TB25033W **Reg.No:..............................**

Name:.................................

B. Sc. DEGREE (C.B.C.S.S) EXAMINATION, MARCH 2025
(2016 and 2017 Admissions Supplementary)
B. Sc. COMPUTER APPLICATIONS [TRIPLE MAIN] – SIXTH SEMESTER

CAM6B07TB – REAL ANALYSIS II

Time: Three Hours **Maximum: 80 Marks**

Part A

I. Answer all questions. Each question carries 1 mark

1. What you mean by discontinuous functions?

2. Name any test for checking the convergence of positive term series.

3. Give an example of a series which is convergent.

4. Define Positive term series.

5. Define upper sum of a function.

6. What you mean by uniform convergence?

(6x1=6)

Part B

II. Answer any seven questions. Each question carries 2 marks

7. State Raabe's test for checking the convergence of a positive infinite series.

8. Define Conditional convergence of an infinite series with the help of an example

9. Give an example of an alternating series that is convergent.

10. Give an example of a diverging series $\sum U_n$ with $\lim U_n = 0$.

11. Prove that difference of two continuous functions is continuous.

12. Define uniform continuity with the help of an example.

13. State Fixed point theorem.

14. Briefly explain removable discontinuity.

15. Define lower Darboux sum of a bounded function f over [a,b].

16. Show that a constant function k is integrable .

(7x2=14)

P.T.O

Part C

III. Answer any five questions. Each question carries 6 marks

17. State and prove Cauchy's general principle of convergence for an infinite series.

18. State and prove D'Alembert's Ratio test.

19. State and prove a test for uniform convergence of a sequence of functions.

20. If a function f is continuous on [a,b], then show that it is integrable on [a,b].

21. Explain briefly about discontinuous functions.

22. State and prove Darboux's theorem.

23. State and prove Weierstrass M- test for uniform convergence of a series of functions.

24. State and prove Cauchy's criterion for uniform convergence of a sequence of functions

(5x6=30)

Part D

IV. Answer any two questions. Each question carries 15 marks

25. Define an alternating series. State and prove the Leibnitz test for checking the convergence of an alternating series.

26. state and prove Intermediate value theorem.

27. Prove that, a bounded function is integrable on [a, b] iff for every $\varepsilon > 0$, there exist a partition

P of [a, b] such that $U(P, f) - L(P, f) < \varepsilon$.

28. State and prove a test for checking the uniform convergence of a series of functions.

(2x15=30)

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