

**SREE VIDYANIKETHAN ENGINEERING COLLEGE**

(An Autonomous Institution, Affiliated to JNTUA, Ananthapuramu)

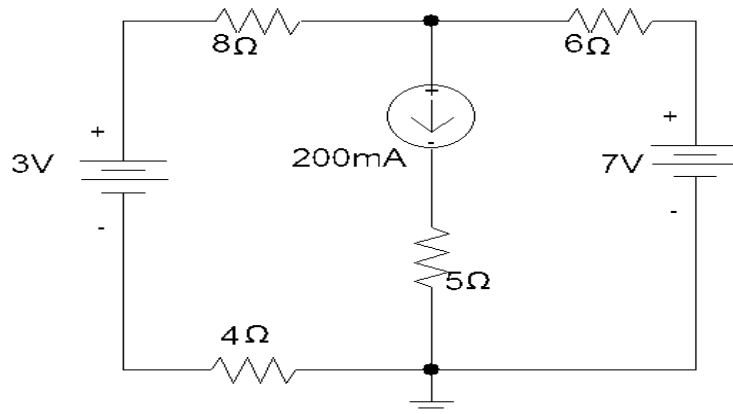
**I B.Tech II Semester (SVEC-16) Regular/Supplementary Examinations June - 2018****BASIC ELECTRICAL AND ELECTRONICS ENGINEERING****[Civil Engineering, Mechanical Engineering]**

Time: 3 hours

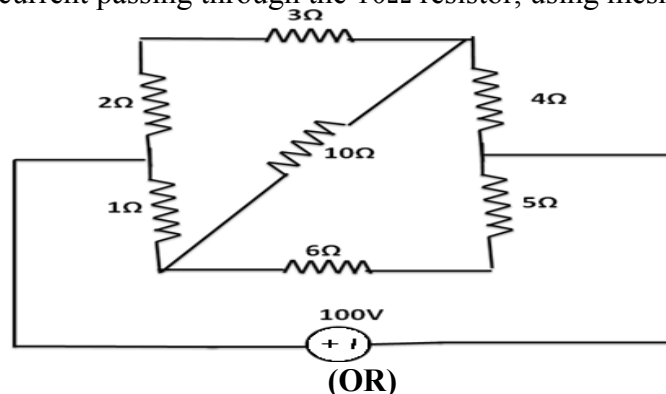
Max. Marks: 70

**Answer One Question from each Unit.****All questions carry equal marks.****UNIT-I**

- 1 a) Write the node - voltage equations for the circuit shown below, solve the current passing through  $8\ \Omega$  resistor. 7 Marks

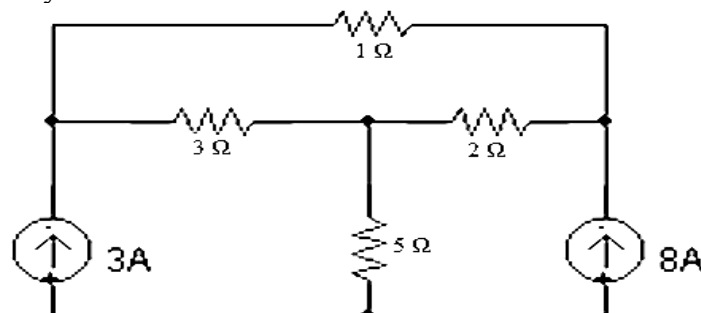


- b) Compute the current passing through the  $10\ \Omega$  resistor, using mesh analysis. 7 Marks

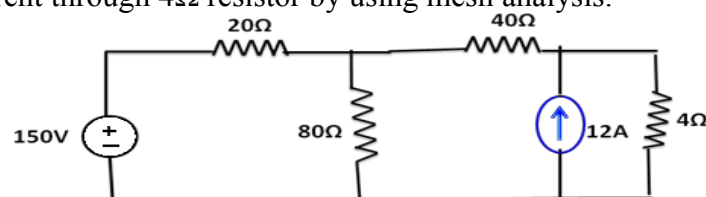


(OR)

- 2 a) Solve for the current through the  $5\ \Omega$  resistor and the voltage over the  $3A$  source using nodal analysis. 7 Marks

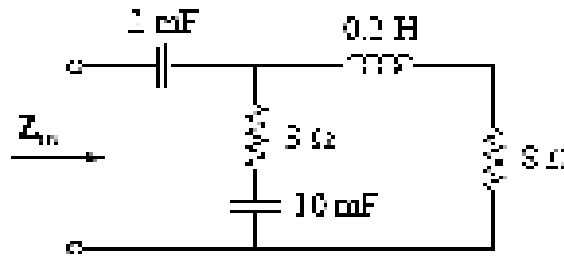


- b) Find the current through  $4\ \Omega$  resistor by using mesh analysis. 7 Marks

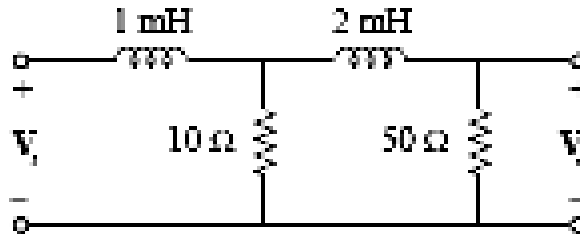


### UNIT-II

- 3 a) Compute the input impedance  $Z_{in}$  circuit shown below, assume that the circuit operates at  $\omega = 50 \text{ rad / sec}$ . 7 Marks

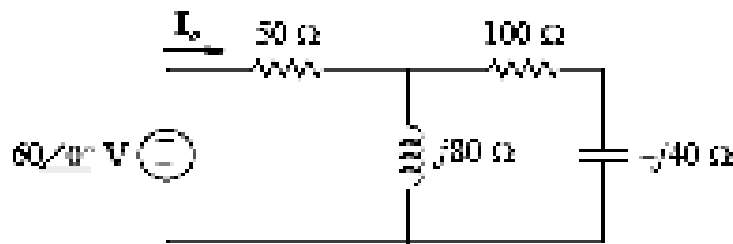


- b) Compute the magnitude and phase angle of output voltage  $V_o$ , when the circuit was excited by 1V, 5 kHz AC voltage source. 7 Marks

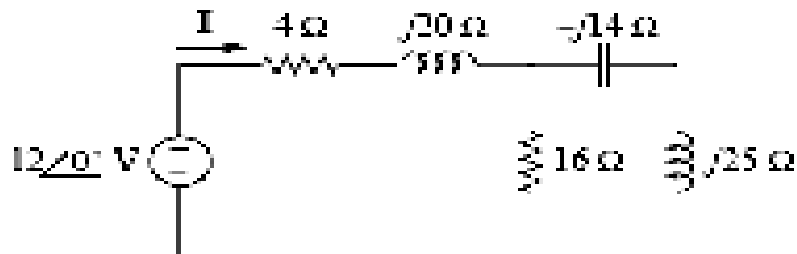


(OR)

- 4 a) Find the current  $I_o$  in the circuit shown below. 7 Marks



- b) Compute the  $I$  in the circuit given below. 7 Marks



### UNIT-III

- 5 a) What is an ideal transformer? 4 Marks  
 b) State the differences between core and shell type transformers. 4 Marks  
 c) A single phase, 50Hz transformer has 80 turns on the primary winding and 400 turns on the secondary winding. The net cross-sectional area of the core is  $200\text{cm}^2$ . If the primary winding is connected to a 240V, 50Hz supply, Determine: 6 Marks  
     i) The EMF induced in the secondary winding.  
     ii) The maximum value of the flux density in the core.

(OR)

- 6 a) Explain the principle operation of three phase induction motor. 7 Marks  
 b) With the help of suitable diagrams, explain different methods of excitation of DC generators. 7 Marks

### UNIT-IV

- 7 a) Explain the operation of voltmeter using block diagram. 7 Marks  
 b) Explain the principle operation of strain gauge using bridge configuration. 7 Marks

(OR)

- 8 a) How a multi-meter could measures the multiple parameters with wide range? 7 Marks  
b) Write the differences between data logger and data acquisition system. 7 Marks

**UNIT-V**

- 9 a) Discuss the flow of three currents  $I_E$ ,  $I_B$  and  $I_C$  in a forward biased emitter junction and reverse biased collector junction. 7 Marks  
b) Draw the V–I characteristics of transistor in common emitter configuration and discuss the salient features. 7 Marks

(OR)

- 10 a) Derive the relation between the BJT parameters  $\alpha$ ,  $\beta$  and  $\gamma$ . 7 Marks  
b) Draw the circuit diagram of NPN junction transistor in common emitter configuration and describe its characteristics. 7 Marks

