BENNETT UNIVERSITY
TIMES OF INDIA GROUP

EMAT101L

Engineering Calculus

Quiz Test 3

(Group 1)

Total marks: 10 Time: 15 minutes

Each question carries 2 marks.

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1. If $h(x) = \max\{\sin x, x\}$, then find the value of $\int_0^1 h(x)\, dx$.

   (a) 0 (b) 1 (c) 2 (d) $\frac{1}{2}$

2. For a function that is strictly decreasing, which of the following is a right hand Riemann sum?

   (a) overestimate

   (b) underestimate

   (c) unable to determine

   (d) exact solution

3. Consider the power series

$$\sum_{n=0}^{\infty} \frac{n}{5^n}(x+3)^n.$$

   It's radius of convergence is 5, center of convergence is -3 and region of convergence is $(-8, 2)$.

4. If the Taylor's series expansion of $f(x) = \cos x$ about $x = \frac{\pi}{2}$ is $\sum_{n=0}^{\infty} a_n \left(x - \frac{\pi}{2}\right)^n$, then find the value of a_5.

   (a) $-\frac{1}{5!}$

   (b) $\frac{1}{5!}$

(c) 0

(d) 1

5. Choose the function which is differentiable in the interval $(0, 5)$.
$\frac{\sin(x+1)}{x^2-2x+1}$, $\frac{x^2+e^x}{x-1}$, $\frac{(x-1)(x-2)}{(x-3)}$ and $\frac{e^x}{x^2+2x+1}$