R16

Code No: 131AK

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech I Year I Semester Examinations, January/February - 2024

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(Common to EEE, ECE, CSE, EIE, 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)	Differentiate dependent and independent sources.	[2]
b)	Define R.M.S value and Average value of sinusoidal wave.	[3]
c)	Define Q factor.	[2]
d)	What is the magnitude of impedance and current during resonance frequency in R-L-C series circuit?	[3]
e)	Draw the Volt Ampere characteristics of PN diode.	[2]
f)	Differentiate static and dynamic resistance of PN junction diode.	[3]
g)	Draw the symbols for i) PNP and ii) NPN transistors.	[2]
h)	How BJT used as an amplifier?	[3]
i)	What is the pinch-off voltage of JFET?	[2]
j)	Explain the method of biasing JFET.	[3]

PART - B

(50 Marks)

2.a) Three resistors 8 ohms, 6 ohms and 10 ohms are connected in series to a battery of terminal voltage 24 volts. Find the current in the circuit, Potential Difference across each resistor and power dissipated in each resistor?

b) Determine the current I in the circuit shown below figure 1, All the resistances are in ohms? [5+5]

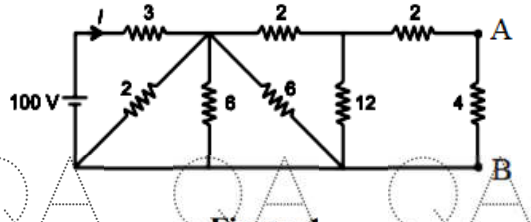

Figure 1

OR

3.a) Find the form factor for the below circuit.(Figure 2)

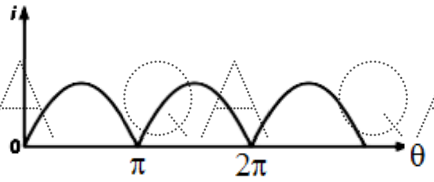

Figure 2

b) A pure inductance L = 0.2H has an applied voltage of e = 100 sin 314t. Find the instantaneous and average power? [5+5]

4.a) Calculate the current I_0 using superposition theorem .(Figure 3)

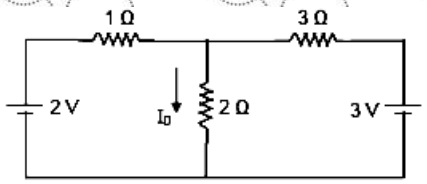

Figure 3

b) Draw the Thevenin's equivalent for the circuit shown in figure 4. [5+5]

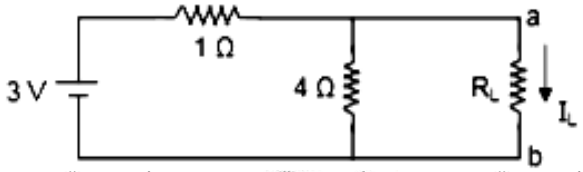

Figure 4

OR

5.a) Using Norton's theorem, determine current I_{ab} in the circuit shown in the figure 5.

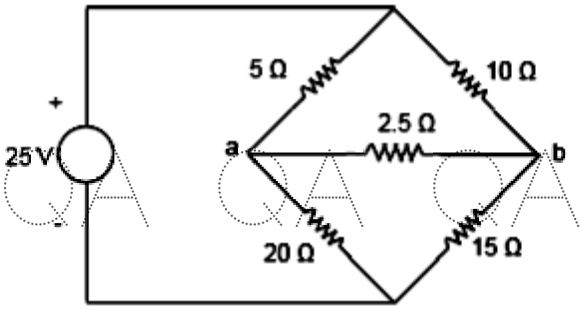

Figure 5

b) What should be the value of load resistor R in the circuit shown in figure 6 to dissipate maximum power? [5+5]

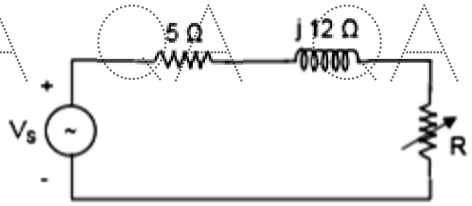

Figure 6

6.a) Explain the principle and operation of PN diode under forward and reverse biased conditions with necessary diagrams.

b) Write short notes on capacitor filter. [6+4]

OR

7.a) Write short notes on inductor filter.

b) Expalin the operation of half wave rectifier with necessary diagrams. [4+6]

8. Explain the working of Common Collector configuration of BJT with neat diagrams. [10]

OR

9. Give detailed analysis of CE configuration of transistor using h-parameters. [10]

10.a) Explain volt ampere characteristic of JFET.

b) Write the applications and advantages of JFET. [5+5]

OR

11.a) Mention the difference between n-channel and p-channel JFET.

b) Compare BJT and FET. [5+5]

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