

Nabadwip Vidyasagar College

1st Internal Assessment

Semester-II

CC-3 & CC-4

F.M:- 20

TIME:- 1 Hour

Answer any 4 question from the following

1. State L.U.B Axiom. Prove that the set of real numbers is uncountable.

1+4=5

2. Use Cauchy's Criterion to prove that $\{x_n\}$ does not converge, where

$$x_n = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots + \frac{1}{n}$$

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3. State and prove Bolzano Weierstrass Theorem on sequence.

5

4. Solve: $(D^2 + 7D + 10)y = xe^{2x}$

5

5. Use operator method to find the general solution of the linear system

$$\frac{dx}{dt} + \frac{dy}{dt} - x - 3y = e^t$$

$$\frac{dx}{dt} + \frac{dy}{dt} + x = e^{3t}$$

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6. Prove that, $[\vec{a} \times \vec{b}, \vec{b} \times \vec{c}, \vec{c} \times \vec{a}] = [\vec{a}, \vec{b}, \vec{c}]^2$

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