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SECOND SEMESTER **B.E. (ALL)**

MID SEM EXAMINATION **FEB 2015**

AM-111 MATHEMATICS - II

Time: 1.30 Hr ***Max. Marks: 20***

Note: 1. Answer **ALL** questions, all questions carry equal marks
2. Use of scientific calculator is not allowed
3. Assume suitable missing data if any

1. Using elementary transformation, find inverse of

$$A = \begin{bmatrix} 7 & 6 & 2 \\ -1 & 2 & 4 \\ 3 & 6 & 8 \end{bmatrix}.$$

2. Test the consistency and solve if possible:

$$3w - 6x - y - z = 0$$
$$w - 2x + 5y - 3z = 0$$
$$2w - 4x + 3y - z = 3.$$

3. Find the eigen values and eigen vectors of

$$A = \begin{bmatrix} 3 & -1 & 1 \\ -1 & 5 & -1 \\ 1 & -1 & 3 \end{bmatrix}.$$

4. Solve: $y'' - 4y' + 13y = e^{2x}\cos 3x + (x^2 + x + 9)$.

5. Solve the following simultaneous equations:

$$2x' + 6x - y = 2\sin 2t$$
$$y' - 2x + 5y = 0.$$