Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 07

B.Sc. (Computer Science) (2013 & Onwards) (Sem.–1)

CALCULUS

Subject Code : BCS-102

M.Code : 70879

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.**

SECTION-A

Q1) Write briefly :

a) Prove that the smallest member of a set, if it exists, is the infimum of the set.

b) Give an example of set which is bounded above but not bounded below.

c) Define continuity of composite function with example.

d) Explain uniform continuity.

e) Write a short note on differentiation of hyperbolic functions.

f) State Maclaurin's theorem.

g) Define concavity with example.

h) Write a short note on points of inflexion.

i) What is multiple points.

j) What is indeterminate forms?

SECTION-B

Q2) Prove that :

a) $|x + y| = |x| + |y| \Leftrightarrow xy \geq 0$.

b) $|x + y| < |x| + |y| \Leftrightarrow xy < 0$.

Q3) State and Prove Cantor Theorem on Nested Intervals.

Q4) State and Prove Maximum and Minimum value theorem for continuity.

Q5) State and Prove Taylor's theorem with various forms of remainder.

Q6) a) Explain Successive differentiation with example.

b) State and Prove Leibnitz test.

Q7) Explain various forms of Asymptotes with examples.

NOTE : Disclosure of identity by writing mobile number or making passing request on any page of Answer sheet will lead to UMC against the Student.