2021
MATHEMATICS GENERAL
SEMESTER-1
INTERNAL ASSESSMENT
Full Marks:10

The figures in the margin indicate full marks.
Symbols and notations used here carry their usual meaning.
Candidates are required to give their answers in their own words as far as practical.

Course: CC1/GE1

Answer all the questions with proper justification: 5x2=10

1. If z_1 and z_2 are two complex numbers, then which one of the following is true?

a) $z_1\bar{z_2} + \bar{z_1}z_2 \geq 2|z_1z_2|$
b) $z_1\bar{z_2} + \bar{z_1}z_2 \leq 2|z_1z_2|$
c) $z_1z_2 + \bar{z_1}\bar{z_2} \leq 2|z_1z_2|$
d) $z_1\bar{z_2} + \bar{z_1}z_2 = 2|z_1z_2|$

2. The order of the differential equations of all conics whose centre is at the origin is -

a) 3
b) 2
c) 1
d) 4

3. If $1 - \frac{x^2}{2} \leq g(x) \leq 1 + \frac{x^3}{4} \; \forall \; x \neq 0$, then $\lim_{x\to 0} g(x)$ is -

a) 4
b) 2
c) 1
d) Does not exist

4. The transformed equation of the straight line $\frac{x}{a} + \frac{y}{b} = 2$ when the origin is transferred to the point (a,b) is

a) $\frac{x}{a} + \frac{y}{b} = 0$
b) $\frac{x}{a} + \frac{y}{b} = 1$
c) $\frac{x}{a} + \frac{y}{b} = 2$
d) $\frac{x}{a} + \frac{y}{b} = 3$

5. The conic $4x^2 + 4xy + y^2 - 12x - 6y + 5 = 0$ represents a/an

a) Ellipse
b) Parabola
c) Pair of parallel straight lines
d) Hyperbola