

2020
MATHEMATICS GENERAL
Paper: CC2/GE2
SET-3
Internal Assessment
Full Marks: 10

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Notations and symbols have their usual meaning.

Answer all questions:

2×5

- 1) The order of the P.D.E $\frac{\partial z}{\partial x} + \frac{\partial z}{\partial y} = 0$ is
 a) 1 b) 2 c) 0 d) 3
- 2) If θ be the angle between the vectors \vec{a} and \vec{b} , such that $|\vec{a} \times \vec{b}| = |\vec{a} \cdot \vec{b}|$, then θ is
 a) 0 b) 45° c) 60° d) 180°
- 2) For any integer a, gcd (a, a+2) is
 a) either 1 or 3 b) either 1 or 2 c) either 2 or 5 d) either 2 or 3
- 3) The sequence $\{x_n\}$, where $x_n = \left(1 + \frac{1}{n}\right)^{2n}$ converges to
 b) e b) e^2 c) \sqrt{e} d) none of these
- 5) The sequence $\{(-2)^n\}$ is
 a) Bounded and convergent
 b) Bounded but not convergent
 c) Convergent but not bounded
 d) Unbounded and divergent

2020
MATHEMATICS GENERAL
Paper: CC2/GE2
SET-3
Theory Examination
Full Marks: 32

The figures in the margin indicate full marks.

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Answer any FOUR questions:

8×4

- 1) Find the P.D.E of $z=e^{5y}\varphi(x-y)$, where φ is arbitrary function.
- 2) If a particle in equilibrium is subjected to four forces $\vec{F}_1 = 3\vec{i} - 5\vec{j} + 10\vec{k}$, $\vec{F}_2 = 2\vec{i} + 3\vec{j} - 7\vec{k}$,
 $\vec{F}_3 = 2\vec{i} + 12\vec{j} - 3\vec{k}$ and \vec{F}_4 . Find the value of \vec{F}_4 .
- 3) Find the solution of the linear congruence $5x \equiv 3(mod\ 11)$
- 4) If $1^p + 2^p + \dots + (p-1)^p = 0(mod\ p)$ then find the value of p.
- 5) Find the value of $\lim_{x \rightarrow 0} \frac{xe^x - \log(1+x)}{x^2}$

2020
MATHEMATICS GENERAL
Paper: CC2/GE2
SET-3
Tutorial Examination
Full Marks: 08

The figures in the margin indicate full marks.

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Answer any ONE question:

8×1

- 1) Find the solution of the P.D.E $ap + aq = z$
- 2) If p and p^2+8 are both prime numbers, then find the value of p .