2020

MATHEMATICS GENERAL

Paper: CC2/GE2

SET-2

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) 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

2) The sequence $\{(-3)^n\}$ is
   a) Bounded and convergent
   b) Bounded but not convergent
   c) Convergent but not bounded
   d) Unbounded and divergent

3) The sequence $\{x_n\}$, where $x_n=\left(1+\frac{1}{n}\right)^n$ converges to
   a) e b) e^2 c)$\sqrt{e}$ d) none of these

4) 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

5) If θ be the angle between the vectors $\vec{a}$ and $\vec{b}$, such that $\left|\vec{a}\times\vec{b}\right|=\left|\vec{a}.\vec{b}\right|$. then θ is
   a) 0 b) 45° c) 60° d) 180°

2020

MATHEMATICS GENERAL

Paper: CC2/GE2

SET-2

Theory Examination

Full Marks: 32

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 any FOUR questions: 8×4

1) If $1^p + 2^p + \ldots\ldots\ldots\ldots + (p-1)^p \equiv 0 (mod\ p)$ then find the value of p.

2) Find the value of $\lim_{x\to 0} \frac{xe^x - \log(1+x)}{x^2}$

3) Find the P.D.E of $z = e^{2y}\varphi(x-y)$, where φ is arbitrary function.

4) If a particle in equilibrium is subjected to four forces $\overrightarrow{F_1} = 3\vec{i} - 5\vec{j} + 13\vec{k}$, $\overrightarrow{F_2} = 2\vec{i} + 3\vec{j} - 7\vec{k}$, $\overrightarrow{F_3} = 2\vec{i} + 12\vec{j} - 3\vec{k}$ and $\overrightarrow{F_4}$. Find the value of $\overrightarrow{F_4}$.

5) Find the solution of the linear congruence $5x \equiv 3 (mod\ 13)$

2020

MATHEMATICS GENERAL

Paper: CC2/GE2

SET-2

Tutorial Examination

Full Marks: 08

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 any ONE question: 8×1

1) Find the solution of the P.D.E bp + bq = z

2) If p and p^2+8 are both prime numbers, then find the value of p.