FE1904

Total No. of Printed Pages:3

F.E Sem-I (Revised Course 2019-2020)
EXAMINATION NOV/DEC 2019
Basics Electrical & Electronics Engineering

[Duration : Three Hours] **[Total Marks :100]**

Instructions:
1) Answer two questions from Part A and two questions from Part B.
2) Answer any one question from Part C.

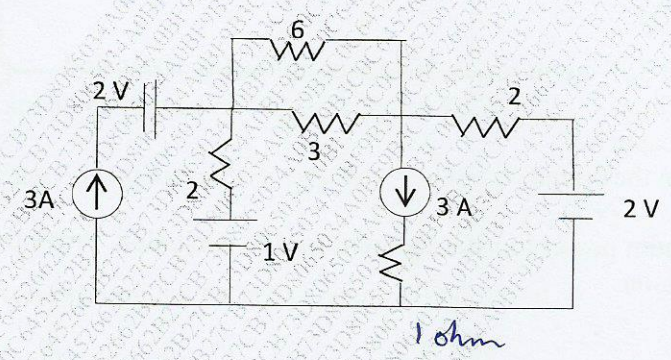
Part A

Q1 a) Describe in brief the main components solar power plant. Explain following terms with respect to solar plant
1) Solar irradation
2) STC
3) Fill factor. **(5+3)**

b) What are the advantages and limitations of Renewable power sources? **(6)**

c) Use Amper's Law to find magnetic flux density due to solenoid. **(6)**

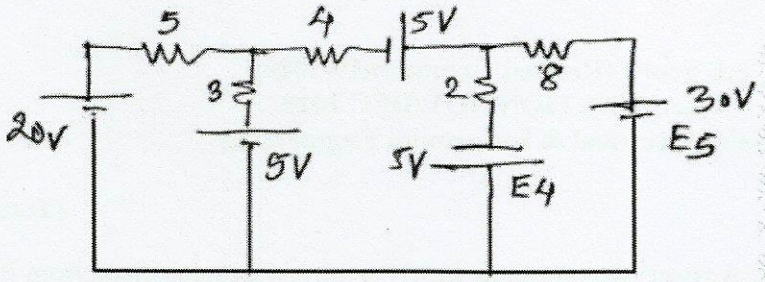
Q2 a) Use super position Theorem to find current in 3Ω in following circuit.



(10)

All resistors are in ohm

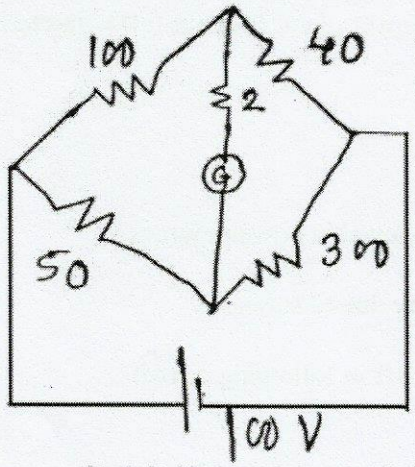
b) Use loop analysis to find current in 8 Ω. Find whether battery E_4 is giving or absorbing power **(6)**



(4)

c) Explain voltage to current source conversion.

Q.3 a) Use Norton's theorem to find current in Wheatstone bridge galvanometer. **(8)**



not required

b) Two capacitors 10μF and 8μF are in series. If voltage applied is 100V find **(6)**
1) Charge in each capacitor.
2) Voltage across each capacitor.
3) Total energy stored in the circuit.

c) State and Explain maximum power transfer theorem for DC excitation. Prove the condition for maximum power transfer. **(6)**

Part B

Q.4 a) Explain with neat circuit diagram and waveforms, working of bridge rectifier. **(10)**

b) What do you mean by Transistor biasing. Briefly explain methods of Transistor biasing. **(10)**

Q.5 a) Describe construction and V-I characteristics of SCR. **(8)**

b) Draw neat circuit of Zener voltage ~~regular~~ regulator and explain its operation. **(8)**

c) Write a brief note on LED. **(4)**

Q.6 a) What do you mean by ripple factor? How do you minimize it . **(8)**

b) Define following terms for Transistor
   1) $\propto$, β current gains
   2) Saturation and cut-off regions. Derive relation between $\propto$, and β
   3) Quiescent point

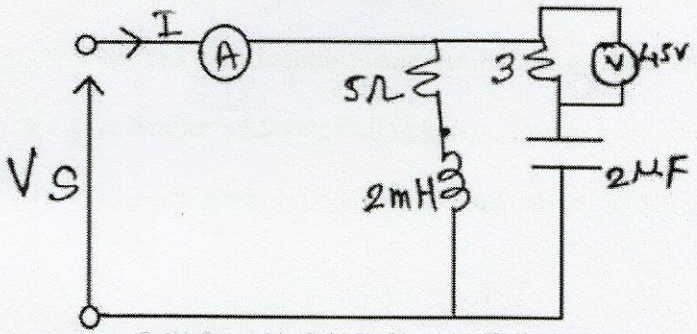
(12)

Part C

Q.7 a) Derive expression for RMS Value of AC wave. **(6)**

b) Derive relationship between phase and line voltages in star connected 3ϕ system. **(6)**

c) Find current in the ammeter in the following circuit if voltmeter reads 45V. The frequency of the supply is 50 Hz. Hence find Vs. **(8)**



Q.8 a) Explain construction and working of MOSFET. **(8)**

b) What do you mean by active and reactive power? If

$$V_s = V_1 + jV_2$$

$$I_s = I_1 + jI_2$$

Find expressions for active and reactive power **(8)**

c) Explain how an Transistor may be used as an amplifier. **(4)**