# 2021
# MATHEMATICS GENERAL
## SEMESTER-3
### Course: GE3/ CC3
### 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.

Choose the correct alternative with proper justification. 5x2=10

1. The value of $\int_0^\pi \int_0^{a\cos\theta} r\sin\theta \, dr \, d\theta$ is
   a) $a^2/3$
   b) $a/9$
   c) $1/(3a^2)$
   d) $1/(9a)$

2. Consider a set of m linear simultaneous equations with n unknowns (n>m) Ax=b. Then the number of non-zero variables in a non-degenerate basic soluation will be
   a) At least m
   b) At most (n-m)
   c) Exactly m
   d) At most m

3. Which one of the following is not a convex set?
   a) $X = \{x: |x| < 4\}$
   b) $X = \{(x, y): x^2 + y^2 \leq 9\}$
   c) $X = \{(x, y): x^2 + y^2 \geq 16\}$
   d) $X = \{(x, y): 3x^2 + 4y^2 \leq 25\}$

4. If $f(-1) = 1, f(0) = 1, f(2) = -5$ then $f(1)$ is
   a) 0
   b) 1
   c) -1
   d) -2

5. The number of significant figures in $X_T$=3.2574, given its relative error equals to $0.1 \times 10^{-3}$ , is
   a) 3
   b) 4
   c) 2
   d) 5