B.Sc DEGREE EXAMINATION,APRIL 2020
I Year II Semester
Allied Mathematics-II

Time : 3 Hours   **Max.marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define an uncountable set and with a two example.
2. Define a characteristic function.
3. Define a convergent sequence.
4. If $\sum_{n=1}^{\infty} a_n$ is a convergent series then
5. State the Rolle's Theorem.
6. If the real valued function f has a derivative at the point c$\in$ R. Then f is continuous at c
7. Find the value of L(sinat).
8. Find L($e^{-2t}\ t^2$).
9. Evaluate L^{-1} $\left(\frac{1}{s+3}\right)$
10 State the value for which $L^{-1}(\frac{1}{s+a})$
11. Define Cantor set?
12. State Initial value theorem.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. If f:A$\rightarrow$ B and if XCB, YCB Then f^{-1}(XUY) = f^{-1}(X) Uf^{-1}(Y).
14. If $\{S_n\}_{n=1}^{\infty}$ is a sequence of non negative number and if $lim_n \rightarrow S_n =$ L Then $L \geq 0$
15. State and prove the Mean value theorem.
16. Find the value of (a) L[sin2t sint] (b) L[tsin2t]
17. Find the inverse of L T of $\frac{s}{s^2+2s+10}$
18. If the sequence of real number $\{s_n$ is convergent. Then $\frac{s_n}{}$ is bounded.
19. Find the L T of $\frac{s^2z-}{e^{3z}t}$

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20 The set $[0, 1] = \{x/0 \leq x \leq 1\}$ is uncountable.

21. The sequence $\{(1 + \frac{1}{n})^n\}_{n=1}^{\infty}$ is convergent.

22. State and prove the Second fundamental theorem of calculus.

23. Evaluate $L\{te^{-t}\text{sint}\}$

24. Find the inverse of $\frac{4s^2 - 3s + 5}{(s+1)(s-1)(s-2)}$