B.Ed. Programme - PART-B: MATHEMATICS
MODEL QUESTION PAPER

Questions: 100
Marks: 100 **TIME: 100 Mins**

SAMPLE QUESTIONS

Choose the correct alternative out of the following.

1. If R is the relation on A = {1,2,3} given by (1,1) (2,2) (3,3) then R is

   a) reflexive b) not reflexive
   c) symmetric d) transitive

2. Which of the following is correct?

   a) Any two square matrices can be multiplied
   b) Any two square matrices of order n can be multiplied
   c) Any two unit matrices can be multiplied
   d) Any two diagonal matrices can be multiplied

3. The inverse of $\begin{pmatrix} Cos\,\theta & -Sin\,\theta \\ Sin\,\theta & Cos\,\theta \end{pmatrix}$ is

   a) $\begin{pmatrix} Cos\,\theta & -Sin\,\theta \\ Sin\,\theta & Cos\,\theta \end{pmatrix}$

   b) $\begin{pmatrix} Cos\,\theta & Sin\,\theta \\ Sin\,\theta & Cos\,\theta \end{pmatrix}$

   c) $\begin{pmatrix} Cos\,\theta & -Sin\,\theta \\ -Sin\,\theta & Cos\,\theta \end{pmatrix}$

   d) $\begin{pmatrix} Cos\,\theta & Sin\,\theta \\ -Sin\,\theta & Cos\,\theta \end{pmatrix}$

4. The value of $\begin{vmatrix} 3 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 3 \end{vmatrix}$ is

   a) 10 b) 15 c) 20 d) 25

5. A value of θ in the 3rd quadrant satisfying $Cos^2\theta = ¼$ is

   a) $\frac{2\Pi}{3}$ b) $\frac{3\Pi}{4}$ c) $\frac{4\Pi}{3}$ d) $\frac{5\Pi}{3}$

6. If $\text{Sin}^{-1} x + \text{Sin}^{-1} (2x) = 2\Pi/3$ then $4x^2 - 4x$ is equal to

a) –1 b) 1 c) 0 d) –2

7. The equation of two circles are $x^2 + y^2 - 4x - 2y + 1 = 0$ and $x^2 + y^2 - 4x - 4y - 8 = 0$. The circles are such that

a) the radius of one is 4 times the other
b) they intersect at real point
c) one circle lies inside the other
d) they touch each other externally

8. What is the minimum force required to move a body of weight W placed on a rough horizontal surface?

a) W Cot λ b) W Tan λ c) W Sin λ d) W Cos λ

9. $\int_{-a}^{a} f(x)\,dx = 0$ if

a) f(x) is single – valued function
b) f(x) is even function
c) f(x) is analytic function
d) f(x) is an odd function

10. On the curve $y^2 = ax^2 + ax^2$ (a>0) the origin is

a) ordinary point b) a conjugate point
c) a cusp d) a node

11. The cubic $Z^2 + 3H_z + G = 0$, $G^2 + 4H^2 = 0$ implies that

a) all equal roots b) two equal roots
c) no equal root d) three equal roots

12. $\int_{-\infty}^{\infty}$ dx/x2 + 2x + 2 is

a) $\frac{\Pi}{2}$ b) $\frac{\Pi}{4}$ c) Π d) 2Π

13. If three forces acting on a body are in equilibrium, then the forces are

a) collinear b) parallel
c) meeting at a point d) forming a closed triangle

14. One of the factors of $\begin{bmatrix} 1 & a & a^2 \\ 1 & b & b^2 \\ 1 & c & c^2 \end{bmatrix}$ is

a) a + b b) b + c c) c + a d) a + b + c

15. The line y = mx + c touches the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{h^2} = 1$ if

a) $c^2 = a^2m^2 + h^2$ b) $c^2 = a^2m^2 - h^2$
c) $c^2 = a^2 + b^2m^2$ d) $c^2 = a^2 - b^2m^2$

16.

$$\int_1^4 x\sqrt{x}\ dx =$$

a) 12.8 b) 12.4 c) 8.4 d) 8.8

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