JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, April - 2018
PRINCIPLES OF ELECTRICAL ENGINEERING
(Common to ECE, ETM)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a)	What is transient response of circuit?	[2]
b)	What are initial conditions? Explain their significance.	[3]
c)	What are symmetrical networks?	[2]
d)	Define Z parameters. Give the symmetry and reciprocity conditions in terms of z-parameters.	[3]
e)	What is characteristic impedance?	[2]
f)	What are different types of filters?	[3]
g)	What is the basic principle of DC generator?	[2]
h)	List out the different types of DC motor.	[3]
i)	State the applications of stepper motor.	[2]
j)	Draw the No-load vector diagram of 1-ϕ transformer.	[3]

PART-B

(50 Marks)

2.a) Determine the current i for $t \geq 0$ if initial current $i(0) = 1$ for the circuit shown in Figure1.
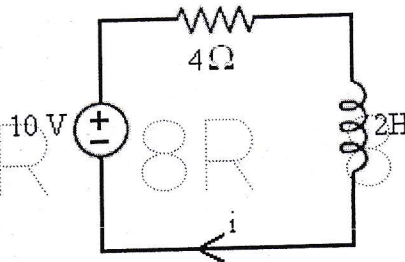

Figure: 1

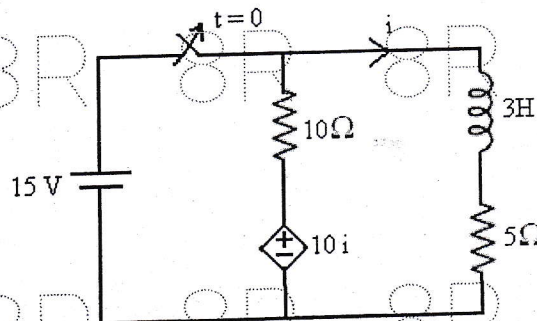b) Switch is opened at t = 0 in the circuit shown in Figure 2. Then find the current 'i'. [5+5]

Figure: 2

OR

3.a) Obtain the transient response for source free series R-L circuit.
 b) Obtain the transient response for source free series R-C circuit. [5+5]

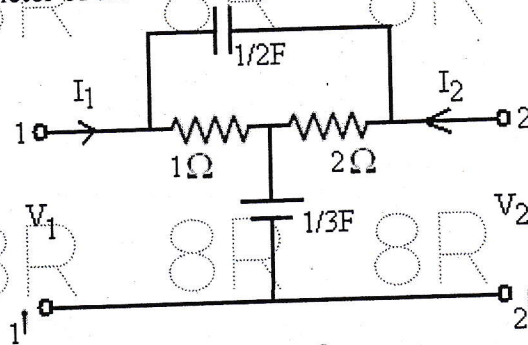4. Find Z and Y parameter of the network shown below Figure. 3. [10]

Figure: 3

OR

5.a) Derive the relationship between Z parameters and Y parameters.
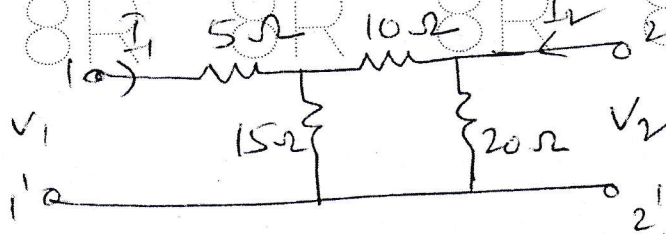 b) Find ABCD parameters of the following network shown in figure 4. [5+5]

Figure: 4

6. Explain π – type attenuator and also design it to give 20db attenuation and to have characteristic impedance of 100Ω. [10]

OR

7.a) Draw a circuit of a band stop filter and explain its working with neat reactance curves.
 b) What are the disadvantages of proto type filters? [6+4]

8. What are the different types of dc generators? Show the connection diagrams and load characteristics of each type. [10]

OR

9.a) Explain the principle operation of dc motor.
 b) Explain the Swinburne's test to be conducted on d.c machine. [5+5]

10.a) Explain the principle operation of transformer.
 b) Explain the losses in a transformer. [5+5]

OR

11. A 50Hz, 1Ø, 100 KVA transformer has full load copper loss of 1200W and its iron loss is 960W. Calculate:
   a) The efficiency at full load, unity power factor.
   b) The efficiency at half load, 0.8 power factor.
   c) The efficiency at 7.5% of full load, 0.7 power factor. [10]

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