

BE I (Jan. - 2021)  
AMR2C1- Applied Mathematics –II  
ETC\_BRANCHE (A, B)  
Online Class Test -I

Time: 70 min.

Maximum Marks: 20

- Note:** 1. Attempt all questions.  
2. Questions must be solved at one place.  
3. Each step must be clear and well-defined.

**Q.1** If  $A = \begin{bmatrix} 1 & 5 & 4 \\ 0 & 3 & 2 \\ 2 & 3 & 10 \end{bmatrix}$  and  $B = \begin{bmatrix} 1 & 1 & 1 \\ 2 & 2 & 2 \\ 3 & 3 & 3 \end{bmatrix}$  then **05**  
find  $\rho(A)$ ,  $\rho(B)$ ,  $\rho(A + B)$ .

**Q.2** Find the value of  $\alpha$  and  $\beta$  for which the equations **05**  
 $x + 2y + 3z = 4$ ,  $x + 3y + 4z = 5$ ,  $x + 3y + \alpha z = \beta$   
have (i) no solution, (ii) unique solution, and (iii) an infinite number of solutions.

**Q.3** Solve  $(x^2 + y^2 + x)dx + xydy = 0$ . **05**

**Q.4** Solve  $\frac{d^3y}{dx^3} + \frac{d^2y}{dx^2} - \frac{dy}{dx} - y = \sin(2x + 3)$ . **05**

B.E. I year (CSE-A&B)

Class Test - I (Dec. -2022)

Class Test - I (Oct.- 2023)

2AMRC1: Applied Mathematics-II

Maximum Marks: 20

Time: 70 min.

Note: Attempt only four questions.

Q:1 Define rank of matrix by normal form. Also convert the given matrix  $A$  to its normal form and (05)

hence find its rank where,  $A = \begin{bmatrix} 2 & 1 & -3 & -6 \\ 3 & -3 & 1 & 2 \\ 1 & 1 & 1 & 2 \end{bmatrix}$ .

Q:2 Examine whether the following system of equations is consistent. If so, find the solution:

$$3x + 3y + 2z = 1; \quad x + 2y = 4; \quad 10y + 3z = -2, \quad 2x - 3y - z = 5$$

Q:3 Reduce the following equation into exact form and solve:-

$$(1 + xy) y dx + (1 - xy) x dy = 0$$

Q:4 Solve the equation-  $(D^2 - 3D + 2) y = x e^{3x} + \sin 2x$ .

Q:5 Solve-  $p^2 + 2py \cot x = y^2$ .

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