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Course: GATE
Computer Science Engineering(CS)

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TOPICWISE : GENERAL APTITUDE-1 (GATE - 2019) - REPORTS

OVERALL ANALYSIS | COMPARISON REPORT | SOLUTION REPORT

ALL(17) | CORRECT(0) | INCORRECT(0) | SKIPPED(17)

Q. 1

The difference of the squares of two consecutive even integers is divisible by which of the following integers?

Solution Video | Have any Doubt ?

A 7

B 6

C 5

D 4 — Correct Option

Solution :
(d)
Let the two consecutive even integers be $2n$ and $(2n + 2)$.

$$(2n + 2)^2 - 2n^2 = (2n + 2 + 2n)(2n + 2 - 2n)$$
$$= 2(4n + 2)$$
$$= 4(2n + 1)$$

$4(2n + 1)$ is divisible by 4.
The answer is (d).

QUESTION ANALYTICS +

Q. 2

A bag contains 6 black and 8 white balls. One ball is drawn at random. The probability that the ball drawn is white is

Solution Video | Have any Doubt ?

A $\frac{3}{4}$

B $\frac{4}{7}$ — Correct Option

Solution :
(b)

$$\text{Number of balls} = 6 + 8 = 14$$
$$\text{Number of white balls} = 8$$
$$P(\text{drawing a white ball}) = \frac{8}{14} = \frac{4}{7} = 0.57$$

C $\frac{1}{8}$

D $\frac{3}{7}$

QUESTION ANALYTICS +

Q. 3

Find the odd one out
41, 43, 47, 61, 73, 80

Solution Video | Have any Doubt ?

A 43

B 47

C 73

D 80 — Correct Option

Solution :
(d)
Each of the numbers except 80 is a prime number.
Hence, 80 is the odd one out.

QUESTION ANALYTICS +

Q. 4

A tank is emptied by three taps with uniform flow. The first two taps operating together empty the tank in the same time during which the tank is emptied by the third tap alone.
The second tap empties the tank 5 hours faster than the first tap and 4 hours slower than the third tap. The time required by the first tap is

FAQ | Solution Video | Have any Doubt ?

A 8 hours

B 10 hours

C 15 hours — Correct Option

Solution :
(c)
Suppose first tap alone takes x hours to empty the tank. Then, second and third taps will take $(x - 5)$ and $(x - 9)$ hours respectively to empty the tank.

$$\therefore \quad \frac{1}{x} + \frac{1}{(x-5)} = \frac{1}{(x-9)}$$

$$\Rightarrow \quad \frac{x-5+x}{x(x-5)} = \frac{1}{(x-9)}$$

$$\Rightarrow \quad (2x - 5)(x - 9) = x(x - 5)$$

$$\Rightarrow \quad x^2 - 18x + 45 = 0$$

$$\Rightarrow \quad (x - 15)(x - 3) = 0$$

$$\Rightarrow \quad x = 15, 3$$

For $x = 3$, $(x - 5)$ and $(x - 9)$ will be negative. $\therefore$ answer is 15 hours.

D 20 hours

QUESTION ANALYTICS +

Q. 5

In how many different ways can the letters of the word "WORKSPACE" be arranged so that the vowels always come together.

FAQ Solution Video Have any Doubt ?

A 28420

B 30240 — Correct Option

Solution :
(b)
The word WORKSPACE contains 9 different letters.
When the vowels (OAE) are always together. They can be supposed to form one letter.
Then, we have to arrange the letters WRKSPC (OAE).
Now, 7 letters can be arranged in 7! = 5040 ways.
The vowels (OAE) can be arranged among themselves in 3! = 6 ways.
$\therefore$ Required no. of ways = $(5040 \times 6) = 30240$

C 32420

D 34820

QUESTION ANALYTICS +

Q. 6

In a 100 m race, Ankit can beat Varun by 25 m and Varun can beat Abhinav by 4 m. In the same race, Ankit can beat Abhinav by _____ m.

FAQ Solution Video Have any Doubt ?

28 — Correct Option

Solution :
28

$$\text{Ankit : Varun} = 100 : 75$$
$$\text{Varun : Abhinav} = 100 : 96$$
$$\therefore \quad \text{Ankit : Abhinav} = \left(\frac{\text{Ankit}}{\text{Varun}} \times \frac{\text{Varun}}{\text{Abhinav}}\right)$$
$$= \left(\frac{100}{75} \times \frac{100}{96}\right) = \frac{100}{72} = 100 : 72$$

$\therefore$ Ankit beats Abhinav by $(100 - 72)$m = 28 m

QUESTION ANALYTICS +

Q. 7

If $3^{(x-y)} = 27$ and $3^{(x+y)} = 243$, then x is equal to _____.

FAQ Solution Video Have any Doubt ?

4 — Correct Option

Solution :
4

$$3^{x-y} = 27 = 3^3$$
$$\Rightarrow \quad x - y = 3 \qquad \ldots(i)$$
$$3^{x+y} = 243 = 3^5$$
$$\Rightarrow \quad x + y = 5 \qquad \ldots(ii)$$

Solving (i) and (ii), we get $x = 4$

QUESTION ANALYTICS +

Q. 8

The angle of elevation of the moon, when the length of the shadow of a pole on a full moon night is $\sqrt{3}$ times the height of a pole is _____

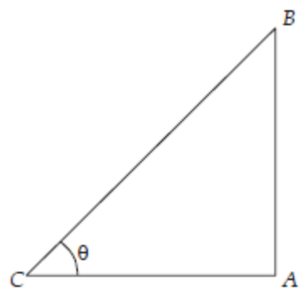
degree.

Solution Video | Have any Doubt ?

30 — Correct Option

Solution :
30

Let AB be the pole and AC be its shadow on the full moon night



Let $\angle ACB = \theta$

Then $\frac{AC}{AB} = \sqrt{3}$

$\Rightarrow \cot\theta = \sqrt{3}$

$\therefore \theta = 30°$

QUESTION ANALYTICS +

Q. 9

The age of mother 10 years ago was thrice the age of her daughter. Ten years hence, mother's age will be twice that of her daughter. The sum of their present ages is _____.

Solution Video | Have any Doubt ?

100 — Correct Option

Solution :
100

Let the ages of mother and daughter 10 years ago be $3x$ and x years respectively.

Then, $(3x + 10) + 10 = 2[(x + 10) + 10]$

$\Rightarrow 3x + 20 = 2x + 40$

$\Rightarrow x = 20$

$\therefore$ Sum of present age $= (3x + 10) + (x + 10)$

$= 70 + 30$

$= 100$

QUESTION ANALYTICS +

Q. 10

At what time between 4 and 5 O'clock will hands of a watch point in opposite directions?

Solution Video | Have any Doubt ?

A 40 min past 4

B $54\frac{6}{11}$ min past 4 — Correct Option

Solution :
(b)

A 4 O'clock, the hands of the watch are 20 minute spaces apart.

To be in opposite directions, they must be 30 min spaces apart.

$\therefore$ Minute hand will have to gain 50 minute spaces

55 minute spaces are gained in 60 min

50 minute space are gained in $\left(\frac{60}{55} \times 50\right)$ min or $54\frac{6}{11}$ min

$\therefore$ Required time $= 54\frac{6}{11}$ min past 4

The answer is (b).

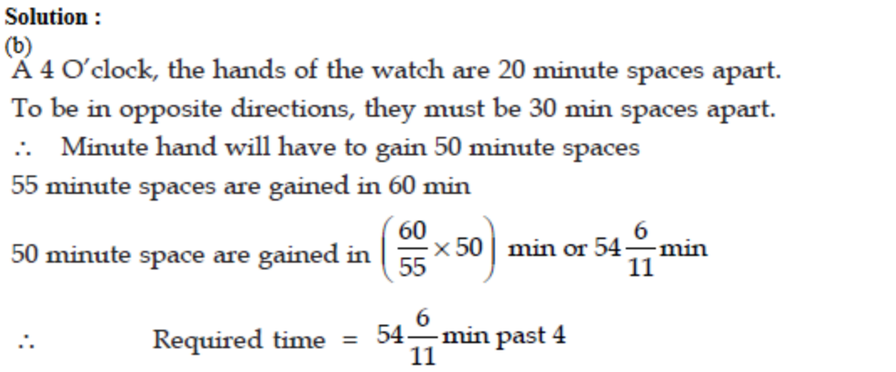
C 45 min past 4

D $50\frac{4}{11}$ min past 4

QUESTION ANALYTICS +

Q. 11

The gold reserves of India (in million USD) from 1981-82 to 1988-1989 are shown below



For which year, the percent increase of gold reserves over the previous year is the highest?

FAQ | Solution Video | Have any Doubt ?

A 1987-88

B 1985-86

C 1984-85

D 1982-83 Correct Option

Solution :
(d)
There is an increase in gold reserves during the years 1982-1983, 1984-1985, 1986-1987, 1987-1988 as compared to previous year as shown by bar-graph.
The percentage increase in reserves during these years compared to previous year are:

$$\text{For 1982-1983} = \left[\frac{(3720-2640)}{2640}\times 100\right]\% = 40.91\%$$

$$\text{For 1984-1985} = \left[\frac{(3360-2520)}{2520}\times 100\right]\% = 33.33\%$$

$$\text{For 1986-1987} = \left[\frac{(4320-3120)}{3120}\times 100\right]\% = 38.46\%$$

$$\text{For 1987-1988} = \left[\frac{(5040-4320)}{4320}\times 100\right]\% = 16.67\%$$

Clearly, the percentage increase over previous year is highest for 1982-1983.
The answer is (d).

QUESTION ANALYTICS +

Q. 12

A large cube is formed from the material obtained by melting three smaller cubes of 10 cm, 8 cm and 6 cm sides. What is the ratio of the total surface areas of the large cube and the smaller cube?

Solution Video | Have any Doubt ?

A 3 : 5

B 20 : 27

C 3 : 4

D 18 : 25 Correct Option

Solution :
(d)
Volume of the large cube $= (6^3 + 8^3 + 10^3)$
$= 216 + 512 + 1000 = 1728\ \text{cm}^3$
Let the edge of the large cube be x
So, $x^3 = 1728$
$\Rightarrow x = 12\ \text{cm}$
$\therefore$ Required ratio $= \left(\frac{6\times 12^2}{6\times\left(6^2+8^2+10^2\right)}\right) = \frac{12^2}{36+64+100}$
$= \frac{144}{200} = 18:25$
The answer is (d).

QUESTION ANALYTICS +

Q. 13

The following table gives the percentage distribution of population of five states Punjab, Haryana, Rajasthan, Bihar and Orissa on the basis of UN poverty line and also on the basis of sex.

State	% of population below UN poverty line	Proportion of Females and Males	
		Below poverty line	Above poverty line
		M : F	M : F
Punjab	35	5 : 6	6 : 7
Haryana	25	3 : 5	4 : 5
Rajasthan	24	1 : 2	2 : 3
Bihar	19	3 : 2	4 : 3
Orissa	15	5 : 3	3 : 2

What will be mole population above poverty line for Punjab if the female population below poverty line for Punjab is 2.1 million?

Solution Video | Have any Doubt ?

A 3.0 million

B 3.3 million Correct Option

Solution :
(b)
Female population below poverty line for Punjab = 2.1 million
Let the male population below poverty line for Punjab be x million
Then $5 : 6 = x : 2.1$
$\Rightarrow x = \frac{2.1\times 5}{6} = 1.75$ million
$\therefore$ Population between poverty line for Punjab = (2.1 + 1.75) million = 3.85 million
Let the population above poverty line for Punjab be y million.
Since, 35% of population of Punjab is below poverty line, therefore, 65% of the total population of Punjab is above poverty line i.e. the ratio of population below poverty line to that above poverty line for Punjab is 35 : 65.
$\therefore$ $35 : 65 = 3.85 : y$
$\frac{65\times 3.85}{}$

$\Rightarrow \quad y = \frac{}{35} = 7.15$

$\therefore$ Population above poverty line for Punjab = 7.15 million.

So, male population above poverty line for Punjab = $\left(\frac{6}{13} \times 7.15\right)$ million = 3.3 million

The answer is (b).

C 3.6 million

D 2.7 million

QUESTION ANALYTICS +

Q. 14

Nirav invested one half of his savings in a bond that paid compound interest, interest being compounded annually for 2 years and received ₹605 as interest. He invested the remaining in a bond that paid simple interest for same 2 years at the same rate of interest and received ₹ 550 as interest. What was the value of his total savings before investing in these two bonds?

Solution Video | Have any Doubt ?

2750 Correct Option

Solution :
2750

Simple interest for 2 years = ₹550

Simple interest for 1 year = $₹\frac{550}{2} = ₹275$

For the first year, SI and CI are same

$\therefore$ Compound interest for 1st year = ₹275

₹(605 – 550) = ₹55 is the interest earned during the second year on ₹275

$\therefore$ Rate of interest = $\frac{55}{275} \times 100 = 20\%$ pa

Now,

Investment in simple interest bond,

$SI = \frac{PRT}{100}$

$\Rightarrow \quad 275 = \frac{P \times 20 \times 1}{100}$

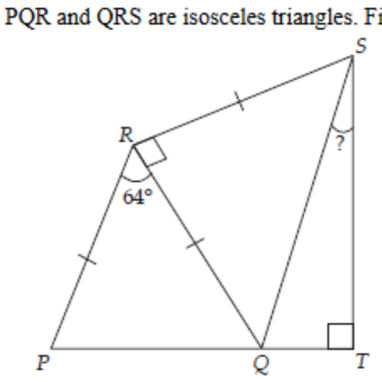
$\Rightarrow \quad P = ₹1375$

Total sum = ₹(1375 × 2) = ₹2750

QUESTION ANALYTICS +

Q. 15

PQR and QRS are isosceles triangles. Find the size of angle QST.



Solution Video | Have any Doubt ?

13 Correct Option

Solution :
13

PQR is an isosceles triangle

$\therefore \quad \angle RPQ = \angle RQP$

Also $\angle RPQ + \angle RQP = (180 - 64)°$

$\Rightarrow \quad 2\angle RPQ = 116°$

$\Rightarrow \quad \angle RQP = 58°$

RQS is a right isosceles triangle; hence

$\angle RQS = \angle RSQ = \frac{(180 - 90)°}{2} = 45°$

Note that

$\angle RQP + \angle RQS + \angle SQT = 180°$

$\Rightarrow \quad 58° + 45° + \angle SQT = 180°$

$\Rightarrow \quad \angle SQT = 77°$

SQT is a right triangle, hence

$\angle QST = 90 - 77 = 13°$

QUESTION ANALYTICS +

Q. 16

How many keystrokes are needed to type numbers from 1 to 500?

Solution Video | Have any Doubt ?

1392 Correct Option

Solution :
1392

While typing from 1 to 500 :

(i) 9 single digit numbers : from 1 to 9

(ii) 90 two digit numbers : from 10 to 99

Each number requires 2 key strokes

$\therefore$ 180 keystrokes

(iii) 401 three digit numbers : From 100 to 500

Each number requires 3 key strokes

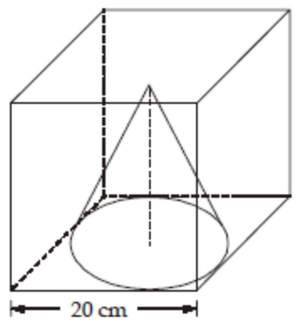
$\therefore$ 1203 keystrokes

$$\text{Total} = 9 + 180 + 1203$$
$$= 1392$$

QUESTION ANALYTICS +

Q. 17

Find the volume of the largest right circular cone in cm^3 that can be fitted in a cube with edge 20 cm. [Round off the answer to the nearest integer]



FAQ | Solution Video | Have any Doubt ?

2094.39 (2090.00 - 2097.00) Correct Option

Solution :

2094.39 (2090 - 2097)

For the largest right circular cone to be fitted in a cube, the base of the cone will touch all the vertical faces of the cube.

$\therefore$ The diameter of base of cone = Side of cube = 20 cm

$\therefore$ Radius = 10 cm

Height = 20 cm

$$\text{Volume} = \frac{\pi r^2 h}{3} = \frac{1}{3} \times \pi \times 10^2 \times 20$$
$$= 2094.39\ cm^3$$

QUESTION ANALYTICS +