

## VMR COACHING CENTER

## CLASS - X

## CHAPTER - 7, MATRIX, PROBABILITY

MARK - 100

CHOOSE THE CORRECT ANSWER  $14 \times 1 = 14$ 

- The solution of  $(2x-1)^2 = 9$  is equal to  
 A) -1      B) 2      C) -1, 2      D) None of these
- Graph of a linear equation is a  
 A) straight line      B) circle      C) parabola      D) hyperbola
- $y^2 + \frac{1}{y^2}$  is not equal to  
 A)  $\frac{y^4+1}{y^2}$       B)  $(y+\frac{1}{y})^2$       C)  $(y-\frac{1}{y})^2+2$       D)  $(y+\frac{1}{y})^2-2$
- $\frac{3y-3}{y} \div \frac{7y-7}{3y^2}$  is  
 A)  $\frac{9y}{7}$       B)  $\frac{9y^3}{(21y-21)}$       C)  $\frac{21y^3-42y+21}{3y^3}$
- The height of a right circular cone whose radius is 5 cm and slant height is 13 cm will be  
 A) 12 cm      B) 10 cm      C) 13 cm      D) 5 cm
- If the radius of the base of a cone is tripled and the height is doubled then the volume is  
 A) Made 6 times  
 B) made 18 times      C) made 12 times      D) unchanged.
- The total surface area of a hemisphere is how much times the square of its radius.  
 A)  $\pi$       B)  $4\pi$       C)  $3\pi$       D)  $2\pi$
- The ratio of the volumes of a cylinder, a cone and a sphere if each has the same diameter and same height  
 A) 1:2:3      B) 2:1:3      C) 1:3:2      D) 3:1:2
- The TSA of cylinder whose radius is  $\frac{1}{3}$  of its height is  
 A)  $\frac{9\pi h^2}{8}$  sq. units      B)  $2A\pi h^2$  sq. units      C)  $\frac{8\pi h^2}{9}$  sq. units      D)  $\frac{56\pi h^2}{9}$  sq. units

base diameter 16 cm is

- A)  $60\pi \text{ cm}^2$     B)  $68\pi \text{ cm}^2$     C)  $120\pi \text{ cm}^2$     D)  $136\pi \text{ cm}^2$

11. The Range of the data 8, 8, 8, 8, 8 ... 8 is

- A) 0    B) 1    C) 8    D) 3

12. Variance of first 20 natural number is

- A) 32.25    B) 14.25    C) 33.25    D) 30

13. Which of the following is incorrect?

- A)  $P(A) > 1$     B)  $0 \leq P(A) \leq 1$     C)  $P(\emptyset) = 0$     D)  $P(A) + P(\bar{A}) = 1$

14. The standard deviation of a data is 3. If each value is multiplied by 5 then the new variance is

- A) 3    B) 15    C) 5    D) 225

### PART-B

Q. NO : 26 is

Compulsory

15.  $A = \begin{bmatrix} 5 & 2 & 2 \\ -\sqrt{17} & 0.7 & 5 \\ 8 & 3 & 1 \end{bmatrix}$  verify  $(A^T)^T = A$

16.  $A = \begin{bmatrix} 1 & 3 & -2 \\ 5 & -4 & 6 \\ -3 & 2 & 9 \end{bmatrix}$      $B = \begin{bmatrix} 1 & 8 \\ 3 & 4 \\ 9 & 6 \end{bmatrix}$  Find  $A+B$ .

17.  $A = \begin{pmatrix} \cos \theta & 0 \\ 0 & \cos \theta \end{pmatrix}$      $B = \begin{pmatrix} \sin \theta & 0 \\ 0 & \sin \theta \end{pmatrix}$  verify  $A^2 + B^2 = I$

18.  $A = \begin{bmatrix} 0 & 4 & 9 \\ 8 & 3 & 7 \end{bmatrix}$      $B = \begin{bmatrix} 7 & 3 & 8 \\ 1 & 4 & 9 \end{bmatrix}$  Find  $3A - 9B$

19. Define Square Matrix with example

20. Express the Sample Space rolling two dice using Tree diagram
21. A die is rolled and coin is tossed simultaneously. Find probability that die shows an odd number and the coin shows head.
22. ~~A bag contains 5~~ ~~b~~ What is probability that leap year at random will contain 53 Saturday
23. The CSA of a right circular cylinder height 14 cm is  $88 \text{ cm}^2$ . Find diameter of cylinder.
24. Find diameter of sphere whose surface area is  $154 \text{ m}^2$ .
25. If ratio of radii two spheres 4:7. Find their volumes
26. Volume of right circular cone is  $11088 \text{ cm}^3$ . If its height 24 cm. Find Radius

Any 10 question PART C  
 $10 \times 5 = 50$  Q. No: 38 is compulsory

27. (1) Find  $3 \times 3$  matrix  $a_{ij} = |i - 2j|$  (2)  
 (2) Find a, b, c, d (3)

$$\begin{bmatrix} d & 8 \\ 36 & a \end{bmatrix} + \begin{bmatrix} 3 & a \\ -2 & -4 \end{bmatrix} = \begin{bmatrix} 2 & 2a \\ 5 & 4c \end{bmatrix} + \begin{bmatrix} 0 & 1 \\ -5 & 0 \end{bmatrix}$$

28. Find  $x$  and  $y$  if  $x + y = \begin{bmatrix} 7 & 0 \\ 3 & 5 \end{bmatrix}$   $x - y = \begin{bmatrix} 3 & 0 \\ 0 & 4 \end{bmatrix}$

29.  $A = \begin{bmatrix} 1 & 2 & 1 \\ 2 & -1 & 1 \end{bmatrix}$   $B = \begin{bmatrix} 2 & -1 \\ -1 & 4 \\ 0 & 2 \end{bmatrix}$   $(AB)^T = B^T A^T$

30. If  $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$   $A^2 - 5A + 7I_2 = 0$

31. An Industrial metallic bucket is in the shape of frustum of right circular cone whose top and bottom diameters 10m and 4m, height 4m. Find CSA and TSA

32. A right circular cylindrical container base radius 6 cm and height 15 cm is full of ice cream. The ice cream is to be filled in cones of height 9 cm and base radius 3 cm, having hemispherical cap. find the number of cones.

33. A girl wishes to prepare birthday caps in the form of right circular cone for her birthday party, using a sheet paper whose area is 5720. how many caps made with radius 5 cm, height 12 cm.

34. A toy is surrounded cylinder with hemisphere. height of toy is 25 cm. find TSA of toy if common diameter is 12 cm.

35. A capsule in the shape of a cylinder with two hemisphere stuck to each of its ends. if the length of the entire capsule is 12 mm. Diameter of the capsule 3 mm. how much medicine

36. Two unbiased dice are rolled together

- getting  
 (i) doublet (ii) product as prime number (iii) sum as 1  
 (iv) sum as prime number.

37. Three fair coins tossed together. Find

- (i) all head (ii) at least one tail  
 (iii) at most one head (iv) at most two tails.

38. In a class of 50 students, 28 opted NCC, 30 opted NSS, 18 th opted both NCC and NSS.

- (i) The student opted for NCC but not NSS  
 (ii) The student opted for NSS but not NCC  
 (iii) The student exactly one of them.

39. A coin tossed three. Find probability getting exactly two heads, or at least one tail or two consecutive head.

### PART - D

40. Radius 4cm Tangent - 8cm

41.	X	40	50	60	75
	Y	150	120	100	80

(i) find variation

(ii)  $x=120$  find  $y$

(iii)  $y=200$  find  $x$