



# جامعہ اردو ہند JAMIA URDU HIND

STATE'S MADRASA TUL OLOOM FOR RESEARCH IN URDU LANGUAGE OF NATIONAL IMPORTANCE

Recognized by Statutory Bodies, Minority Commission, Ministry of Social Justice & Empowerment and Ministry of HRD, Govt of India

## MAIN EXAMINATION OF JAMIA URDU HIND 2014

### INSTRUCTIONS:

ALL QUESTIONS ARE COMPULSORY AND CARRY EQUAL MARKS.

TOTAL NO OF QUESTIONS ARE FIVE.

TOTAL DURATION OF EXAMINATION IS TWO HOURS(2 HOURS).

## INTERMEDIATE EXAMINATION(XII STANDARD)

### MATHEMATICS

Time : 2 Hrs

Max. Marks : 100

1. (a) For what values of  $\mu$  the equations  $x+y+3z=0$ ,  $4x+3y+\mu z=0$ ,  $2x+y+2z=0$  have a  
(i) trivial solution (ii) non-trivial solution

(OR)

- (b) Trace the curve  $y=x^3+1$ .

2. (a) Evaluate  $\lim_{x \rightarrow 0} (\cot x)^{\sin x}$

(OR)

- (b) Prove that  $\sin(A+B) = \sin A \cos B + \cos A \sin B$  by vector method.

3. (a) Verify  $\frac{\partial^2 u}{\partial x \partial y} = \frac{\partial^2 u}{\partial y \partial x}$  for the function  $u = \sin\left(\frac{x}{y}\right)$

(OR)

- (b) Find the area between the curve  $y=x^2-x-2$ , X-axis and the lines  $x=-2$  and  $x=4$ .

4. (a) Find the vector and Cartesian equations of the plane passing through the points with position vectors  $3\vec{i}+4\vec{j}+2\vec{k}$ ,  $2\vec{i}+2\vec{j}-\vec{k}$  and  $7\vec{i}+\vec{k}$ .

(OR)

- (b) P represents the variable complex number z. Find the locus of P if  $\arg\left(\frac{z-1}{z+1}\right) = \frac{\pi}{3}$

5. (a) On lighting a rocket cracker, it gets projected in a parabolic path and reaches a maximum height of 4 mts., when it is 6 mts. away from the point of projection. Finally, it reaches the ground 12 mts. away from the starting point. Find the angle of projection

(OR)

- (b) Solve  $x^7+x^4+x^3+1=0$ .