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CSS - 2019

Part - II

Section - II

Q: 07

(d) In a certain code computer is written as FRUVQNPC. How will MEDICINE will be written in code language? [5]

Ans:

Computer : ^{6 18 21 22 17 14 16 3}FRUVQNPC
_{3 15 13 16 21 20 5 18}

MEDICINE : OFJDJEFM
_{13 5 4 9 3 9 14 5}

Q: 08

(a) Seven Piano students TUVWXYZ and Z are given a recital and their instructor is deciding the order in which they will perform, each student will play exactly one piece, a piano solo. In deciding the order of performance the instructor must observe following restrictions.

(i) X cannot play first or second.

W cannot have played until X has played

Neither T nor Y can play Seventh.

Either Y and Z must play immediately after

W

⇒ P.T.O

V must play immediately after, or immediately U played.

(ii) If V play first, which one of the following must be true.

T plays sixth

X plays third

Z plays seventh

T plays after immediately after Y

W plays immediately After X.

[5]

Ans: (i) No. Students

1	U
2	V
3	X
4	W
5	Y
6	T
7	Z

(ii) If V play first

then Z plays

Seventh. This

Statement is true.

Q: 8

(b) $U = [\text{whole numbers from 10 to 24}]$

$A = [\text{Even Numbers}]$

$B = [\text{Number divisible by 5}]$

Write down the number elements of

$A \cap B$.

[5]

Ans: $A = [2, 4, 6, 8, \dots]$

$B = [5, 10, 15, 20, \dots]$

$\Rightarrow P.T.O$

Now

$$A \cap B = [2, 4, 6, 8, 10, \dots] \cap [5, 10, 15, 20, 25, \dots]$$

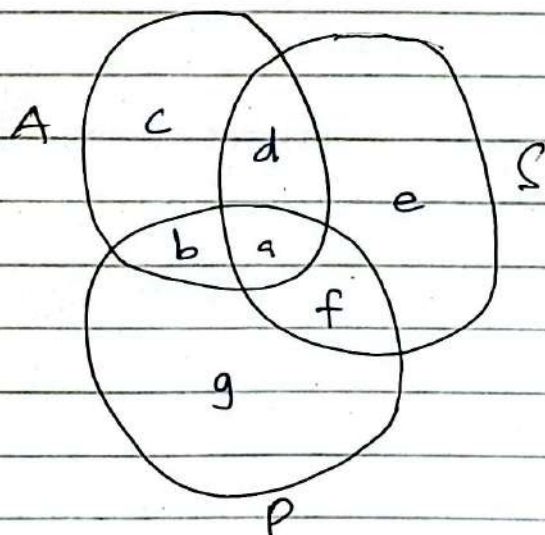
$$= [10, 20, 30, \dots]$$

It looks like infinite set, then number of elements of $A \cap B$ must be infinite.

Ans

Q.: 8

(c) In the following diagram A represent American, S represent scientist and P represents politicians: [5]



(i) American those are politicians but not scientists will be.

(ii) Scientists which are politicians but not Americans will be.

Ans

(i) only "b" is the american politician but not scientist.

(ii) only "f" is the scientist which is also politician but not american.

Q: 08

(d) Each packet of washing powder carries a token and 4 token can be exchanged for free packet, How many free packets will I receive if I buy sixty four packets? [5]

Ans:

- Each packet of washing powder carries = 1 token
- 4 token can be exchanged = 1 free Packet.
- How many free packets I will receive?
- I buy 64 packets.

$$\frac{64}{4} = 16$$

Hence, On buying 64 packets I will receive 16 free packets.

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Section-B

Q.06

(b) Find the missing numbers to complete each sum.

$$(a) 9 + 8 - 5 = 2 \times (\text{-----})$$

$$(b) 3 \times 9 - 14 = 24 - (\text{-----})$$

$$(c) 15 \div 3 \times 12 = 41 + (\text{-----})$$

$$(d) 24 \div 4 + 5 = 66 \div (\text{-----})$$

$$(e) 8 \times 6 - 13 + 3 = 7 \times 6 - (\text{-----})$$

[5]

Ans

$$(a) 9 + 8 - 5 = 2 \times \text{-----}$$

Sol

$$17 - 5 = 2 \times \text{-----}$$

$$12 = 2 \times 6$$

$$12 = 12 \quad \text{Ans}$$

$$(b) 3 \times 9 - 14 = 24 - (\text{-----})$$

Sol

$$27 - 14 = 24 - (\text{-----})$$

$$13 = 24 - (\text{---})$$

$$13 = 24 - 11$$

$$13 = 13$$

Ans

⇒ P.T.O

(c) $15 \div 3 \times 12 = 41 + (\dots)$

Sol

$5 \times 12 = 41 + \dots$

$60 = 41 + 19$

$60 = 60$

Ans

(d) $24 \div 4 + 5 = 66 \div \dots$

Sol

$6 + 5 = 66 \div \dots$

$11 = 66 \div 6$

$11 = 11$

Ans

(e) $8 \times 6 - 13 + 3 = 7 \times 6 - (\dots)$

Sol

$48 - 13 + 3 = 42 - (\dots)$

$51 - 13 = 42 - (\dots)$

$38 = 42 - 4$

$38 = 38$

Ans

Q-07

(c) Five girls A, B, C, D, E and four boys W, X, Y, Z have to go to a trip in three cars, car-1, car-2, car-3. The following restrictions for seating in car one to be observed:

- (i) Only three persons can sit in one car.
 - (ii) At least one boy and one girl must be in each car.
 - (iii) A and D should remain together.
 - (iv) Z cannot sit with B or C in the same car.
- Distribute boys and girls in three cars.

[5]

Ans

Car-1	Car-2	Car-3
A, D, Z	B, C, W	E, X, Y

Ans

Q-08

(c) A group of 50 men can construct 20km road in 40 days. How long will 70 men take to complete same length of road? [5]

Ans Data:

Men = 50

Road length = 20 kilometers

Men = 70

Time taken of 50 men = 40 days.

Time will take to complete by 70 men = ?
same road

⇒ P. T. D

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This is inverse proportion so;

$$\begin{array}{ccc} \text{Men} & :: & \text{Days} \\ 50 & & 40 \\ \downarrow & & \uparrow \\ 70 & & x \end{array}$$

$$\frac{x}{40} = \frac{50}{70}$$

$$x = \frac{50 \times 40}{70} = \frac{200}{7} = 28.57$$

If we round off this number 28.57 then it is approximately 29 days to complete the same road by 70 men.

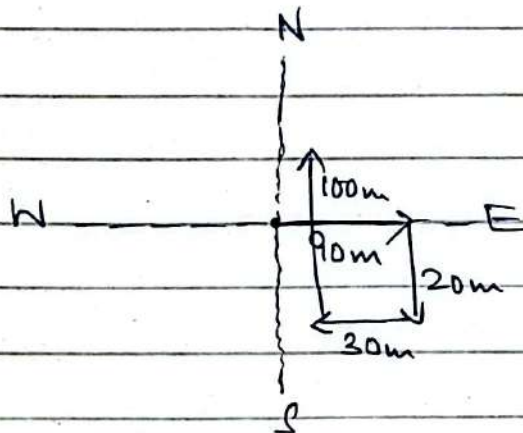
Ans

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Section-B

Q.07

(a) A child went 90m towards East, and then he turned Right and went 20m. Subsequently he turned Right and after going 30m he reached his uncle's house. From there he went 100m to his North. Determine how far he is from his starting point. [5]

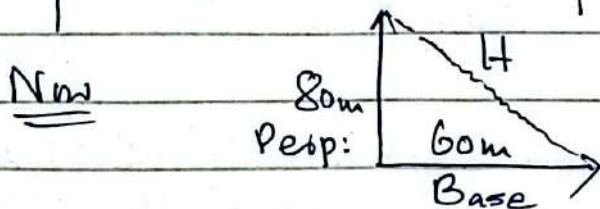
Ans



• Addition and Subtraction of Vectors;

$$\textcircled{1} \leftarrow 30\text{m} - 90\text{m} = 60\text{m} \rightarrow$$

$$\textcircled{2} \uparrow 100\text{m} - 20\text{m} = 80\text{m} \uparrow$$



$$\Rightarrow \underline{P.T.O}$$

Apply ; Pythagoras Theorem :

$$H = \sqrt{B^2 + P^2}$$

$$H = \sqrt{(60)^2 + (80)^2}$$

$$H = \sqrt{3600 + 6400} = \sqrt{10000}$$

$$H = (1 \times 10^4)^{\frac{1}{2}}$$

$$H = (1)^{\frac{1}{2}} \times 10^{\frac{2}{4} \times 1}$$

$$H = 1 \times 10^2$$

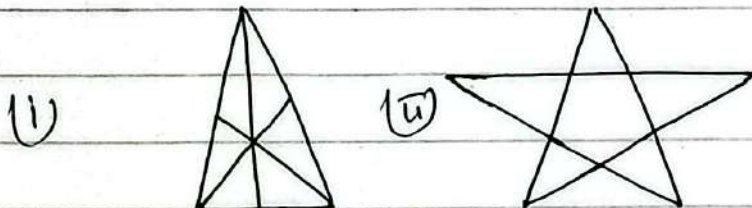
$$H = 100 \text{ m}$$

Ans

He is 100 m away from his starting point.

Q. 8

(b) Find the number of triangles in the following two images. [5]



Ans (i) In figure (i), there are 7 triangles.

(ii) In figure (ii), there are 6 triangles.

Ans

Q: 8

(d) Find the missing numbers in the given series.

(i) 4, 18, ?, 100, 180, 294.

(ii) 15, 31, 63, 127, ?

(iii) 1, 8, 27, 64, 125, ?

(iv) 132, 156, ?, 210, 240.

(v) 8, 24, 12, 36, 18, 54, ?

Ans (i) 4, 18, ?, 100, 180, 294.

Sol

Formula: $T_n = n(n+1)^2$

$T_3 = 3(3+1)^2 = 3(4)^2 = 3 \times 16$

$T_3 = 48$

So; 4, 18, 48, 100, 180, 294.

(ii) 15, 31, 63, 127, ?

Sol

15, 31, 63, 127, 255
 $+16 \quad +32 \quad +64 \quad +128$

(iii) 1, 8, 27, 64, 125, ?

Sol

1, 8, 27, 64, 125, 216
 $+7 \quad +19 \quad +37 \quad +61 \quad (+91)$
 $+12 \quad +18 \quad +24 \quad +30$

⇒ P.T.O

(iv) 132, 156, ?, 210, 240.

Sol

132, 156, 182, 210, 240.
+24 +26 +28 +30

(v) 8, 24, 12, 36, 18, 54, ?

Sol

8, 24, 12, 36, 18, 54, 26
+4 +6 +8