Engineering Mathematics - I
Solution & Marking Scheme.

Model Answers:

Q 1) a) Echelon form 3 marks, Trivial solution 3 marks

b) Eigen values 1,2,3 : 3 marks

Eigen vectors [0 ,1, 0], [-1,2,2] [-1 ,1, 1]

c) Normal form 2 marks, rank 2, 2 marks

OR

Q2) a) Nontrivial solution 3 marks relation X1+X2+X3-X4=0 :3 marks.

b) Eigen values 0,3,3: 3 marks

Eigen vectors [-1 ,1, 1], [1,1,0] [1,-1,2]: 3 marks

c) echelon form marks rank 3, 2 marks

Q3) a) Real and imaginary part separation 3 marks, R.P. = 0, 3 marks

b) Polar form 2 marks, de moivre's theorem 1 mark, ans 1 mark

c) values of log i and log (1+i): 2 marks , proof :2 marks

OR

Q4) a) Factors 2 marks, solution of each factor 2 marks

Ans: 1,-1, i,-i, -1 , $(1/2 + i\sqrt{3/2})$ $+\left(\frac{1}{2} - i\sqrt{3}\right)$

b) separation 2 marks, proof 2 marks.

c) separation 2 marks, proof 2 marks.