Code.No: A109212305 | R09 | SET-1

II B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(BIO-TECHNOLOGY)

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

Answer any FIVE questions
All questions carry equal marks

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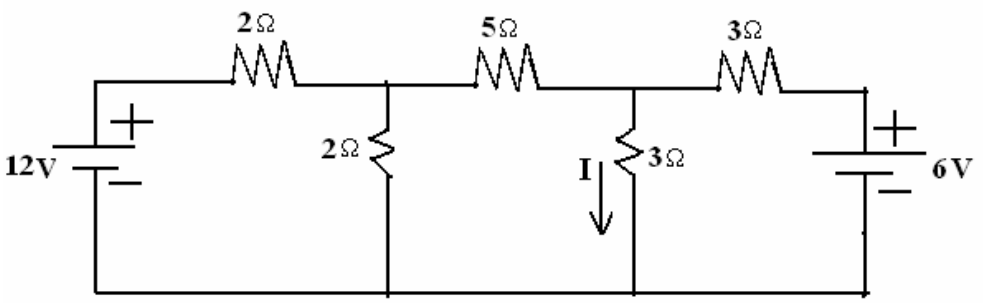
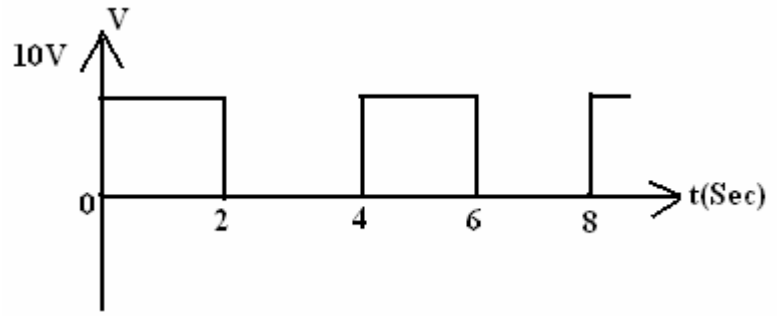
1.a) State and explain KCL and KVL.
b) Find the current 'I' in the circuit shown below.

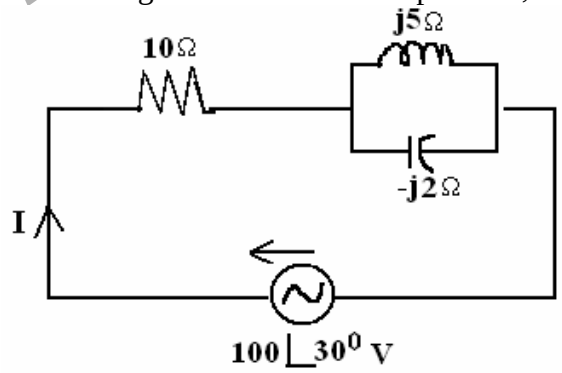


[8+7]

2.a) Find the form factor of the waveform shown below.



b) For the below circuit diagram find the total impedance, total current and phase angle.



[7+8]

3.a) A 3ϕ, 3 wire, 110V ABC system supplies a delta connection of three equal impedances of $5\angle 45^0\Omega$. Determine the line currents.
b) Define phase, phase difference, leading and lagging. [7+8]

4.a) Explain the theory of operation of single phase induction motors.
b) Mention the various advantages disadvantages and applications of Synchronous motors. [8+7]

5.a) Explain in detail the operation of Repulsion type moving iron type instrument.
b) Explain the principle and operation of a dynamometer type wattmeter. [8+7]

6.a) Explain static resistance, bulk resistance, junction resistance, dynamic resistance and reverse resistance of a diode.
b) What is a Triac? Explain its characteristics and applications. [8+7]

7.a) Explain the input and output characteristics of a common emitter transistor.
b) Draw the V-I characteristics of an N-channel FET. [8+7]

8.a) Define and give truth tables of
i) AND ii) NOT iii) NAND
b) Write short notes on Digital to Analog and Analog to Digital Conversion. [9+6]

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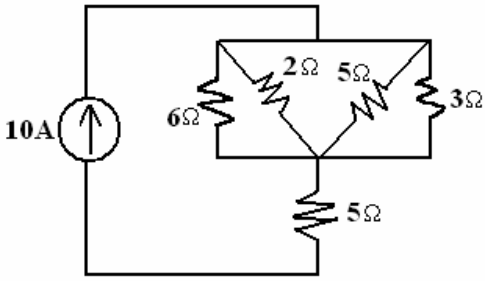
Code.No: A109212305 | R09 | SET-2

II B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(BIO-TECHNOLOGY)

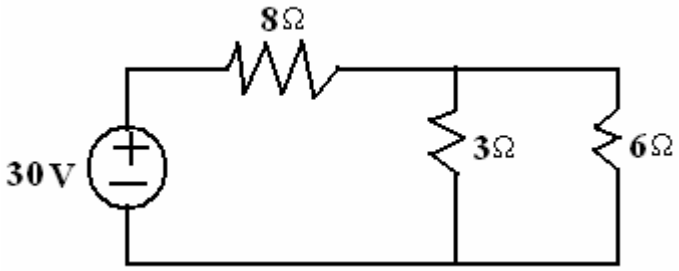
Time: 3hours **Max.Marks:75**

Answer any FIVE questions
All questions carry equal marks
- - -

1.a) Using current division formula, determine the current in each branch of the circuit.

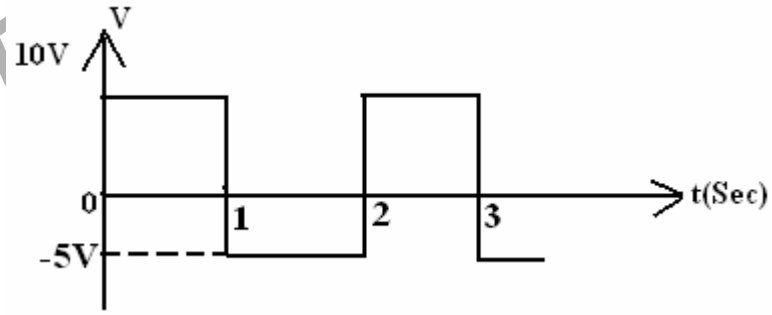


b) Find the all branch currents and voltage across all the resisters in the below circuit diagram.

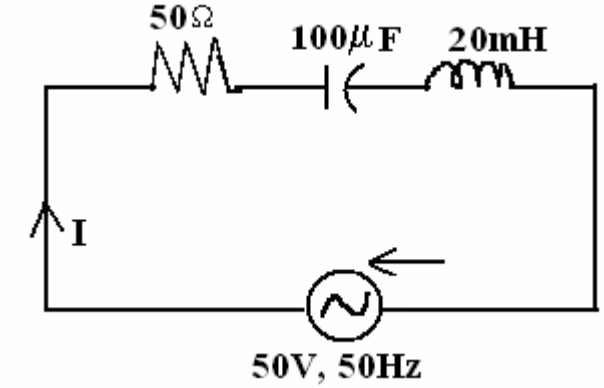


[8+7]

2.a) Calculate average and RMS values of the waveform shown below.



b) Determine the impedance, phase angle and current in the below series circuit. [8+7]



Code.No: A109212305 | R09 | SET-2

3.a) A 3ϕ, 4 wire, 208V, CBA System serves a balanced star connected load with impedances $20\angle -30^0\Omega$. Find the line currents.
b) What are the advantages of Polyphase Systems? [8+7]

4.a) Explain the principle of operation and construction details of Synchronous generator.
b) Derive the emf equation of a DC generator. [8+7]

5.a) Explain the deflecting, controlling and Damping torques in the measuring instruments.
b) Explain the attraction type Moving Iron instrument in detail. [7+8]

6.a) Give a Schematic diagram of SCR and explain its characteristics and applications.
b) What is meant by intrinsic Semiconductor? Name three acceptor and doping materials for doping a Semiconductor. [8+7]

7.a) Explain the input and output characteristics of Common – Base transistor.
b) Explain with the help of neat diagram, the Structure of N-Channel FET. [8+7]

8.a) Define and give truth tables of
i) NOR ii) NAND iii) NOR gate.
b) Show how to implement a NOR logic with NOT and OR gates. [8+7]

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Code.No: A109212305 | R09 | SET-3

II B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(BIO-TECHNOLOGY)

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

Answer any FIVE questions
All questions carry equal marks

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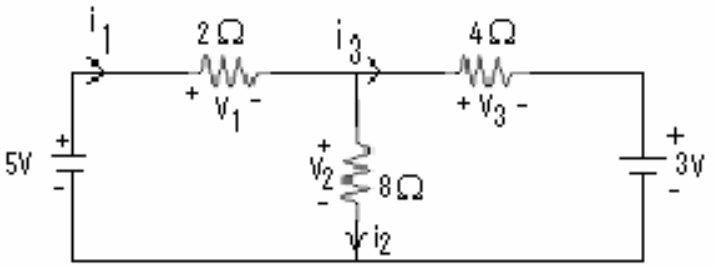
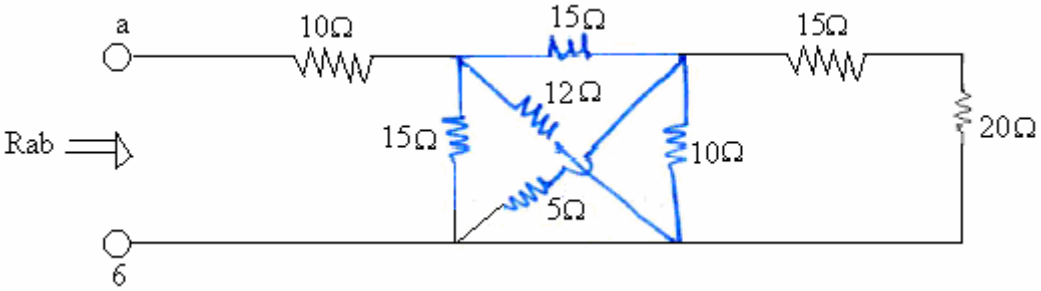
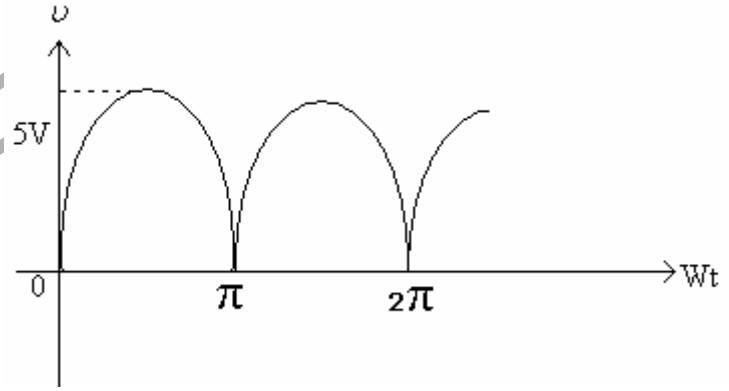
1.a) Find the currents and voltages in the below circuit.



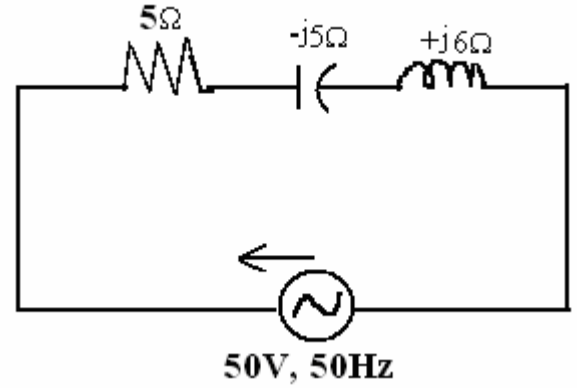
b) Calculate the equivalent resistance Rab in the below circuit. [8+7]



2.a) Find the average and RMS values of the full wave rectified Sine wave shown below.



b) In the below circuit, determine the total impedance, current and phase angle. [8+7]



Code.No: A109212305 | R09 | SET-3

3.a) Three identical impedances of $10\angle 53.1^0\Omega$ are connected in delta to a 3ϕ, 3 wire, 50 Hz, 240V CBA System. Find the line currents.
b) Obtain the relation between line and phase voltages of a three phase star connected system. [8+7]

4.a) Explain the principle of operation of Synchronous motor with neat diagrams.
b) Explain the principle of operation and construction of a Single phase transformer. [7+8]

5.a) Explain the construction and principle of operation of Induction Energy meter.
b) What are the merits and demerits of Moving iron instruments? [8+7]

6.a) Discuss briefly, the construction, working, characteristics and applications of Silicon Controlled Rectifier.
b) Explain the effect of temperature on the volt – ampere characteristics of a diode. [9+6]

7.a) Discuss thermal runaway. How it can be prevented in a high power transistor.
b) Explain the working of a junction field effect transistor. [8+7]

8.a) What is a binary number system? Why is it preferred to be decimal system for use in computers?
b) What is a flip-flop? Describe in brief RS flip-flop and D flip-flop. [8+7]

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Code.No: A109212305 | R09 | SET-4

II B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(BIO-TECHNOLOGY)

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

Answer any FIVE questions
All questions carry equal marks

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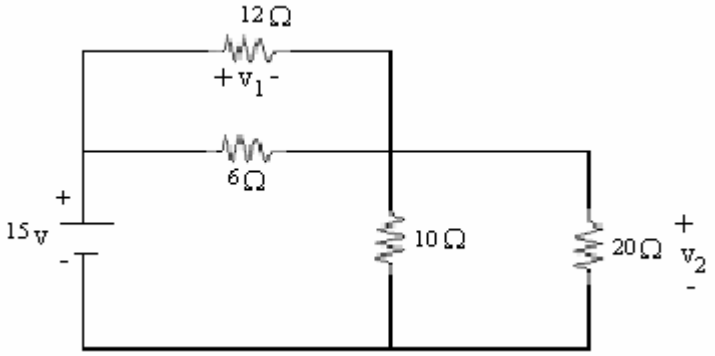
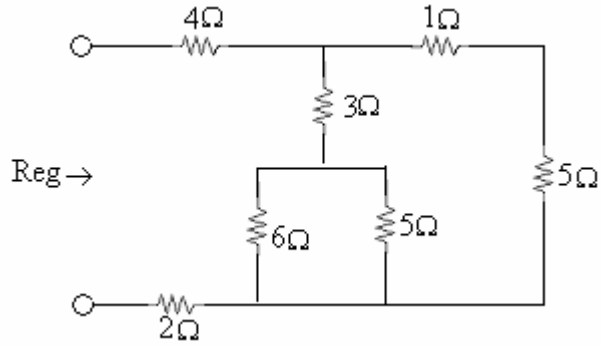
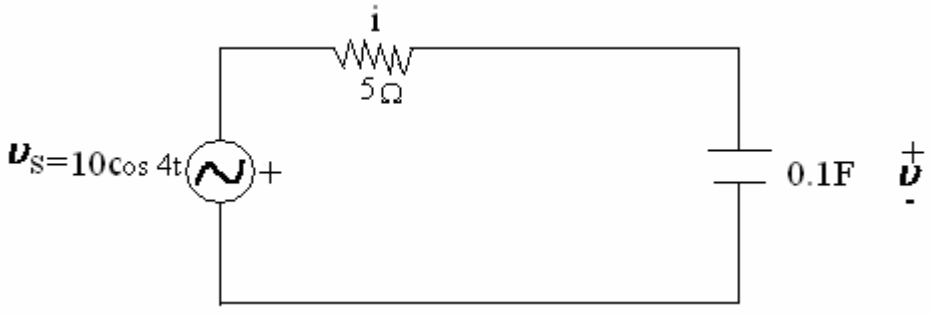
1.a) Find V_1 and V_2 in the below circuit. [8+7]



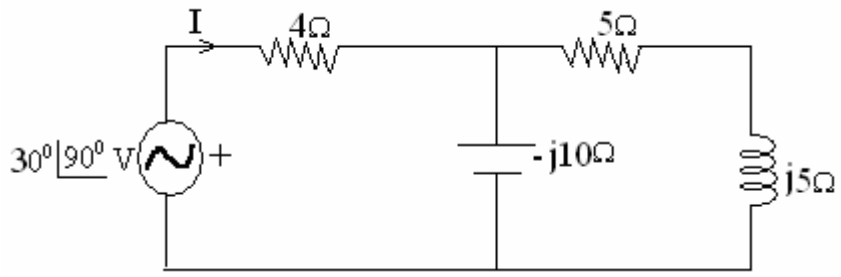
b) Calculate R_{eq} in the below circuit diagram.



2.a) Find $\upsilon(t)$ and i(t) in the below circuit. [7+8]



b) Find 'I' in the below circuit.



Code.No: A109212305 | R09 | SET-4

3.a) Obtain the relation between line and phase currents of a three phase delta connected system.

b) A 3ϕ, 4-wire, 220 V, 50 Hz, ABC system serves a balanced Star connected load with impedances $45\angle 30^0\Omega$. Find the line currents. [7+8]

4.a) Explain with neat sketches the construction details of a DC motor.

b) Derive the emf equation of a Single phase transformer. [7+8]

5.a) What are the merits and demerits of Moving coil instruments?
b) Explain the principle of operation and construction of an Attraction type moving iron instrument. [8+7]

6.a) Draw the V-I characteristics of a junction diode when it is
i) forward biased and ii) reverse biased
b) What is a Zener diode? Explain the characteristics and applications of Zener diode. [7+8]

7.a) Sketch the V-I characteristics of an NPN transistor in common emitter operation.
b) List the advantages and disadvantages of FET over bipolar transistor. [8+7]

8.a) Discuss the BCD and binary codes.
b) Mention the major differences between analog and digital quantities in brief. [7+8]

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