Test Series Question Paper-17-02-2024

1. **Mr. Kapoor deposits Rs.10,000 in a savings certificate earning 'R' percent annual interest compounded quarterly. What is the value of 'R'?**

i. During the term of the certificate, he earns Rs.18000 more than he would if the interest were not compounded.

ii. He withdraws all the money six months after depositing it.

a) Statement (i) by itself is sufficient to answer the question, but statement (ii) by itself is not.

b) Statement (ii) by itself is sufficient to answer the question, but statement (i) by itself is not.

c) Statements (i) and (ii) taken together are sufficient to answer the question, even though neither statement by itself is sufficient.

d) Either statement by itself is sufficient to answer the question.

Ans. c

Rate of interest = R%

Invested amount = Rs. 10,000

From I & II:

$10000[1 + R/400]^2 = (10000 \times .5 \times R)/100 + 18000$

By solving this equation, we get the value of R.

Hence, both I & II together are required.

2**. If company P's profits decreased Rs. 2.5 million from last year to this year, what was the percent decrease in profits?**

i. If the profits had decreased by Rs. 4 million, there would have been a 40 percent decrease.

ii. This year's profits were Rs 7.5 million.

a) Statement (i) by itself is sufficient to answer the question, but statement (ii) by itself is not.

b) Statement (ii) by itself is sufficient to answer the question, but statement (i) by itself is not.

c) Statements (i) and (ii) taken together are sufficient to answer the question, even though neither statement by itself is sufficient.

d) Either statement itself is sufficient to answer the question.

Ans. d

Let the last year's profit = Rs. x

Current year profit = Rs. x - 2.5

From I: x - 4 = 60/100x

5x - 20 = 3x

x = 10

Last year profit = 10cr

Current year profit = 7.5cr

Percent decrease in profit = 2.5/10 x 100 = 25cr

From II: x - 2.5 = 7.5

x = 10

Last year profit = 10cr

Current year profit = 7.5cr

Percent decrease in profit = 2.5/10 x 100 = 25cr

3. The number of five–digit telephone numbers having at least one of their digits repeated is

a) 86700

b) 100000

c) 30240

d) 69760

Ans. d

The number of five–digit telephone numbers which can be formed using the digits of 0, 1, 2,...., 9 = 10 x 10 x 10 x 10 =10^5

Now, the number of five-digit telephone numbers which have none of their digits repeated is = 10 ×9 ×8 ×7 x 6 = 30240 Hence the required number =10^5 - 30240 =69760.

4. What is the unit digit of $(91283)^{167}$ x $(5906997)^{1863}$?

a) 0

b) 1

c) 3

d) 5

Ans. B

The cyclicity of 3 is 4. By dividing the power (167) by 4 we get 3 as remainder.

$(3)^3 = 27$

The cyclicity of 7 is also 4. By dividing 1863 by 4 we get 3 as remainder.

$(7)^3 = 343$

7 x 3 =21

By multiplying the unit digits of both 27 & 343 we get 1 as unit digit.

5. If p and q are positive integers such that p × q = 40, what is the value of p + q?

i. 1< p/q <2

ii. p > q

a) Statement (i) by itself is sufficient to answer the question, but statement (ii) by itself is not.

b) Statement (ii) by itself is sufficient to answer the question, but statement (i) by itself is not.

c) Statements (i) and (ii) taken together are sufficient to answer the question, even though neither statement by itself is sufficient.

d) Either statement by itself is sufficient to answer the question.

Ans. a

p * q = 40

Possible values: 1 x 40

2 x 20

5 x 8

10 x 4

From I: From I: 1< p/q <2

Only possible set of values are 5 & 8.

From II: p > q

Data is not sufficient as many cases can be possible.

6. How many kilolitres of water are in a reservoir?

i. If the reservoir were filled to full capacity form its normal capacity, there would be 520 more kilolitres in the reservoir.

ii. The reservoir is normally 75 percent full.

a) Statement (i) by itself is sufficient to answer the question, but statement (ii) by itself is not.

b) Statement (ii) by itself is sufficient to answer the question, but statement (i) by itself is not.

c) Statements (i) and (ii) taken together are sufficient to answer the question, even though neither statement by itself is sufficient.

d) Statements (i) and (ii) taken together are not sufficient to answer the question.

Ans. c

Let the quantity of water = x Liters

Capacity of tank = C

From I: C = x + 520

From II:

The reservoir is normally 75 percent full.
Normal water quantity = 75% of C

By combining I & II

C = 75%of C + 520

C -3/4 C = 520

C = 2080

Hence, both I & II are required.

7. **During May, a mail order retailer received 3,300 orders for an amount less than Rs. 100, and 1,100 orders for an amount of at least Rs. 100. What was the average size of an order in May?**

i. The gross sales from the orders less than Rs. 100 equals the gross sales from the orders greater than Rs. 100.

ii. The orders for less than Rs. 100 account for a total of Rs. 154,000 in gross sales.

a) Statement (i) by itself is sufficient to answer the question, but statement (ii) by itself is not.

b) Statement (ii) by itself is sufficient to answer the question, but statement (i) by itself is not.

c) Statements (i) and (ii) taken together are sufficient to answer the question, even though neither statement by itself is sufficient.

d) Either statement by itself is sufficient to answer the question.

Ans. c

For amount less than Rs. 100 =3300 orders

For at least Rs. 100 =1100 orders

Total orders = 4400

From I: Gross sales from orders less than Rs. 100 = Gross sales from greater than Rs. 100

3300x = 1100y

Thus 3x = y

From II: Orders less than Rs. 100 = Rs. 154000

By combining I & II both:

We know that both sales are equal

Therefore, (154000 + 154000) / 4400 =70

Both I & II are required to answer the question asked.

8. **The integers A, B, and C are consecutive and A <B<C. If $A^2 = C$, which of the following could be the value of A?**

I. -1

II. 0

III. 2

a) I only

b) III only

c) I and II only

d) I, II, and III

Ans. d

A<B<C

A2 = C

From I: If A = -1 then C = (-1)2 = 1

A<C; B is somewhere between A & C

From II: If A = 0 then C = 0

but here the condition A<B<C will not satisfy.

From III: If A = 2 then C = 22 = 4

A<C

A can be -1 or 2.

9. If p is an odd number; which of the following must be odd?

a) $(p^2 - 1) /2$

b) $(p^2 + 2p + 1) /2$

c) $p^3 + 5p^2 + p$

d) $3p^2 - 3p$

Ans. C

Let p = 3

From (a) --- $(p^2 - 1) /2 = 4$

From (b) --- $(p^2 + 2p + 1) /2 = 8$

From (c) --- $(p^3 + 5p^2 + p) = 75$

From (d) --- $(3p^2 - 3p) = 18$

10. What is the smallest integer greater than 1 that leaves a remainder of 1 when divided by any of the integers 6, 8, and 10?

a) 21

b) 41

c) 121

d) 241

Ans. C

First find LCM of 6,8 &10 i.e. 120

Now add the remainder to it.

So, the smallest integer = 120 + 1 =121

11. If the product of two integers is odd, which of the following must be true?

a) The sum of the two integers is an odd number.

b) The difference between the two integers is an odd number.

c) The square of either integer is an odd number.

d) d. The sum of the squares of the two integers is an odd number.

Ans. c

The product of two integers is odd only when both integers are odd.

Since only odd x odd = odd.

Thus, of the answer choices given, only C is true, since the square of an odd integer is also odd.

12. The integer P is greater than 7. If the integer P leaves a remainder of 3 when divided by 8, all of the following must be true EXCEPT

a) The number that is 3 less than P is a multiple of 8.

b) The number that is 5 more than P is a multiple of 8.

c) The number that is 1 more than P is a multiple of 4.

d) When the number is k +1 more than P and then divided by 2 leaves remainder 1.

Ans. d

P=8k+3, where k is any positive integer and since P>7 so k is not equal to 0.

From a: P = 8k + 3 - 3 =8k; clearly a multiple of 8. True

From b: P = 8k + 3 + 5 =8k + 8; Clearly a multiple of 8. True

From c: P = 8k + 3 + 1 = 8k + 4; clearly a multiple of 4. True

From d: P = 8k + 3 + k + 1 =9k + 4.

=>9k+4 if k is even then it will be divisible by 2 but if k is odd then it will leave a remainder of 1 when divided by 2. Hence not always true.

13. If the product of two integers is an even number and the sum of the same two integers is an odd number, which of the following must be true?

a) The two integers are both odd.

b) The two integers are both even.

c) One of the two integers is odd and the other is even.

d) One of the integers is 1.

Ans. c

The product of two integers is even:
When both are even. Ex: 2 x 2 =4
When one is even and the other is odd. Ex: 3 x 2 =6
The sum of two integers is odd:
When one is even and the other is odd. Ex: 2 + 1 =3

So, one of the two integers must be even, and the other integer must be odd. That is Answer c.

14. Three bags A, B and C, contain 3 pink, 7 blue; 5 pink, 5 blue, and 4 pink & 6 blue balls respectively. A person picks one ball at a time from each bag i.e. firstly from bag A then from B and then from C so on. What will be the maximum number of balls he will pick before picking a pink ball?

a) 7

b) $^{10}C_3 \times {}^{10}C_5 \times {}^{10}C_4$

c) 16

d) 3×5×4

Ans. C

The Person will pick 5 blue balls from each bag, then he will pick 6th ball from Bag A. Then, when he will pick a ball from bag B, it will be a pink ball. Thus, 16 balls he has to pick before picking a blue ball.

15. A wire is cut into four equal parts. The resulting segments are then cut into 2, 3 and 8 equal parts respectively. If each of the resulting segments has an integer length, what is the minimum length of the wire?

a) 24

b) 36

c) 48

d) 96

Ans. d

LCM of 2, 3 and 8 =24
Since each of four equal parts will be of length 24 each.
Minimum length of original wire = 24 * 4 = 96.

16. When Priya was born, her father was 34 years older than her brother and her mother was 26 years older than her sister. If Priya's brother is 6 years older than Priya and her mother is 4 years younger than her father, how old was Priya's sister when Priya was born (in years)?

a) 12

b) 6

c) 10

d) 15

Ans. c

Priya's age when she was born = 0 years
Her brother's age = 6 years
Her father's age = brother age + 34years = 6+34 =40 years

Her mother's age = father's age - 4 =36
So sister's age = 36-26 =10years.

17. How many positive integers less than 60 are equal to the product of a positive multiple of 5 and an even number?

a) Four

b) Five

c) Nine

d) Ten

Ans. B

The product of a positive multiple of 5 and an even number means an even multiple of 5.

Now, the positive integers less than 60 that are also even multiples of 5 are 10, 20, 30, 40, and 50, so there are 5 such integers.

18. Two cars starts at the same time from Himachal and Pune and proceed towards each other at the rate of 30 km/hr and 27 (1/2) km/hr. When they meet it is found that one car has travelled 150 km more than the other car. What is the distance between Himachal and Pune (in km)?

a) 3450

b) 5320

c) 4350

d) 42400

Ans. a

Ratio of speeds of two trains -- 30: 27 (1/2) [60: 55]

Alternatively, 12 :11 (difference is 1)

1 ---> 200 km (more)

12 + 11 = 23

23 ---> 23 x 150 = 3450km

19. The Average age of 10 men is decreased by one year when two of them having ages 22 years and 42 years are replaced by two women of same age. The age of a woman is (in years) is

a) 26

b) 27

c) 37

d) 42

Ans. b

Let the average age of 10 men = x years

Also, the age of each woman = y years

Now, (10x – 22 – 42 + 2y)/10 = x – 1

10x + 2y – 64 =10x – 10

y = 54/2 = 27 years.

20. Ten movie theaters have an average of 300 customers per theater per day. If Four of the theaters close but the total theater attendance stays the same, what is the average daily attendance per theater among the remaining theaters?

a) 500

b) 750

c) 1,000

d) 1,200

Ans. A

Average customers of 10 movie theaters = 300

Sum = 10 x 300 =3000

Average of (10-4) 6 movie theaters = 3000/6 = 500.

21. If there are total (P^2 + 10P) four-digit numbers that can be formed using digits 1, 4, 0, and 5 such that the number is divisible by '5' and the repetition of digits is allowed then find the value of 'P' (take the positive value of P)?

a) 5

b) 4

c) 6

d) 7

Ans. c

Let the required number is ABCD

D can take two values i.e 0 & 5

A can be filled in 3 ways, B can be filled in 4 ways & C can be filled in 4 ways

Total ways for both 0 &5=96 ways

Now, $P^2 + 10P = 96$

P = 6, -16

P = 6 (ignore -ve value)

22. The Red chilli factory produced two-sixth of the Consolidated Brick Company's bricks in 2020. Red chilli factory produced 1800 tons of bricks in 2020. Total production of Red Chilli Factory in the year 2021 was decreased by 20% with respect to the previous year. What was the Consolidated Brick Company's total production for the year 2021, in tons, assuming other production units produced same quantity in 2020 and 2021?

a) 7000

b) 5040

c) 2,800

d) 3,500

Ans. b

Let total output of Consolidated brick company = P

Now, (2/6) P = 1800 tons

P = 5400 tons

By other factories = 5400 -1800 =3600

Now, in 2021 total production of the red chili company decreased by 20% with respect to the previous year = 80/100 x 1800 = 1440

Consolidated brick company's total production = 1440 + 3600 =5040.

23. The difference between the compound and simple interest on a sum of Rs. 'P' at R% rate of interest after 2 years is '6.25P' Rs. If the simple interest on the same sum at the same rate of interest after one year is (Q - 6.25P) Rs. then what is the compound interest on the same sum at the same rate of interest after 2 years?

a) 2.37Q

b) 1.48Q

c) 1.28Q

d) 3.27Q

Ans. c

The difference between CI and SI for two years = P x $(R/100)^2$

According to question, 6.25P = P x $(R/100)^2$

R = 250%

Now, the SI on the same sum at the same rate of interest after one year =

Q - 6.25P

(P x 250 x 1)/100 = Q - 6.25P

Q = 8.75P

P = Q/8.75 ---- (i)

Now, the CI on the same sum at the same rate of interest after 2 years

= P x [(1+(250/100))2 -1] = 11.25P

By substituting the value of P from equation (i) we get

Required CI = 11.25 x Q/8.75 = 1.28Q.

24. A device password comprises of 5 rings and each ring can be unlocked using 7 different messages. Find out the maximum number of different unsuccessful efforts to open the lock?

a) 16807

b) 17806

c) 16806

d) 19806

Ans. c

Each ring has 7 messages.

The number of tries made with the five rings is = 7 * 7 * 7 * 7 * 7 =16807.

Now, out of total efforts one will be successful.

Maximum number of unsuccessful efforts = 16807 - 1 =16806.

25. Two inlet pipes, P and Q, can fill an empty cistern in 20 and 30 hours, respectively. They were opened at the same time, but pipe P had to be closed 3 hours before the cistern was full. How many hours in total did it take the two pipes to fill the empty cistern?

a) 13.5

b) 13.8

c) 13.7

d) 13.6

Ans. b

P alone can fill it in 20 hours.

Q alone can fill it in 30 hours

Total work LCM of (20,30) = 60 units

As in question it is given that P will leave the work 3 hours before so if P doesn't leave then they will complete the total work = 60 + 3 x 3 = 69 units

Time taken = 69 / (3 + 2) = 13.8 hours.

26. How many 5-digit telephone numbers can be constructed using the digits 0 to 9, if each number starts with 67 and no digit appears more than once?

a) 339

b) 336

c) 337

d) 338

Ans. b

Let five-digit number 67ABC [6 & 7 are fixed]

A can be filled in 10 - 2(6,7) = 8 ways

B can be filled in 7 ways

C can be filled in 6 ways

Number of 5-digit telephone digits constructed = 8 x 7 x 6 =336.

27. In the beginning, Trisha works at a rate such that she can finish a piece of work in 36 hrs, but she only works at this rate for 24 hrs. After that, she works at a rate such that she can do the whole work in 21 hrs. If Trisha has to finish this work in a stretch, how many hours will she take to finish this work?

a) 31

b) 32

c) 17

d) 7

Ans. a

Trisha's 24 hr work = 24/36 = 2/3

Now, remaining work = 1 – 2/3 = 1/3.

This remaining 1/3 work completed in 21 hrs i.e 1/3 x 21 = 7 hrs

So, total time taken to complete work = 24 + 7= 31 hrs.

28. A person uses a mixture of milk and water at Rs. 60/liter. This mixture contains 20 % water. Another mixture containing 40 % milk costs Rs. 30/liter. How much does the person pay (in Rupees) if he buys 10 liters of mixture containing 60% milk?

a) 400

b) 450

c) 500

d) 550

Ans. b

1st mixture contains M: W

80: 20

2nd mixture contains M: W

40: 60

Required % of milk = 60%

Required ratio = 80 - 60 :60 - 40 = 1: 1

Required price of the mixture = 60 - x: x - 30 = 1: 1

x = Rs. 45/ liter

Price of 10 liters of this mixture = 45 x 10 = Rs. 450.

29. Two cars start from the same point simultaneously. One moves in the East direction and the other in the North direction. The speed of the first car is 5 km/h more than that of the other. If after 2 hours the distance between two cars is 50 km, find the speed of each car (in km/h)?

a) 25, 20

b) 35, 20

c) 15, 20

d) 15, 30

Ans. c

Let the speed of northbound car = x & the speed of eastbound car = x + 5

Distance travelled by both cars after 2 hours:

p = 2x northbound car

q = 2(x + 5) eastbound car

After two hours they are 50km apart i.e. r = 50km

This is a right triangle problem:

$H^2 = B^2 + P^2$

$r^2 = p^2 + q^2$

2500 = 4x2 + 4x2 + 40x + 100

8x2 + 40x - 2400 =0

x = 15 km/hr Northbound car

Eastbound car = 15 + 5 =20km/hr.

30. A shopkeeper charges Rs. 500 for register, colour box and glass bottle but Rs. 600 for register, colour box and steel bottle. If the steel bottle costs three times as much as the glass bottle, how much does the glass bottle cost (in Rupees)?

a) 40

b) 50

c) 60

d) 70

Ans. B

Let the cost of glass bottle = Rs. x
Cost of steel bottle = Rs. 3x
So,
3x-x= 100
2x= 100
x= 50

Cost of glass bottle = Rs. 50.

31. 1/4 of the number of white cats in a certain laboratory is 1/12 of the total number of cats and 1/12 of the number of grey cats is 1/18 of the total number of cats then what is the ratio of white cats to grey cats?

a) 1:2

b) 2:3

c) 2:1

d) 3:2

Ans: a

WT/4 = TC/12

GC/12=TC/18

=> WT/GC = 18/12 × 4/12

=> WT: GC = 1:2

32. A Share increases in value by 60 percent. By what percent must the share price decrease to reach its former value?

a) 35.5

b) 40

c) 35

d) 37.5

Ans: d

Percent decrease to reach its former value = 100 × 60/160 = 37.5

33. The population of a certain village increases by 25 percent in every 10 years. If the population in 2024 is 625, in which year was the population 256?

a) 1996

b) 2004

c) 2008

d) 1984

Ans: d

Let increment happen 't' times

A 25% increase means the final value will be (125/100) or (5/4) times the previous value

so, (5/4) t = (625/256)

=> (5/4) t = (5/4)4

=> t = 4

4 times increment means 40 years

2024 - 40 =1984.

34. In a Grass Seed Mixture, 8% is Doob seeds. If the amount of the mixture needed to plant one acre contains 2 kg of Doob seeds, how many acres can be planted with 300 kg of the seed mixture?

a) 6

b) 12

c) 16

d) 8

Ans: b

Given 300 kg of seed mixtures.

8% of 300 = 24 kg of Doob is in 300 kg of grass mixture.

2 kg of Doob is enough for one acre; hence 24 kg of Doob is enough for 12 acres.

35. A salesman earns Rs. 5000 salary each month plus a 12 % commission on the value of his sales. If he earned Rs. 29000 last month, what was the total value of his sales (In Rupees)?

a) 100000

b) 120000

c) 150000

d) 200000

Ans: d

Let the value of sales = p

Earning calculation

5000 + p×12/100 = 29000

So, p = 200000

36. A man bought six boxes of apples for Rs. 1000 total. If he lost two of the boxes; at what price (In Rupees) would he have to sell each of the remaining boxes to earn a total profit of 16% of the total cost?

a) 290

b) 270

c) 240

d) 180

Ans: a

16% of 1000 =160

Total selling price = 1000 + 160 = 1160

Selling price per box =1160/4 = Rs. 290

37. Before the market opens on Monday, a share is priced at Rs. 3000. If its price decreases 20% on Monday, increases 25% on Tuesday and then decreases 30% on Wednesday, what is the final price (In Rupees) of the share on Wednesday?

a) 2500

b) 2150

c) 2100

d) 2400

Ans: c

A 20 % decrease will be nullified by a 25 increase.

So, only a 30% decrease will have an impact on the final price.

=> 3000 × 70/100 = Rs. 2100

38. Gita's weekly salary is Rs. 2000 less than Nitin's, whose weekly salary is Rs. 3000 more than Sumit's. If Sumit earns Rs. 88000 in 77 days, how much does Gita earn in 49 days (In Rupees)?

a) 54000

b) 63000

c) 77000

d) 66000

Ans: b

Let Sumit earn Rs. 88000 in 77 days

So, in 7 days Sumit will Earn Rs. 8000

then in 7 days Nitin earns Rs. (8000 + 3000) = Rs. 11000

and in 7 days Gita earns Rs. (8000 + 1000) = Rs.9000

Hence, in 49 days Gita earns =7 × 9000 = Rs. 63000

39. During the 20th century a certain toll booth collected Rs.100 for every bike in the first six months and Rs.150 in the last six months passing through a toll booth. If in 1990 an average of four bike rallies passed through the toll booth every month and there was an average of 40 bikes in each bike rally that year, how many rupees were collected from the rally over the year?

a) 180000

b) 270000

c) 160000

d) 240000

Ans: d

Rupees were collected from the rally over the year= (6×4 × 40 × 100) + (6×4×40 ×150) = Rs. 240000

40. A worker P charges Rs. 70 an hour while another worker Q charges Rs. 50 an hour. If P and Q work the same amount of time together on a job, how many total hours together do they work if their combined charge for labour is Rs. 1680?

a) 14

b) 28

c) 42

d) 18

Ans: b

Working together for 1 hour, they earn Rs. 120

1680/120 = 14

So, combined total hours = 14×2 = 28.

41. A certain book costs Rs. 15 more in hardcover than in softcover. If the cost of 20 softcover and 40 hard-cover together is Rs. 3000. How much does the 120 books cost in hard-cover (In Rupees)?

a) 8000

b) 5500

c) 4800

d) 6600

Ans: d

Let the cost of softcover books = x

So, cost of hardcover books = (x = 15)

Hence, 20x + 40(x+15) = 3000

=> x= 40

So, the cost of one softcover book = 40

and one hardcover book = 55

So, cost of 120 books in hardcover = 55 × 120 = Rs. 6600.

42. During a certain month, a shopkeeper sold Rs. 32000 worth of two items, rice at the rate of Rs. 40/kg and wheat at the rate of Rs. 50/kg. If rice and wheat sold in the ratio of 3: 4. Find the quantity of rice and wheat (in kg).

a) 150 and 200

b) 300 and 400

c) 180 and 240

d) 600 and 800

Ans: b

3x × 40 + 4x × 50 = 32000

=> x = 100

Quantity of rice = 300 kg

and quantity of wheat= 400 kg

43. 9 years ago, Richa's age was 3 times the age of Rohan. What will be Rohan's age (in years) after 12 years if the sum of their present age is 34 years?

a) 20

b) 25

c) 30

d) 35

Ans: b

Let the present age of Richa = x years

So, present age of Rohan = (34-x) years

9 years ago, the situation was

(x-9) = 3 × (34 - x - 9)

=> x= 21

So, the present age of Richa and Rohan is 21 years and 13 years respectively.

Hence, After 12 years Rohan's age = 13+12 =25 years.

44. During the first 4 months of a year the amount of water in a pond was reduced by one-third and in the next four months, the amount of water in a pond was reduced by two- third of the remaining water. If 7000 gallons of water are required to fill the pond after last 8 months' use. What is the capacity of the pond (in gallons)?

a) 10000

b) 9000

c) 36000

d) 64000

Ans: c

Let, capacity of pond = x gallons

x - (x/3 + 2x/3 × 2/3) = 2x/9

7x/9= 7000

So, x = 7000 × 9/7 = 9000 gallons.

45. A and B are two friends. A's watch gains 1 minute in an hour and B's watch loses 2 minutes in an hour. Once they set both the watches at 12:00 noon correctly. When will the two incorrect watches of A and B show the same time together?

a) 8 days later

b) 10 days later

c) 6 days later

d) cannot be determined

Ans: b

To show the same time together the difference between two watches must be 12 hr.

Now, since they create 3 min difference in 1 hr

So, they will create 12 hr difference in $\frac{1}{3} \times \frac{12 \times 60}{24} = 10\ days\ later$

46. In how many different ways can four books A, B, C and D be arranged one above another in a vertical order such that the books A and B should not come together?

a) 9

b) 12

c) 14

d) 8

Ans: b

Take A and B as one unit, they are always continuous.

Now, numbers of units to arranged = 4 – 2 + 1 = 3

These three books can be arranged in 3! ways

and A and B can be arranged in 2 ways among themselves.

So, the number of ways = 2 × 3! = 12.

47. If the product of m and n is equal to 9 less than the product of p and q, and m is 3 more than p and n is 6 less q. Which of the following statement(s) must be true?

I. 2m - n = 9

II. q - p = 9

a) Only I

b) Only II

c) Both I and II

d) None of the above

Ans: a

Given, mn+9 = pq

After putting p = (m-3) and q= (n+6) and solving

We get, 2m-n = 9.....(i)

Moreover, after putting m = (p + 3) and n = (q-6)

We get, (q-p) = 3.....(ii)

So, only one statement is correct.

48. Four partners invested Rs. 12,000 each to purchase 100 shares of a Company A. If the total cost they have to pay for the shares is Rs. 60,000 plus a 5 percent commission on total share price. How much amount per share (In Rupees) each partner has to pay additionally?

a) 1800

b) 2210

c) 3750

d) 4440

Ans: c

Total cost of the share = 60000+ 60000×5/100 = Rs. 63000

So, Investment by each person = 63000/4 = 15750

Hence, additionally investment = 15750 - 12000 = Rs. 3750.

49. At parking area A, it costs ₹85 to park a car for the first hour and ₹12.5 for each additional hour. At parking area B, it costs ₹95 for the first hour and ₹11 for each additional hour. What is the difference between the cost of parking a car for 8 hours at parking area A and parking area B (in Rupees)?

a) 1.50

b) 0.50

c) 2.50

d) 0

Ans: b

Difference = (85+7 × 12.5) -(95 + 7 ×11) = ₹0.5

50. At a high school, 4/5 of the students are in sports teams. 2/5 students who play sports are in the cricket team. If there are a total of 300 students in the high school, how many students play in the cricket teams?

a) 90

b) 72

c) 80

d) 96

Ans: d

Number of students play in the cricket teams =300 × 4/5 × 2/5 = 96

51. Dipak has Rs. 1700 more than Rohit. After Dipak spends Rs. 500 on groceries, Dipak has 4 times as much money as Rohit. What is the ratio of money, Rohit and Dipak has?

a) 2:7

b) 4:21

c) 4:17

d) 5:21

Ans: b

Let Rohit have Rs. x

then Dipak has Rs. (1700 +x)

After spending 500, (1200 + x) = 4x

=> x = 400

So, Ratio = 400:2100 = 4:21

52. Maya finds that 6/7 Cans of paint are just enough to paint 4/5 of her room. How many more cans of paint will she need to finish painting in this room and painting a second room of the same size?

a) 7/5

b) 11/5

c) 9/7

d) 15/7

Ans: c

Cans needed to paint one room = 6/7 × 5/4 = 15/14

So, total required cans = (15/14 - 6/7) + 15/14 = 9/7

53. The total air-fare for 5 adults and 3 children is Rs. 14000. If each child's fare is two-thirds of each adult's fare, what is the fare for 18 children (In Rupees)?

a) 12000

b) 15000

c) 18000

d) 24000

Ans: a

Let one adult's fare = x

So, fare for 1 child = 2x/3 or fare for 3 children = 2x

So, 5x + 2x = 14000

=> x= 2000

Hence, fare for 18 children = 2000 × 6 = Rs. 12000.

54. Rupesh spent 5/7 of her savings on buying a bike, and he spent 1/10 of his remaining savings on a new watch. If the watch cost her Rs. 2500, how much were Rupesh's original savings (In Rupees)?

a) 46000

b) 72500

c) 75000

d) 87500

Ans: d

Let, Rupesh's original savings = ₹x

2x/7 × 1/10 = 2500

=> x = 87500

Hence, Rupesh's original savings = Rs. 87500.

55. If the LCM of two numbers a and b is 1104 and their HCF is 4, which of the following MUST be true?

I. a * b = 4416

II. a and b are both divisible by 8

III. a: b = 48: 23 or a: b = 23: 48

a) I only

b) II only

c) I and III only

d) II and III only

Ans: a

Statement I: a*b = 4416

Result 1 states that a*b = LCM (a, b) * HCF (a, b).

So, a*b = 1104*4=4416.

Statement I is true.

Statement II: a and b are both divisible by 8

The HCF of a and b is 4. Therefore, the largest number that could divide both a and b is: 4

If 8 could divide both a and b, the largest number that could divide both would have been 8

Consequently, the HCF of the two numbers would have been 8 and not 4.

Therefore, statement II is NOT true.

Statement III: a: b = 48: 23 or a: b = 23: 48

If L is the LCM (a, b) and h is the HCF (a, b), L = m*n*h.

Where a = mh and b = nh and m and n are co-prime.

We have to determine whether a: b = 48: 23 or 23: 48.

i.e., we have to determine whether m: n = 48: 23 or 23: 48.

Because L = m*n*h, 1104 = m*n*4

Or m*n = 276 ≠ 48 x 23

Note: m and n are co-prime.

Statement III is NOT true.

56. How many integers are there between 100 to 200 (both excluded) which is odd and is divisible by 3 but not by 7.

a) 16

b) 12

c) 11

d) 13

Ans: d

There are 33 numbers between 100 and 200 which are divisible by 3.

Out of these, 17 are even and 16 are odd.

There are 5 numbers between 100 and 200 which are divisible by 21 (LCM of 3 and 7).

Out of these, 3 are odd.

Hence, the number of odd numbers divisible by 3, but not by 7 is (16 – 3) = 13.

57. If a and b are two perfect square digits and ab is a two-digit perfect square number such that (a × b) + (a + b) = ab, then the value of [ba – (b + a)] is

a) 27

b) b^2

c) 81

d) Either of b and c

Ans: c

The perfect square digits are 1, 4 and 9.

So, the number formed by using any of these two digits which is also a perfect square is 49.

where (4 × 9) + (4+9) = 49

36+13=49 = 49=49

So, 94 – (9 + 4) = 81.

58. There is a 6-digit number p0125q, which is divisible by 24.

The number of possible combinations of p and q is

a) 2

b) 3

c) 4

d) 5

Ans: b

p0125q must be divisible by 3 & 8.

25q must be divisible by 8.

Possible values of q= 6 only.

Also, p01256 is divisible by 3.

p+14 is a multiple of 3.

P can be = 1, 4, 7

Possible combinations are (1,6), (4,6) and (7, 6) =3

59. A scheme was launched where it was announced that 5 cylinders will be provided in 3 selected villages: A, B and C as part of the pilot project. In how many ways these cylinders can be given in 3 villages such that village A gets more cylinders than village B and village B gets more cylinders than village C (Assuming a Village can get 0 cylinders also)?

a) 2

b) 3

c) 1

d) 4

Ans: b

Suppose village A got 'a' Cylinders.

Village B got 'b' Cylinders.

Village C got 'c' Cylinders.

Then, $a+b+c=5$ **and** $a>b>c$.

For $c=0 \rightarrow b=1, c=4$

& $b=2, c=3$

For $c=1 \rightarrow b=2, c=3$

Hence, total '3' combinations are possible.

60. How many combinations are possible for p and q?

p and q are positive numbers, where p is an even number and q is an odd number. Also, p is greater than q.

The product of p and q is 30.

a) 2

b) 3

c) 4

d) 5

Ans: b

From II, p, q could be (2, 15) (6, 5), (10, 3) and (30, 1).

But from I, we get p, q can't be (2, 15). (We are considering only positive even integers).

Hence, 3 combinations are possible.

61. A class of 40 students is to be divided into smaller groups and each group is to contain 3, 4, or 5 people. At least one group must contain 4 students and at least one group must contain 5 students and no student should be left out. Then, what is the largest number of groups possible?

a) 13

b) 10

c) 12

d) 8

Ans: c

1 group of 5 students

2 groups of 4 students

9 groups of 3 students

So, total 12 groups.

62. How many coins do A and B have together?

I. A has twice as many coins as B.

II. If A gives B, 10 of his coins, he will have half as many as coins as B.

a) Statement I alone is sufficient to answer the question.

b) Statement II alone is sufficient to answer the question.

c) Both the Statements together are necessary to answer the question.

d) Both the Statements together are insufficient to answer the question.

Ans: c

B has x coins, then A will have 2x coins.

After an exchange of coins,

A will have (2x - 10) coins and B will have (x+10) coins.

According to the Question,

(x+10)/2 = 2x - 10

x = 10

Hence, A & B combined will have 30 coins.

Both the statements are necessary to answer the question.

63. How many workers earn Rs. 75 a day?

I. In a group of 60 workers, the average salary is Rs. 80 a day per worker.

II. If some of the workers earn Rs. 75 a day and all the rest earn Rs. 100 a day.

a) Statement I alone is sufficient to answer the question.

b) Statement II alone is sufficient to answer the question.

c) Both the Statements together are necessary to answer the question.

d) Both the Statements together are insufficient to answer the question.

Ans: c

From Statement I, the total salary of workers = Rs. 4800

From Statement II, taking input from Statement I, we get;

Let x workers earn Rs. 75 & (60 - x) workers earn Rs. 100.

75x + (60-x)100 = 4800

x = 48

Hence, both the statements together are necessary to answer the question.

64. What was the amount of the discount?

I. If an item is sold at Rs. 800 after a 20 % discount.

II. The cost of the item is Rs. 1000.

a) Statement I alone is sufficient to answer the question.

b) Statement II alone is sufficient to answer the question.

c) Both the Statements together are necessary to answer the question.

d) Both the Statements together are insufficient to answer the question.

Ans: a

From Statement I: Cost of item = x

Then, x - 20% of x = 800.

Hence, discount = Rs. (1000 - 800) = Rs. 200.

From Statement II, we cannot get the discount amount.

65. In the share market, the price of a share A, in a day initially rose by y% and later finally in that day, dropped by y%. In this case, the price decreased by 441 rupees while the price of share B, in a day initially increased by z% and later decreased by z%. The decrease in the price of share B was 529 rupees. If the price of both the shares are same originally then the ratio of y/z will be:

a) 21:22

b) 21:23

c) 22:23

d) 23:24

Ans: b

Net price of share 'A' on day 1

$$= x\left(\frac{1+y}{100}\right)\left(\frac{1-y}{100}\right)$$

Let original price be Rs. (x– share 'A')

\ Change in price

$$= x - x\left(1 - \frac{y^2}{100^2}\right)$$

And change in price of share B

$$= \frac{x z^2}{100^2}$$

Now, ratio

$$\Rightarrow \frac{\frac{x y^2}{100^2}}{\frac{x z^2}{100^2}} = \frac{441}{529}$$

$$\Rightarrow \left(\frac{y}{z}\right)^2 = \left(\frac{21}{23}\right)^2$$

$$\backslash \ \frac{y}{z} = \frac{21}{23}$$

66. A store sells a watch for a profit of 25 % over the cost price. If the cost price of a watch is increased by 10% and the selling price is decreased by 20%. What will be the loss percentage?

a) 25/11

b) 10/11

c) 20/21

d) 15/4

Ans: b

Let old CP = 100

So, SP = 125

New cost price = 110

New SP = 125 × 4/5 = 100

Loss % = 10 × 10/110 = 10/11

67. Consider 3 positive integers; a, b and c where 'a' and 'b' are odd and positive while. 'c' is even and positive. Then which of the following is true?

I. $(a \times b^2) \times (a^2 \times b^2)$ is an odd number

II. $(a \times b^2) \times (a^2 \times b^2) \times c$ is an even number

III. $(a^2 \times b) \times (a^2 + b^2)$ is an odd number

a) I and III are correct.

b) Only II is correct.

c) I and II are correct.

d) None of the above

Ans: c

I. Odd × even= even

II. odd × even × even = even.

III. odd + odd = even.

odd × even = even.

68. A builder purchases 57 windows after 25 percent off at Rs. 1,200. If the builder receives an additional discount of 5% on the purchase he paid, how much did each window cost (in Rupees)?

a) 40

b) 25

c) 30

d) 20

Ans: d

1200 × 95/100 = 1140

1140/57 = Rs 20

69. If A can finish a job in 5 hours and B can finish the same job in 10 hours. After doing work for 2 hours, A leaves the job while at the same time B along with C joins the job who can complete the job in 15 hours. How many minutes will it take both together to finish the job?

a) 164

b) 180

c) 144

d) 150

Ans: c

Work completed by A and B together in 2 hr = 3/5

Remaining work = 2/5

Work completed by B and C together in 1 hr (1/10 + 1/15) = 1/6

So, 2/5 work will be completed in 12/5 hr = 144

70. What percent of both classes are boys?

I. One class in a school is 30 percent boys.

II. If a second class that is half the size of the first has 40 percent boys.

a) Statement II alone is sufficient to answer the question.

b) Either of the statements alone is sufficient to answer the question.

c) Both the Statements together are necessary to answer the question.

d) Both the Statements together are insufficient to answer the question.

Ans: c

Both the Statements together are necessary to answer the question.

Let no. of students in second class = 100 then, no. of students in the first class = 200

No. of boys in second class = 40. but we don't know any of the boys in first class.

71. In how many ways can the 26 letters of the English alphabet be arranged so that there are seven letters between the letters C and D?

a) 12

b) $36 \times 24!$

c) ${}^{26}P_7 \times 18! \times 2$

d) ${}^{24}C_7 \times 20! \times 2$

Ans: b

Between C & D, there are 7 letters out of 24.

Arranging these 7 numbers between C & D = 7!

Number of ways of selecting 7 letters out of 24 = ${}^{24}C_7$

Number of ways of arranging C & D = 2

Number of ways 9 letter word with C & D at both ends = ${}^{24}C_7 * 7! * 2$

Now, consider these 9 letters as a single letter.

Number of ways of arranging the 18 letters = 18!

Total number of ways the 26 letters of the English alphabet be arranged so that there are seven letters between the letters C and D = ${}^{24}C_7 * 7! * 2 * 18! = 24! * 2 * 18 = 36 * 24!$

72. A boy is running on a foggy road at a speed of p km/hr. Due to low visibility, the boy can see only up to 600 meters. If a car overtakes the boy from behind at the speed of 20 km/hr and the boy can see the car for 3.6 minutes. Find the speed of the boy (in km/h)?

a) 5

b) 8

c) 15

d) 10

Ans: d

The boy can see up to = 600/1000 = 0.6km

Time for which the boy can see the car = 3.6/60 = 0.06 hour

ATQ, 0.6/(20-p) = 0.06

p = 10 km/hr

73. Raman has 5 pants and 7 shirts in his closet. He wants to wear a different pant/shirt combination each day without buying new clothes for as long as he can. How many weeks can he do this for?

a) 4

b) 5

c) 7

d) 6

Ans: b

Unique combinations of pants & shirts Raman can wear = 5 x 7 = 35 ways

If he wears one combination each day, he can last 35 days, or 5 weeks (without buying new clothes.)

74. How many minutes longer will it take him than if he makes the entire trip at 40 kilometres per hour?

I. Shiva is making 80-kilometer trip.

II. If he travels at 60 kilometres per hour for the first 20 kilometres and then at 30 kilometres per hour for the rest of the trip.

a) Statement (I) by itself is sufficient to answer the question, but statement (II) by itself is not.

b) Statement (II) by itself is sufficient to answer the question, but statement (I) by itself is not.

c) Statements (I) and (II) taken together are sufficient to answer the question, even though neither statement by itself is sufficient.

d) Either statement by itself is sufficient to answer the question.

Ans: c

From I: Distance = 80 km

From II: T1= 20/60 = 1/3 x 60 = 20 mins

T2 = 60/30 = 2 hours

Total time for entire trip = 2 hrs & 20 mins

Now, T3 = 80/40 = 2 hours

His trip took him 2 hours and 20 minutes, whereas had he travelled 20kph it would have taken him 2 hours. So, he took 20 minutes longer.

75**. What percent of the entire student body DO NOT play Kho-Kho sport?**

I. In a certain school, 40 percent of all boys' students and 50 percent of all girls' students participated in Kho-Kho.

II. If 60 percent of the students at the school are boys.

a) Statement (I) by itself is sufficient to answer the question but statement (II) by itself is not.

b) Statement (II) by itself is sufficient to answer the question but statement (1) by itself is not.

c) Statements (I) and (II) taken together are sufficient to answer the question, even though neither statement by itself is sufficient.

d) Either of the statements by itself is sufficient to answer the question.

Ans: c

Let total students = 100x

From II: Boys = 60x & Girls = 40x

From II: 40% of boys & 50% of girls participated.

Means, 60% of boys & 50% of girls do not participate

Means, Boys = 60x x 40%= 24x

Girls = 40x x 50% = 20x

Percentage of entire students who do not participated = (44x/100x) x 100 = 44x

Hence, both I & II are required.

76. If four men working at the same rate can do 1/3rd of a job in 30 minutes. How many minutes would it take two men working at this rate to do 1/5th of the job?

a) 40

b) 48

c) 36

d) 72

Ans: c

(4*40)/ (1/3) = (2*x)/ (1/5)

x= 36 minutes

77. How many workers does the company employ?

The workforce of a company is 20 percent part-time workers, with the rest of the workers full-time.

At the end of the year 30 percent of the full-time workers received bonuses.

72 full-time workers received bonuses.

a) 132

b) 240

c) 280

d) 300

Ans: d

Let total workers = 100x

Part-time = 20x & Full-time = 80x

Bonus received = 80x x 30% = 24x

From III: 24x = 72

x = 3

Total workers = 100 x 3 =300

78. In a cricket championship, there are 36 matches. If each team plays one match with every other team, the number of teams is

a) 8

b) 9

c) 10

d) None of these

Ans: b

Let n be the number of teams. $^nC_2 = 36$
$(n(n-1)/2) = 36$
$\Rightarrow n(n-1) = 72$
$\Rightarrow n = 9$

79. A factory cut its labour force by 16 percent, but then increased it by 25 percent of the new amount. What was the net percent change in the size of the workforce?

a) 5% decrease

b) No net changes

c) 5% increase

d) 9% increase

Ans: c

Assume total workers = 100.

Decrease = 16%.

New number of workers = 84

Now increase = 25%

New number of workers = 84 + 84/4 = 105

Net Change = 105 - 100 =5 or 5% increase

80. If a dealer had sold a stereo for Rs. 600, he would have made a 25 percent profit. Instead, the dealer sold it for a 60 percent loss. At what price was the stereo sold (in Rupees)?

a) 200

b) 192

c) 300

d) 150

Ans: b

SP = Rs.600

CP = 600 * 4/5 = Rs. 480

The dealer sold it for a 60% loss.

SP = 480 * 40/100 = Rs. 192