



EMAT101L
Engineering Calculus
Quiz Test 2

Total marks: 10

Time: 10 minutes

Each question carries 2 marks.

1. Consider the following two series.

$$S_1 : \sum_{n=1}^{\infty} \frac{1}{n(n+1)} \quad \text{and} \quad S_2 : \sum_{n=1}^{\infty} \log \left(\frac{n+1}{n} \right).$$

Then choose the correct option.

- (a) Only S_1 is convergent.
 - (b) Both S_1 and S_2 are convergent.
 - (c) Only S_2 is convergent.
 - (d) Both S_1 and S_2 are divergent.
2. If $\sum_{n=1}^{\infty} u_n$ converges, then $\sum_{n=1}^{\infty} |u_n|$
- (a) converges
 - (b) diverges
 - (c) not necessarily converge
 - (d) none of these
3. $\sum_{n=1}^{\infty} \frac{x^n}{n}$ converges absolutely for
- (a) $|x| < 1$
 - (b) $|x| > 1$

- (c) $x \in \mathbb{R}$
- (d) no real value of x
4. The series $\sum_{n=1}^{\infty} \frac{1}{n^2} \sin\left(\frac{1}{n^2}\right)$ is
- (a) convergent
- (b) divergent
- (c) oscillatory
- (d) None of the above
5. Choose the correct option.
- (a) The series $\sum_{n=1}^{\infty} \frac{3^n - 4^n}{7^n}$ is convergent.
- (b) The series $\sum_{n=1}^{\infty} \frac{3^n + 4^n}{7^n}$ is divergent.
- (c) The series $\sum_{n=1}^{\infty} (-1)^n \frac{3^n + 4^n}{7^n}$ is divergent.
- (d) The series $\sum_{n=1}^{\infty} \frac{e^n \sin n}{n^{2021}}$ is convergent.