BENNETT UNIVERSITY

POSSESSION OF MOBILES IN EXAM IS UFM PRACTICE

Name of Student: ..... **Enrollment No.** .....
Department: .....

BENNETT UNIVERSITY, GREATER NOIDA
Mid Term Examination, FALL SEMESTER 2018-19

COURSE CODE : EMAT101L — MAX. DURATION: 1 Hour
COURSE NAME: Engineering Calculus
COURSE CREDIT: 3-1-0 — MAX. MARKS: 20

Instructions:

- All questions are mandatory.

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1. Find the infimum and supremum of the set $S = \left\{ \frac{(-1)^n}{n^2} : n \in \mathbb{N} \right\}$. [2]

2. (a) Give an example of a function which is discontinuous at every point of $\mathbb{R}$. [1]

   (b) Examine whether the function $f(x) = \dfrac{1}{x}$ is uniformly continuous on $(0, 1)$. [3]

3. Find the limit of the sequence $\left\{ \sum_{k=1}^{n} \dfrac{1}{\sqrt{n^2 + k}} \right\}$. [3]

4. Find the radius of convergence and domain of convergence of the series $\sum_{n=0}^{\infty} \dfrac{(x+2)^{3n}}{5^n}$. [3]

5. Examine whether f' is continuous at 0 for the function $f(x) = \begin{cases} x^2 \ln \frac{1}{|x|}, & x \neq 0 \\ 0, & x = 0. \end{cases}$ [4]

6. Check the convergence of the following series: [2 + 2 = 4]

   (a) $\sum_{n=1}^{\infty} \dfrac{\sqrt[n]{n}}{n^2}$ (b) $\sum_{n=1}^{\infty} \dfrac{n!}{10^n}$.