CSIR NET Exam 2022 Exam Analysis (Mathematical Science 16th February)

Memory Based Questions

Memory Based Questions (Quantitative Aptitude)

Topic-Permutations and Combination

Q1. No. of ways 6 balls can be distributed among 3 guys so that each gets atleast 1 ?

Solution:- Total no. of possible distribution = 3^6

Now, no. of ball received by one person = 3_{C1} $(26 - 2)$

$\Rightarrow 186$

When all 6 balls are received by 1 person. i.e. may be 1st or 2nd person

Now, 1 person among 3 gets all 6 ball = 3_{C1}

$\therefore$ No. of ways that each get atleast 1 ball = $3^6 - (186 + 3)$

$= 540$ Ans.

Topic-Mensurations

Q2. From a completely filled water tank water is poured into boxes with a 1/10th radius. No. Of the boxes required?

Solution:- Let water tank radius = 10m

So, small tank radius = 1 m

$\therefore \pi (10)^2 h = [\pi (1)^2 h] \times N$

Hence N = 100

So, no. of boxes required will be 100

Topic- Ratio & Proportion

Q3. A,B,C and D count coins in 1,2,5,10 ratios . If A has 6 rs more than B. Find the value of no. of coins?
Solution:-

$$
\begin{array}{ccccccc}
A & : & B & : & C & : & D \\
1 & : & 2 & : & 5 & : & 10
\end{array}
$$

₹6

Here 1 unit = Rs. 6

So, from above logic we can find no. of coins

∴ Value of coin will be 18 × 6 = 108

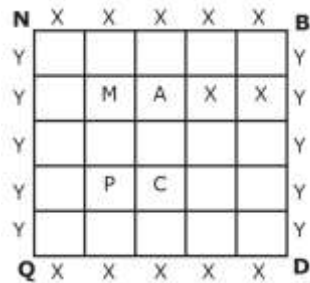Now,

A = Rs. 6;

B = $\dfrac{2}{18} \times 108 = 12$

C = $\dfrac{5}{18} \times 108 = 30$

D = $\dfrac{10}{18} \times 108 = 60$

Topic-Permutations & Combinations

Q4. In a square dimension of 5×5, starting from the centre square. In how many ways he can reach corners? If the condition is, he can move only horizontally or vertically.

Solution:-

Small Steps = In horizontal is x

In vertical is y

No. of path from A to B = $\dfrac{4!}{2!2!} = 6$

∴ Total no. of ways (A to B) + (M to N) + (C to D) + (P to Q) = 24

Topic- Average

Q5.In a class named A and B. The number of people in class A is 24. If we exchange 1 guy in between class A and B,then the average of class A increases by 1.25 whereas that of B reduces by 1. Find the total strength of class B.

:- No. of people in class A = 24

A   :   B
                            [Given]
24   ?

Now, According to the question if we exchange one guy between class A and B. Then the average increases by 1.25. and reduced by

If average 1.25 increased in class A

Then, 1.25 × 24 = 30 kg

If 30 kg increased in A means 30 kg will decrease from B as average is reduced in class B

Now, it is given that B average reduced by 1 means,

1 = 30

Therefore 30 students is the strength of the class B

Topic-Number System

Q6. In 40 pages there are "x" lines on each page. If we remove 2 lines per page, we get 10 more pages. Find the no. of lines each page "x".

Solution:- Suppose let the no. of lines in each page be x

There is 40 such page

Now, according to the question if 2 lines per page are removed, 10 more pages added.

Means, if 2 lines are removed from 1 page, then from 40 page = 2 × 40 = 80 lines removed
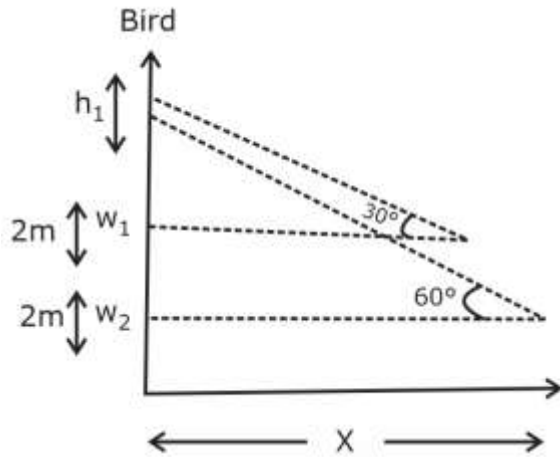
Now, 80 lines make 10 page

∴ 1 page has $\frac{80}{10}=8$ lines

Hence each page has 8 lines.

Topic- Trigonometry

Q7. A building has 2 windows. The lower window is 2 m above the ground and the 2nd window is 4 m above the ground. A flying bird making an angle of 30-degree 60 degrees respectively with the window . At what height is the bird above the ground?

Solution:- The building has 2 windows which are 2m and 4 m from ground respectively

Bird

$$\tan 60° = \frac{2 + h_1}{x} = \sqrt{3}$$

$$\tan 30° = \frac{h_1}{x} = \frac{1}{\sqrt{3}}$$

By dividing above equation

$$\frac{1}{\sqrt{3} \times \sqrt{3}} = \frac{h_1 \times x}{x(2 + h_1)}$$

$\Rightarrow 2 + h_1 = 3h_1$

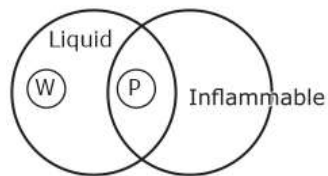$\Rightarrow h_1 = 1$

$\therefore$ Height of bird = 4 + 1 i.e. 5

Hence, height of bird from ground = 5m

Memory Based Questions (Reasoning)

Topic-Logical Venn Diagram

Q8.Which among the following represents the Venn diagram involving inflammable, water, liquid and petrol ?

Solution:- Following is the venn diagram for Inflammable, water, liquid and petrol.

Here water is not inflammable but petrol and some other liquid may be inflammable.

Topic-Calendar

Q9. From 2000 to 2020 how many days are there whose reverse gives the same.If the Calendar follows dd/mm/yyyy format?

Solution:- If we considered date 1 month 1-year format, we will find 15 palindrome dates from 2000-to 2020

i.e.

10th Feb	2001
20th Feb	2002
1 Feb	2010
11 Feb	2011
1 Oct	2011
21 Feb	2012
2 Oct	2012
3 Oct	2013
4 Oct	2014
5 Oct	2015

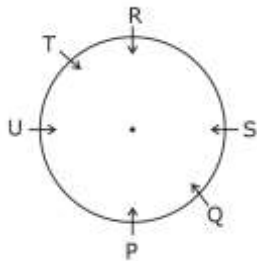|	
6 Oct	2016
7 Oct	2017
8 Oct	2018
9 Oct	2019
2 Feb	2020

Topic- Sitting Arrangement

Q10. PQRSTU sat at a circular table facing the center T is not adjacent to S. T is diametrically opposite to Q and P is left to Q. Then which of the following statements is incorrect?

A. R may sit adjacent to T

B. Q is right to P

C. U may sit beside T

D. U is exactly opposite to P

Ans. D

Solution:

Following is the reference for the above data

Hence, from the above data, we can say option (D) is incorrect

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