BE - 104

B.E. I & II Semester Examination, December 2013

Basic Electrical & Electronics Engineering

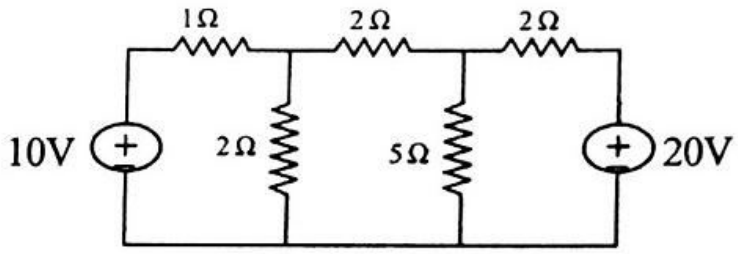
Time : Three Hours

Maximum Marks :70

note: Attempt all the questions. Every question has internal choice.

1. a) State and explain superposition theorem.

b) Calculate current through 5 ohm resistance using loop analysis.



OR

2. a) Define the following: 7

i) Average value ofAC voltage
ii) RMS value ofAC voltage
iii) Power factor
iv) Active power
v) Reactive power
vi) Apparent power
vii) Three phase balanced supply.

b) A coil of resistance 100 and inductance 0.1H is connected in series with 150p$ capacitor across a 200V, 50Hz supply calculate: 7

i) Inductive reactance
ii) Capacitive reactance
iii) Impedance
iv) Current
v) Power factor
vi) Voltage across the coil
vii) Voltage across capacitor.

3. a) Derive EMF equation tier single phase transformer 7

b) A single phase transionner is connected across 200V, 50Hz. supply. Number of turns in primary is 500 while in secondary is 1000. the net cross sectional arra of the core is $80cm^2$= calculate:

i) Transformation Ratio.
ii) Maximum flux dencity
iii) EMF induced in secondary winding 7

OR

4. a) What quantities can be find out using open circuit test on I b transformer. Explain how you can perform open circuit test on lep transformer in the laboratory. 7
b) A 100 KVA, 1000/10,000 V, 50Hz single phase transformer has an iron loss of 1100 w the copper loss. With 5A in the high. Voltage winding is 400W. Calculate efficiency at 10O% normal load for p.f. 1.0 and 0.8. 7
5. a) Describe the constructional details of d.c. machine giving; suitable diagram. 7
b) What do you mean by separately excited and self excited d.c. generator sketch following type of d.c. generator. 7
i) Shunt wound
ii) Series wound
iii) Compound generator
OR
6. Draw and explain Torque - slip characteristic of 3-phase induction.
7. a) State and prove Demorgan's theorem.
b) Write and explain truthtable of
i) NAND gate
ii) EX-OR gate.
OR
8. a) Draw and explain with the help of truth table working of J-K flip-flop.
b) Draw and explain 4 bit full adder circuit.
9. Explain operation of PN junction diode when it is :
i) Forward biase
ii) Reverse biase
OR
10. a) Explain the working of Transistor when it is operated in CE mode.
b) Explain in short application of transistor.