.15 **Statements :** All Aliens are Creatures
Some Creatures are not Friendly
Conclusion : (I) All Aliens are Friendly
(II) Some Friendly are not Aliens

15.16 **Statements :** All the actors are girls.
All the girls are beautiful.
Conclusions : (I) All the actors are beautiful.
(II) Some girls are actors.

15.17 **Statements :** All the windows are doors.
No door is a wall.
Conclusions : (I) Some windows are walls.
(II) No wall is a door.

15.18 **Statements :** All green are blue. All blue are white.
Conclusions : (1) Some blue are green.
(2) Some white are green.
(3) Some green are not white.
(4) All white are blue.
(A) Only (1) and (2)
(B) Only (1) and (3)
(C) Only (1) and (4)
(D) Only (2) and (4)

15.19 **Statements :** All men are vertebrates. Some mammals are vertebrates.
Conclusions : (1) All men are mammals.
(2) All mammals are men.
(3) Some vertebrates are mammals.
(4) All vertebrates are men.
(A) Only (4) (B) Only (2)
(C) Only (3) (D) Only (1)
(E) Only (1) and (3)

15.20 **Statements :** All the phones are scales. All the scales are calculators.
Conclusions : (1) All the calculators are scales.
(2) All the phones are calculators.

(3) All the scales are phones.

(4) Some calculators are phones.

(A) Only (1) and (4)

(B) Only (3) and (4)

(C) Only (2) and (4)

(D) Only (1) and (2)

(E) Only (1) and (3)

15.21 **Statements :** Some tables are T.V. Some T.V. are radios.

Conclusions : (1) Some tables are radios.

(2) Some radios are tables.

(3) All the radios are T.V.

(4) All the T.V. are tables.

(A) Only (2) and (4)

(B) Only (1) and (3)

(C) Only (4)

(D) Only (1) and (4)

(E) None of the four

15.22 **Statements :** All the research scholars are psychologists. Some psychologists are scientists.

Conclusions : (1) All the research scholars are scientists.

(2) Some research scholars are scientists.

15.23 (1) All gems are diamonds.

(2) Some diamonds are not sapphires.

(3) All rubies do not glitter.

(4) Some rubies are gems.

(5) No gem is a sapphire

(6) Some sapphires are not rubies.

(A) 453 (B) 152

(C) 456 (D) 345

15.24 (1) All phones are telegrams.

(2) No telegraph is a telegram

(3) Some telegrams are mails

(4) All mails are letters

(5) All mails are not telegraph

(6) All phones are mails

(A) 235 (B) 136

(C) 543 (D) 123

15.25 (1) All doors are woods.

(2) Some wood are teak.

(3) All keys are doors.

(4) Some keys are iron.

(5) All doors are teak

(6) Some keys are wood.

(A) 125 (B) 136

(C) 346 (D) 236

15.26 **Statement :** (A) Some cars are four wheelers.

(B) All four wheelers are vehicles

(C) Some vehicles are SUV's

Conclusion : I. Some SUVs are four wheelers

II. Some vehicles are four wheelers

III. Some vehicles are cars.

IV. Some SUVs are cars

(A) All follow

(B) Only II & III follows

(C) Either III or IV follows

(D) None of these

15.27 **Statement :** (A) All registers are books.
(B) All books are written materials
(C) All written materials are novels

Conclusion : I. All books are novels
II. All written materials are registers
III. All registers are novels
IV. All novels are books.

(A) Only I and II follow
(B) Only II and III follow
(C) Only I and III follow
(D) All follow
(E) None of these

15.28 **Statement :** (A) Some cats are animals
(B) Some animals are mammals
(C) Some mammals are earthlings

Conclusion : I. Some earthlings are cats
II. Some mammals are cats.
III. Some earthlings are animals
IV. Some cats are earthlings

(A) None follow
(B) All follow
(C) Only I and II follows
(D) Only II and IV follow
(E) Only III and IV follow

15.29 **Statement :** (A) No apple is mango
(B) All mangoes are fruits
(C) All frits are vegetarian

Conclusion : I. No fruit is apple.
II. No vegetarian is apple
III. Some vegetarians are mango
IV. Some vegetarians are apples.

(A) None follows
(B) All follow
(C) Either II or IV and III follow
(D) Either II or III and I follow (E) None of these

15.30 **Statement :** (A) All pens are pencils
(B) Some pencils are markers
(C) All markers are ball points

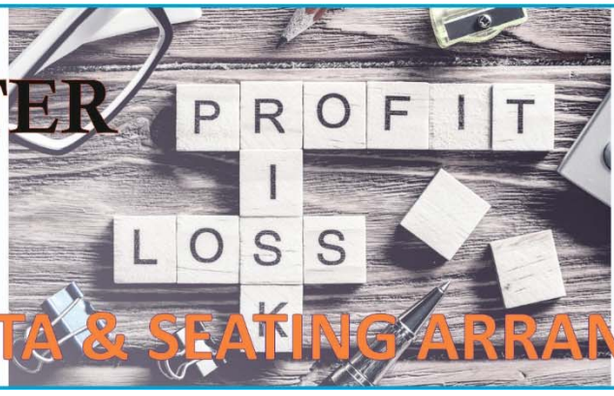
Conclusion : I. Some markers are pens
II. Some balls points are pencils
III. Some ball points are pens
IV. Some pencils are pens

(A) None follows
(B) Only I and III follows
(C) All follows.
(D) Only II and IV follow
(E) None of these

Answer Key : Syllogisms

15.1	A	15.2	B	15.3	C	15.4	C	15.5	D
15.6	B	15.7	C	15.8	A	15.9	B	15.10	C
15.11	A	15.12	D	15.13	A	15.14	B	15.15	B
15.16	A	15.17	D	15.18	B	15.19	A	15.20	B
15.21	A	15.22	C	15.23	C	15.24	B	15.25	C
15.26	D	15.27	C	15.28	B	15.29	A	15.30	C

CHAPTER 16



DATA & SEATING ARRANGEMENT

16.1 In a row of girls of sheetal who is 10th from the left and Lina who is 9th from the right change their teats Sheetal becomes 15''' from the left. How many girls are there in a row?

(A) 16 (B) 23
(C) 32 (D) 25

16.2 Five boys are so standing that they from a circle. Ajay is between Ramesh and Dominic, Soloman is to the left of Babu. Ramesh is to the left of Soloman. Who is the right of Ajay?

(A) Dominic (B) Soloman
(C) Babu (D) Ramesh

16.3 In a row of 16 boys when Prakash was shifted by two places towards the left, he became 7th from the left end. What was his earlier position from the right end of the row?

(A) 12th (B) 10th
(C) 14th (D) 8'h

16.4 Five boys are sitting in a row. A is on the right of B, E is on the left of B, but to the right of C. If A as on the left of D. Who is sitting in the middle?

(A) E (B) B
(C) A (D) C

16.5 Some boys are sitting in row. P is sitting 14thfrom the left and Q is 7thfrom the right. If there are four boys between P and Q, how many boys are there in the row?

(A) 19 (B) 21
(C) 25 (D) 23

16.6 If (i) six persons, A, B, C, D, E and F are standing in a circle, not necessarily in the same order. (ii) B is between F and C. (iii) A is between E and D and (iv) F is to the left of D, which of the following is between A and F?

(A) B (B) C
(C) D (D) E

16.7 In a row of boys, Anil is 15th from the left and Vishakh is 7th from the right. If they interchange their positions. Vishakh becomes 15th from the right. How many boys are there in the row?

(A) 21
(B) 25
(C) 29
(D) Can't be determined

16.8 Five persons were playing card game sitting in a circle all facing the center. Mukund was to the left of Rajesh, Vijay was to the right of Anil and between Anil and Nagesh. Who was to the right of Naget?

(A) Rajesh (B) Vyjay
(C) Anil (D) Mukund

16.9 In front of a camera, Mr. X is sitting to the left of that man, who is at the center of the row, but Mr. X is to right of Mr. Y. Mr. P is to the right of Mr. Z and Mr. R is the right of Mr. P. Mr. R is second from the man, sitting at the center. Who is sitting at the center of the row?

(A) Mr. X (B) Mr. Z
(C) Mr. Y (D) Mr. R

16.10 A ranks fifth in a class. B is eighth from the last. If C is sixth after A and just in middle of A and B, how many students are there in the class?

(A) 25 (B) 26
(C) 23 (D) 24

16.11 Suresh is 7 ranks ahead of Ashok in the class of 39. If Ashok 's rank is 17th from the last, what is Suresh's rank from the start?

(A) 15 (B) 14
(C) 24 (D) 16

16.12 In a row of children Munni is ninth from the left of Tunni is thirteenth from the right. When they exchange places, Munni will be seventeenth from the left. Which of the following will be the new position of Tunni from the right?

(A) 20th (B) 21st
(C) 7th (D) 9th

16.13 Some boys are sitting in a row, P is sitting 14th from the left and Q is seventh from the right. If there are four boys between P and Q, how many boys are there in the row?

(A) 19 (B) 21
(C) 25 (D) 23

16.14 In a row of trees, one tree is the 9th from either end of the row. How many trees are there in the row?

(A) 17 (B) 19
(C) 16 (D) 18

16.15 In a certain class, Rakesh is 29th from the top and mohan is 16th from the bottom in the alphabetical arrangements of names. If they have 7 boys between them what is the number of students in the class?

(A) 52 (B) 36
(C) 45 (D) 35

16.16 Rakesh ranks seventh in a class of twenty. What is his rank from the last?

(A) 15th (B) 13th
(C) 14th (D) 8th

16.17 Of the five villages: 1) Phulwade is small& than Dhanwade 2) Ambawade is bigger than Khelwade 3 Sonewade is bigger than Dhanwade but is not as big as Kelwade. Which is biggest village?

(A) Ambawade (B) Phulwade
(C) Dhanwade (D) Kelwade

16.18 It (A) Ashok is taller than Suresh (B) Raju is taller than Ashok (C) Chandu is shorter than Suresh, then chandu is

(A) taller than ashok
(B) as tall as suresh
(C) taller than suresh
(D) shorter than Ashok

16.19 Five boys Rakesh, Anil, Mahesh, Suresh and Manjit are sitting in a circle. (A) Anil is sitting between Rakesh and Suresh (B) To Manjit's right Suresh is seated. Who is seated to Mahesh's left?

(A) Anil (B) Manjit
(C) Suresh (D) Rakesh

16.20 Four girls are swimming in a stream.

(1) Harjeet is further ahead of Manjula
(2) Neena is behind Manjula
(3) Ruchi is between Manjula and Neena.

Who is second from the last?

(A) Neena (B) Manjula

(C) Ruchi (D) Harjeet

16.21 Five poles are standing in a row. M is on the left of N, 0 is on the right of P, which is on the right of N. If L is on the left of M, which pole is in center?

(A) L (B) M

(C) N (D) O

16.22 Five boys are sitting in a row. Sanjay is just on the one side of Pradeep but not just on any side of Timur. Kailash is just on one side of Ramesh who is sitting left of all and Timur is not sitting just on any side of Kailash who are sitting on either side of Sanjay?

(A) Kailash & Pradeep

(B) Ramesh & Pradeep

(C) Only Pradeep

(D Pradeep & Timur

16.23 Six families A, B, C, D, E and F are living in houses in a row. B has F and D asneighbours, E has A and C as neighbours. A does not live next to D. Who are F's next door neighbors?

(A) B and E

(B) B and D

(C) B and C

(D) Data Insufficient

16.24 Sudha is taller than Pushpa but shorter than Malati. Geeta is shorter than Vinu and Vinu is not as tall as Pushpa. Who should be in the middle if they stand in a row according to height?

(A) Pushpa (B) Malati

(C) Sudha (D) Geeta

16.25 Among five friends, Manish is taller than Harish, but not as tall as Jayesh. Jayesh is taller than Vijay and Sharad. Vijay is shorter than Harish but taller than one who is shortest among them. Who is the fourth in the descending order of their heights?

(A) Manish

(B) Harish

(C) Sharad

(D) Can't be determined

Directions (Question 16.26 – 16.30) :

Read the following information and answer the below it

1. Seven students P Q, R, S, T, U and V take a series of tests.
2. No two students get similar marks.
3. V always scores more than P.
4. P always scores more than Q.
5. Each time either R scores the highest and T gets the least, or alternatively S scores the highest and U or Q scores the least.

16.26 If S is ranked sixth and Q is ranked fifth, which of the following can be true?

(A) V is ranked first of fourth

(B) R is ranked second and third

(C) P is ranked second or fifth

(D) U is ranked third or fourth

16.27 If R gets most, V should be ranked not lower than

(A) Second (B) Third

(C) Fourth (D) Fifth

16.28 If R is ranked second and Q is ranked fifth which of the following must be true?

(A) S is ranked third

(B) P is ranked sixth

(C) T is ranked sixth

(D) V is ranked fourth

16.29 If S is ranked second, which of the following can be true?
(A) U gets more than V
(B) V gets more than S
(C) P gets more than R
(D) P gets more than V

16.30 If V is ranked fifth, which of the following must be true?
(A) S scores the highest
(B) R is ranked second
(C) T is ranked third
(D) Q is ranked fourth

Directions (Questions 16.31-16.35) : Study the following information carefully and answer the questions given below it :

Five friends A, B, C, D and E are sat on a bench.

1. A is sitting next to B
2. C sitting next to D
3. D is not sitting with E
4. E is on the left end of the bench
5. C is on second position from the right a.
6. A IS on the right side of B and to the right side of E
7. A and C are sitting together

16.31 Where is A sitting?
(A) Between B and C
(B) Between D and C
(C) Between E and D
(D) Between C and E

16.32 Who is sitting in the center?
(A) A (B) B
(C) C (D) D

16.33 C is sitting between
(A) B and D (B) A and E
(C) D and E (D) A and D

16.34 What is the position of D?
(A) Extreme left
(B) Extreme right
(C) Third from left
(D) Second from left

16.35 What is the position of B?
(A) Second from right
(B) Centre
(C) Extreme left
(D) Second from left

Directions (Questions 16.36-16.40) : Study the following information carefully and answer the questions given below it, A sales representative plans to visit each of six companies K, N, P, Q, R and S exactly once during the course of one day. She is setting up her schedule for the day according to the following conditions.

She must visit M before N and R.

She must visit N before Q The third company she visits must be P.

16.36 Which of the following must be true of the sales representative schedule?
(A) She visits M before Q
(B) She visits P before M
(C) She visits N before R
(D) She visits P before S

16.37 If the sales representatives visits S first, which company must she visit second?
(A) M (B) N
(C) P (D) Q

16.38 The sales representative could visit any of the following companies immediately after P except
(A) S (B) R
(C) Q (D) M

16.39 If the sales representative visits Q immediately before r and immediately after S, she must visit Q.

(A) First (B) Second
(C) Fourth (D) Fifth

16.40 Which of the following could be the order in which the sales representative visit the six companies?

(A) M, S, P, N, R, Q
(B) M, R, N, Q, P,
(C) Q, N, P, R, S, M
(D) P, S, M, R, Q, N

Directions (Questions 16.41-16.44): Read the following information carefully and answer the questions given below it. On a shelf are placed six volumes side by side labeled A, B, C, D, E and F. Three volumes B, C and E have green covers while the other volumes have yellow covers. A, D and B are new volumes while the rest at old volumes. A, C and B are law reports, while the rest are Gazetteers.

16.41 Which volume is new, yellow covered and a Gazetteer?

(A) B (B) D
(C) E (D) F

16.42 Which two volumes are old Gazetteers and have green covers?

(A) B, C (B) B, F
(C) B, E (D) Only E

16.43 Which is green covered, old and a law report volume?

(A) A (B) B
(C) C (D) D

16.44 Which of the following is the old volume of a Gazetteer?

(A) C (B) D
(C) E (D) B

Directions (Questions 16.45-16.49): Study the following information carefully and answer the questions given below it: From amongst six boys A, B, C, D, E and F and five girls P, Q, R, S and T, a term of six is to be selected under the following conditions: A and D have to be together. C cannot go with S. S and T have to be together. B cannot be teamed with E D cannot go with R B and R have to be together. C and Q have to be together.

16.45 If there be five boys in the team, the long girl's member is

(A) P (B) Q
(C) R (D) S

16.46 If including P, the team has three girls, the members other than P are

(A) BCFQR (B) ADBST
(C) ADEST (D) BFRST

16.47 If the team including C consist of four boys, the members of the team other than C are

(A) ADEPQ (B) DEFAQ
(C) ABDQR (D) BEFRQ

16.48 If four members including E have to.be boys, the members other than E are

(A) ABCQP (B) BCFQR
(B) ADFST (D) ACDFQ

16.49 If four members have to be girls, the members of the team are

(A) BCPQRS (B) BCQRST
(C) BFPRST (D) BCPQRT

Directions (Questions 16.50-16.54) : Study the following information carefully and answer the questions given below it :

There are six teachers A, B, C, D, E and F in a school. Each of the teachers teaches two subjects, one compulsory subject and other optional subject. D's optional subject was

History while three others have a compulsory subject. E and F have physics as one of their subjects. F's compulsory subject is mathematics which is an optional subject of both C and E. History and English are A's subjects but in terms of compulsory and optional subjects, they are just reverse of those of D's. Chemistry is an optional subject of only one of them. The only female teacher in the school has English as her compulsory subject.

16.50 What is C's compulsory subject?

(A) History (B) Physics
(C) Chemistry (D) English

16.51 Who is a female member in the group?

(A) A (B) D
(C) B (D) None

16.52 Which of the following has same compulsory and optional subjects as those of F's?

(A) D (B) B
(C) A (D) None

16.53 Disregarding which is the compulsory which is the optional subject who has same two subject combination as F?

(A) A (B) B
(C) E (D) D

16.54 Which of the following groups has History the compulsory subject?

(A) A, C and D (B) C and D
(C) B, C and D (D) A, B and C

Directions (16.55-16.60) :

A family has 6 children viz., Savitha, Sadguna, Swathi, Srinivas, Suvidha and Susheel not born in the sat order. Any two consecutive children has 2 years age difference.

(i) Swathi is older than Srinivas and Susheel.

(ii) Suvidha born as 2' child in the family and she is 4 years elder than Sadguna.

(iii) Susheel born last and he is 6 years younger to Srinivas.

16.55 Who had born first?

(A) Swathi (B) Suvidha
(C) Srinivas (D) Sadguna

16.56 Who had born as a 5''' child in the family?

(A) Srinivas (B) Swathi
(C) Sadguna (D) Savitha

16.57 What is the age difference between Suvidha and Susheel?

(A) 10 years (B) 8 years
(C) 6 years (D) 2 years

16.58 If Swathi's age is 23 years then what is the age of Savitha?

(A) 11 years (B) 13 years
(C) 15 years (D) 17 years

16.59 Who is the eldest child of the family?

(A) Swathi (B) Suvidha
(C) Srinivas (D) Susheel

16.60 Who is the eldest child of the family?

(A) Swathi (B) Suvidha
(C) Srinivas (D) Susheel

Directions (16.61-16.64) : Four friends are playing cards game. Anil is facing North and Sunil sat to his left. Vikrant is opposite to Sunil and Vikranth's right is Vinod.

16.61 Who is opposite to Vinod?

(A) Anil
(B) Vikranth
(C) Sunil
(D) Can't be determined

16.62 Who is facing west?

(A) Anil (B) Sunil
(C) Vikranth (D) Vinod

16.63 Who is to the right of Vinod?
(A) Vikranth
(B) Sunil
(C) Anil
(D) Can't be determined

16.64 Who is facing south?
(A) Anil (B) Sunil
(C) Vikranth (D) Vinod

Directions : Study the following information carefully and answer the questions given below it : There are five persons R Q, R, S and T. One is football player, one is chess player and one is hockey play; P and S are unmarried ladies and do not participate in any game. None of the ladies plays chess or football. There is a married couple in which is the husband. Q is the brother of R and is neither a chess player nor a hockey player.

16.65 Who is the football player?
(A) 4 (C) Q
(C) R (D) S

16.66 Who is the hockey player?
(A) T (B) S
(C) R (D) Q

16.67 Who is the chess player?
(A) S (B) P
(C) T (D) R

16.68 Who is the wife of T?
(A) P (B) Q
(C) R (D) S

16.69 The three ladies are____.
(A) P, Q and R (B) P, Q and S
(C) P, Q and S (D) P, R and S

Directions (16.70 – 16.74) : Study the following information carefully and answer the questions given below it: P, Q, R, S, T and X are members of a family. There are two married couple. Q is an Engineer and is fatty of T. X is grandfather of R and is a lawyer. S is grandmother of T and is a housewife. There is one Engineer, one Lawyer, one Teacher, one Housewife and two students in the family.

16.70 Who is the husband of P?
(A) R (B) X
(C) Q (D) S

16.71 Which of the following are two married couples?
(A) XS, QP (B) XS, QT
(C) XS, RP (D) TS, RX

16.72 Which of the following is definitely a group of male members?
(A) Q, X, T (B) Q, X, P
(C) X, T (B) Q, X

16.73 Who is the sister of T?
(A) R
(B) S
(C) P
(D) Data inadequate?

16.74 Which of the following can be P's profession?
(A) Housewife
(B) Engineer
(C) Teacher
(D) Engineer or Teacher

Directions (16.75 – 16.78) : Study the following information carefully and answer the questions given below it: Prashant Arora has three children – Sangeeta, Vimal and Ashish. Ashish married Monika, the eldest daughter of Mr. and Mrs. Roy. The Roys married their youngest daughter to the eldest son of Mr. and Mrs. Sharma, and they had two children name Amit and Shashi. The Roys have two more children, Roshan and V3ndana, both elder to Veena. Sameer and Ajay are sons of Ashish and Monika. Rashmi is the daughter of Amit.

16.75 What is the surname of Rashmi?

(A) Sharma

(B) Roy

(C) Arora

(D) Can’t be determined

16.76 How is Sameer related to the father of Monika?

(A) Grandson (B) Son

(C) Cousin (D) Son-in-law

16.77 What is the surname of Sameer?

(A) Roy

(B) Roy

(C) Arora

(D) Can't be determined

16.78 How is Mrs. Roy related to Ashish?

(A) Aunt

(B) Mother-in-law

(C) Mother

(D) Sister-in-law

Answer Key : Data & Seating Arrangement

16.1	D	16.2	B	16.3	B	16.4	C	16.5	C
16.6	C	16.7	B	16.8	D	16.9	B	16.10	B
16.11	D	16.12	B	16.13	D	16.14	C	16.15	D
16.16	C	16.17	D	16.18	C	16.19	C	16.20	B
16.21	B	16.22	C	16.23	B	16.24	A	16.25	C
16.26	B	16.27	B	16.28	C	16.29	*	16.30	C
16.31	C	16.32	C	16.33	C	16.34	D	16.35	D
16.36	B	16.37	D	16.38	D	16.39	B	16.40	C
16.41	B	16.42	D	16.43	B	16.44	C	16.45	C
16.46	D	16.47	B	16.48	D	16.49	B	16.50	B
16.51	C	16.52	B	16.53	C	16.54	D	16.55	B
16.56	C	16.57	D	16.58	C	16.59	D	16.60	A
16.61	B	16.62	D	16.63	B	16.64	A	16.65	C
16.66	C	16.67	D	16.68	B	16.69	B	16.70	C
16.71	D	16.72	B	16.73	B	16.74	C	16.75	A
16.76	B	16.77	C	16.78	B				

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Space for Notes