

**MATHEMATICS : PAPER-I**

Time : 2.45 Hrs.

PARTS – A & B

Max.Marks:40

**Instructions:**

1. Read all Questions.
2. Part A answers should be written in separate answer Book.
3. There are three sections in Part-A
4. Answer all questions.
5. Every answer should be written Visibly and neatly.
6. There is internal choice in Section-III

**PART-A**

Time: 2.15 Hrs.

Marks:30

**SECTION-I**

1. Check whether 3 and -2 are the Zeroes of the Polynomial  $p(x)=x^2-x-6$ .
2. Write two sets of your choice involving geometrical ideas.
3. The Coach of a Cricket team buys 3 bats and 6 balls for Rs.3900/-. Later, he buys another bat and 3 more balls for Rs.1300/- of some kind represent this situation algebraically.
4. How many balls, each of radius 1 cm, can be made from a solid sphere of lead of radius 8 cm?

**SECTION-II**

**5X2=10m**

5. Show that  $\sqrt{2}$  is an irrational.
6.  $3x^2 + 2\sqrt{5}x - 5 = 0$  determine whether the given quadratic equation has real roots and if so, find the roots.
7. The rain water from a roof of 22m x 20m drains into a cylindrical vessel having diameter of base 2 m and height 3.5m. If the Vessel is full, find the rain fall in cm.
8. Write the relationship between the Zeroes and the coefficients of a cubic polynomial.
9. Find the value of k for which the system  $2x+3y-5=0$ ,  $6x+ky-15=0$  has infinitely many solutions.

**SECTION-III**

4 x 4 = 16 M

10. A) Solve  $\frac{3}{x+y} + \frac{2}{x-y} = 2$ ;  $\frac{9}{x+y} - \frac{4}{x-y} = 1$  ( $x \neq 0, x-y \neq 0$ )

OR

B) If the diameter of cross section of a wire is decreased by 5% how much percent will the length be increased so that the volume remains the same?

11. A) Find the sum of first 24 terms of the list of numbers whose  $n^{\text{th}}$  term is given by  $a_n = 3+2n$

OR

B) A two digit number is such that the product of its digits is 18. When 63 is subtracted from the number, the digits interchange their places. Find the number.

12. A) Use Euclid's division lemma to show that the square of any positive integer is of the form  $3p, 3p+1$

OR

B) Prove that if  $A \subseteq B, B \subseteq A$ , then  $A=B$

13. A)  $x+2y-4=0$  and  $2x+4y-12=0$ . Represent this situation graphically. Write your comments

(OR)

B) Draw the graph of  $y=6-x-x^2$  and find Zeroes. What do you notice?

**PART-B**

Time: 30 Min.

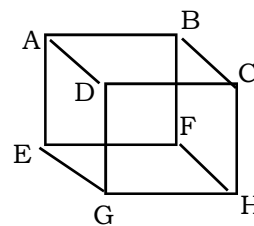
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**SECTION -IV**

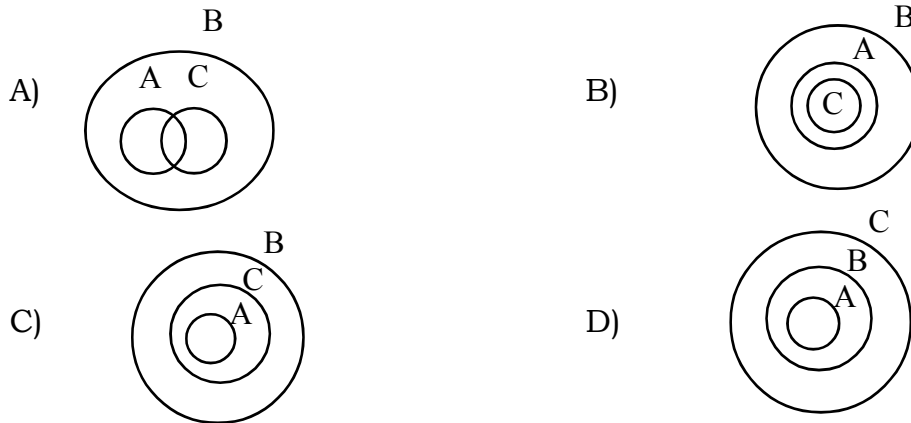
20 X 1/2= 10M

14. The expression  $14^n - 6^n$  is always divisible by ( )  
A) 6                      B) 8                      C) 14                      D) 20
15. If  $A = \{x : x \text{ is a letter of the word TELUGU}\}$   $B = \{E, G, L, T, U\}$   
then  $A - B$  ( )  
A)  $\{U\}$                       B)  $\{ \}$                       C)  $\{T, L\}$                       D) Cannot find
16. The sum of roots of the equation  $\sqrt{2}x^2 + 2x - 5 = 0$  ( )  
A)  $-\sqrt{2}$                       B)  $\sqrt{2}$                       C)  $-2\sqrt{2}$                       D)  $-5/\sqrt{2}$
17. Which of the following equation has 3 and 4 as the roots ( )  
A)  $x^2 + 12x + 7 = 0$                       B)  $x^2 - 12x + 7 = 0$   
C)  $x^2 + 7x + 12 = 0$                       D)  $x^2 - 7x + 12 = 0$
18.  $\sqrt{42 + \sqrt{42 + \sqrt{42 + \dots a}}}$   
A) 2                      B) 4                      C) -6                      D) 8.
19. In an A.P. if  $5 \times a_5 = 12 \times a_{12}$  then  $a_{17}$  ( )  
A) 17                      B) 5                      C) 12                      D) 0
20. If  $\sqrt{10} = 3.162$  then  $\frac{1}{\sqrt{10}} =$  ( )  
A) 3.162                      B) 0.3162                      C) 31.62                      D) 316.2
21. If 1 is Zero of  $p(x) = ax^2 + bx + c$  then  $a + b + c =$  ( )  
A) 0                      B) 1                      C) 2                      D) 3
22. If the pair of equations  $2x + py + 5 = 0$  and  $3x + 3y + 6 = 0$  has a unique solutions then ( )  
A)  $P = 2$                       B)  $P = 3$                       c)  $p \neq 3$                       d)  $p \neq 2$

23. If  $\alpha, \beta$  are the roots of the equation  $ax^2 + bx + c = 0$  then  $\frac{1}{\alpha} + \frac{1}{\beta}$  ( )
- A)  $\frac{-b}{c}$                       B)  $\frac{b}{c}$                       C)  $\frac{c}{-b}$                       D)  $\frac{c}{b}$
24. A trinomial of degree 10 of the following is ( )
- A)  $x^{10} - 2$                       B)  $10x^2 - 5x + 6$                       C)  $x^{10} - 3x + 2$                       D)  $10x^{10} + 3x^2 - 2$
25. If there are  $p$  arithmetic mean between  $a$  and  $b$ , then  $d =$  ( )
- A)  $\frac{b-a}{p+1}$                       B)  $\frac{b-a}{p}$                       C)  $\frac{b-a}{p-1}$                       D)  $\frac{b-a}{p+2}$
26. The ratio of the volume of a cube to that of a sphere which will fit inside the cube is ( )
- A)  $3: \pi$                       B)  $4: \pi$                       C)  $6: \pi$                       D)  $9: \pi$
27. The area of smallest square which can be formed with rectangles of dimension  $6\text{cm} \times 4\text{cm}$  is ( )
- A)  $16 \text{ cm}^2$                       B)  $24\text{cm}^2$                       C)  $36\text{cm}^2$                       D)  $144 \text{ cm}^2$
28. The number of cubes each of edge  $6 \text{ cm}$  can be cut from a cuboid of  $42\text{cm} \times 36\text{cm} \times 24\text{cm}$  is ( )
- A) 124                      B) 142                      C) 168                      D) 196
29. The ratio of the total surface area of a sphere and the curved surface area of the circumscribed cylinder is ( )
- A) 1:1                      B) 1:2                      C) 1:3                      D) 1:4
30. In the figure shown, if  $AD=5$   $DG=2$  and  $GH=4$  then what is the shortest distance between  $E$  and  $C$  ( )
- A) 7                      B)  $5 + \sqrt{18}$
- C)  $\sqrt{65}$                       D)  $\sqrt{72}$

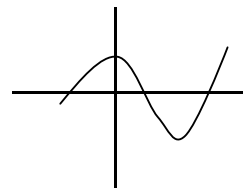


31.  $A = \{ \text{Trapeziums} \}$                        $B = \{ \text{quadrilaterals} \}$   
 $C = \{ \text{Para llelograms} \}$     then which of the following  
Venn - diagram is correct



32. From the figure the number of solutions of the pair of equations representing the graph (    )

- A) 1                                      B) 2  
B) 3                                      D) 4



33. From the figure, then number of solutions of the pain of equations repre senting the lines is (    )

- A) 1                                      B) 2  
C) 3                                      D) In finite

