R16

Code No: 131AK

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech I Year I Semester Examinations, January/February - 2025
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Common to EEE, ECE, CSE, IT)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	Define and draw about the Independent and Dependent Sources.	[2]
b)	What is RMS value and Average Value?	[3]
c)	Write the Statement for Superposition Theorem.	[2]
d)	What is Resonance? Give any one example.	[3]
e)	What is Diffusion Capacitance of diode?	[2]
f)	Define Ripple Factor.	[3]
g)	What is a Transistor? Draw its symbol.	[2]
h)	In a common base connection, the emitter current is 2mA. If the emitter circuit is open, the collector current is 55 μA, α = 0.92. Find the total collector current.	[3]
i)	What is Pinch-Off Voltage?	[2]
j)	Write any two advantages of Junction Field Effect Transistor.	[3]

PART – B

(50 Marks)

2.a) Briefly discuss about the Phase and Phase Difference, Power Factor, Complex and Polar Forms.
b) Write short notes on Kirchoff's Laws and Source Transformation. [5+5]

OR

3.a) Using Nodal analysis determine node voltages for the below circuit. (Figure 1)

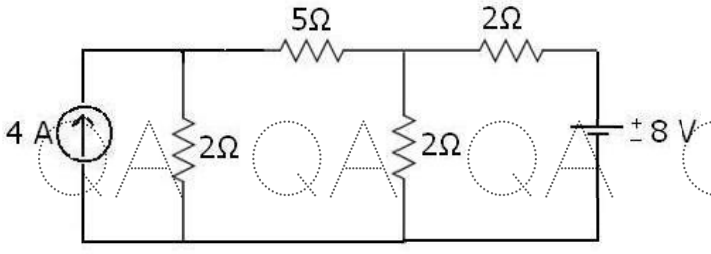

Figure 1

b) Briefly discuss about the steady state analysis of a series RLC circuit with sinusoidal excitation. [5+5]

4.a) Derive and discuss about the Bandwidth and Quality Factor of a series resonant R-L-C circuit.

b) A series RLC circuit is connected across a variable frequency supply and has R = 12 ohms, L = l mH and C = l000 pF. Calculate (i) Resonant frequency. (ii) Q factor and (iii) Half power frequencies. [5+5]

OR

5.a) Find the current flowing through the 1KΩ resistor of the network shown below figure 2 by using Norton's theorem.

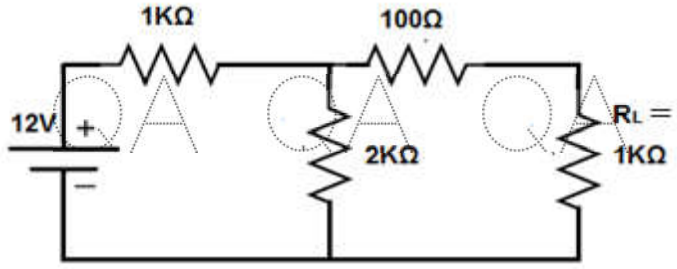

Figure 2

b) Write the statement of Reciprocity Theorem and verify the following circuit(Figure 3). [5+5]

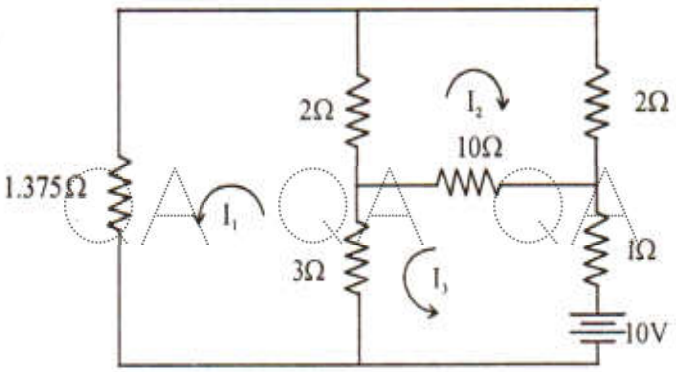

Figure 3

6.a) Discuss and draw the VI characteristics of Zener Diode.

b) Briefly discuss about Transition Capacitance of a semiconductor diode. [5+5]

OR

7.a) Draw and discuss the Half Wave Rectifier with and without filter.

b) Briefly discuss about π section filter with neat circuit diagram. [5+5]

8. Draw and discuss the operation of Common Emitter Configuration of Transistor and draw its output and input characteristics. [10]

OR

9. Discuss how to determine h-parameters of a Transistor. [10]

10.a) Explain the Volt-Ampere characteristics of JFET.

b) Compare and discuss about BJT & FET. [5+5]

OR

11. Draw and discuss clearly about the construction and operation of N- Channel JFET and also describe about drain characteristics. [10]

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