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B. E. (Third Semester) Examination, Nov.-Dec. 2021

(New Scheme)

(IT Engg. Branch)

BASIC ELECTRONICS & NETWORK THEORY

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Part (a) is compulsory and of 2 marks. Attempt any two parts from (b), (c) & (d) carry 7 marks each.*

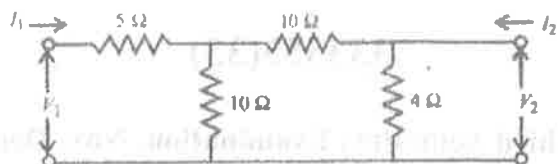### Unit-I

1. (a) Define KVL & KCL for writing Network.

   (b) Explain maximum power transfer theorem with example.

(c) Example Thevenin's theorem with example.

(d) Find Z parameter for the network shown below.

Unit-II

2. (a) What do you mean by rectifier?

(b) Draw the ckt diagram of full wave rectifier and explain its working with waveform. Find expression for efficiency.

(c) How many capacitances are in effective in diode? Explain them with characteristics and derivation.

(d) Write and prove Diode equation.

$$I = I_0 \left(e^{V/\eta v_t} - 1 \right)$$

Unit-III

3. (a) Explain about doping concentration of different

region of transistor.

(b) Write different current components of p-n-p Transistor with diagram.

(c) Draw and explain the all characteristics of common base configuration of transistor.

(d) Explain early effect with diagram.

Unit-IV

4. (a) Explain the reason for keeping operating point of transistor fixed.

(b) What is bias compensation? Give compensation for V_{be}.

(c) Explain the operation of collector to base bias ckt. and find stability factor.

(d) Write short notes on :

(i) Stability factor

(ii) Selection of operating point

Unit-V

5. (a) What do you mean by FET?

(b) With structure, explain the characteristics of JFET.

(c) Comparison between JFET and MOSFET.

(d) Write n-channel depletion type MOSFET with neat diagram and explain its characteristics.