



SET - A

Subject: AM-I

Academic Year 2015-16

Class / Sem : F.E./I

Time: 1hr

Div :

Marks: 30

Note : All questions are compulsory.

Q. No.	1a	1b	2	3
COs	CO3	CO4	CO3	CO5

1.A) Examine whether the following vectors are linearly dependent or independent [3,1,-4], [2,2,-3], [0,-4,1] [5]

OR

1.A) Test the following equations for consistency $6x+y+z=-4$; $2x-3y-z=0$; $-x-7y-2z=7$ [5]

1.B) Simplify
$$\frac{(\cos 3\theta + i \sin 3\theta)^4 (\cos 5\theta - i \sin 5\theta)^5}{(\cos(\frac{3\theta}{2}) + i \sin(\frac{3\theta}{2}))^{2/9} (\cos \frac{4\theta}{5} - i \sin \frac{4\theta}{5})^{10}}$$
 [5]

OR

1.B) Express $\sin^7 \theta$ in term of multiple of θ [5]

2. Find the non-singular matrices P and Q such that PAQ is in normal form $A = \begin{bmatrix} 1 & 2 & 3 & 2 \\ 2 & 3 & 5 & 1 \\ 1 & 3 & 4 & 5 \end{bmatrix}$ [10]

OR

2. Find the values of λ for which the system of equations $x+y+z=1$; $X+2y+4z=\lambda$; $x+4y+10z=\lambda^2$ have unique solution, infinitely many solutions and no solutions [10]

3. If $u = \log \tan[\frac{\pi}{4} + \frac{\theta}{2}]$ P.T i) $\tanh \frac{y}{2} = \tan \frac{\theta}{2}$ ii) $\cosh u = \sec \theta$ [10]

OR

3. If $\tan(\alpha+i\beta)=x+iy$ show that i) $x^2+y^2+2x\cot(2\alpha)=1$ ii) $x^2+y^2-2y\coth(2\beta)+1=0$ [10]

U Lane

[Signature]

12/3/13