2020

MATHEMATICS GENERAL

Paper: CC4/GE4

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) The multiplicative group {-1,1} is a subgroup of
   a) { 1, -1, i }
   b) { 1, -1, -i }
   c) { 1, -1, i, -i }
   d) { 1, -1, 0, i }

2) In Klein's 4-group {e, a, b, c} , the order of each non-identity elements are

   a) 0 b) 1 c) 2 d) 3

3) Which of the following forms a group?

   a) $(\mathbb{R}, \cdot)$ b) $(\mathbb{Q}, \cdot)$ c) $(\mathbb{Z}, \cdot)$ d) $(\mathbb{Q}-\{0\}, \cdot)$

4) Which of the following is not true for probability distribution function F(X)?

   a) $F(-\infty)=0$
   b) $F(\infty)=1$
   c) F(X) is monotone non-decreasing everywhere.
   d) The distribution function is continuous at left of a point X=a.

5) If A and B be two events such that P(A) =P(B)=1, then P(A+B) is
   a) 0
   b) 1
   c) $\frac{1}{2}$
   d) $\frac{2}{3}$

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Theory Examination

Full Marks: 32

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Answer any FOUR questions: 8×4

1) Two dice are thrown. Find the probability that the sum of the faces equal to 10.

2) Draw a flowchart to find the largest of the three distinct numbers X, Y, Z.

3) Show that the set $\{ 3^n : n \in \mathbb{N} \}$ forms a commutative group with respect to multiplication.

4) Convert the number 2759_{10} into octal system.

5) Find the value of $(110011101)_2 + (1011011)_2$

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Tutorial Examination

Full Marks: 08

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Notations and symbols have their usual meaning.

Answer any ONE question: 8×1

1) Design an algorithm to compute the factorial of a positive integer m.

2) An urn contains 7 red and 5 white balls. 4 balls are drawn randomly. Find the probability that 3 balls are red and one ball is white.