Total No. of Printed Pages:03

F.E Semester-I (Revised Course 2019-20)
EXAMINATION AUGUST 2020
Basics of Electrical & Electronics Engineering

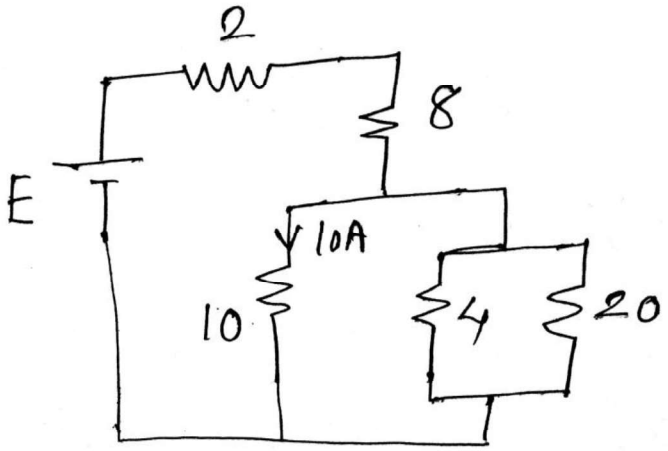
[Duration : Two Hours] **[Total Marks : 60]**

Instruction: Answer THREE FULL QUESTIONS with ONE QUESTION FROM EACH PART

Part-A

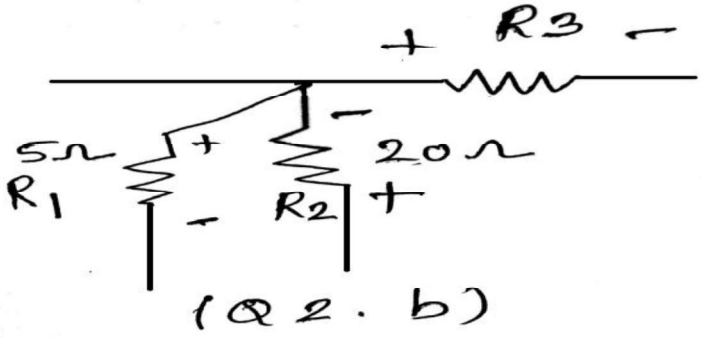
Q.1 a) What do you mean by Renewable energy sources? What are their advantages and restrictions? **10**

b) In the circuit below find currents in all other resistors if current in 10Ω is 10A. Hence find value of E **10**



Q.2 a) Explain Kirchoff's laws with proper examples. **8**

b) IF the voltages across R_1, R_2, R_3 are 20V, 40V, & 60V respectively in the part of circuit shown. Find R_3 the polarities of voltages are as shown. **8**



(Q 2. b)

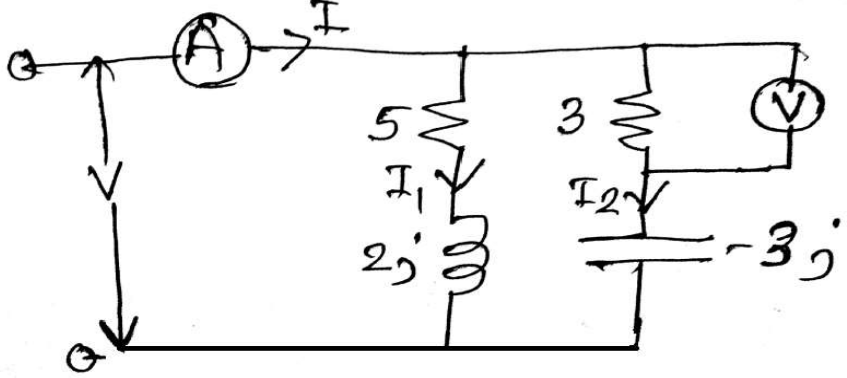
c) If a resistor 'R' is carrying current I show that power dissipated is $\frac{V^2}{R}w$ where V= voltage across the resistor. **4**

Q.3 a) Define 'RMS' value of an waveform **4**

b) Find RMS value of wave form **4**

$$V(Q) = V_m \sin Q$$

c) Find the reading of Ammeter if voltmeter reads 45V in the following circuit Also find $I_1, I_2 and\ V\ and$ Draw phasor diagram **12**



Part- B

Q.4 a) Explain how zener diode may be used as voltage regulator. Draw its V-I characteristics indicating typical parameters. **8**

b) Explain output characteristics of transistor in CE configuration sketch them neatly with relevant circuit to obtain them in the laboratory. **8**

c) Draw neat circuit of full wave bridge rectifier and draw relevant wave forms. **4**

Q.5 a) Explain with neat circuits following biasing circuits of an transistor **10**

i) Fixed bias

ii) Voltage divider bias

b) Explain construction and V-I characteristics of SCR. How it can be used to control the phase of applied voltage. **10**

Q.6 a) Explain working of n-channel JFET and draw its VDS -i_D characteristics and explain it **8**

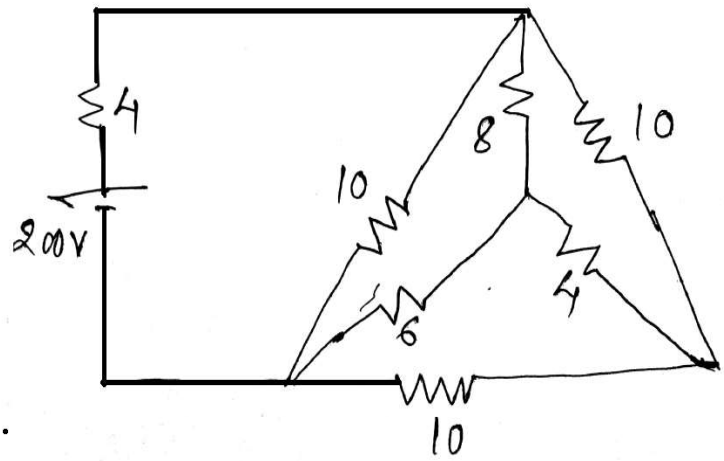
b) Explain working of depletion type and enhancement type MOSFET with neat operational sketches **12**

Part- C

Q.7 a) Derive emf equation of an single phase transformer **8**

b) Draw neat phasor representation of 3-ϕ supply system and write expressions for 3 phases. **6**

c) Use star – delta transformation to find current I **6**



Q.8 a) Explain following terms for transistor **8**

1) Saturation and cut off regions
2) $\propto and\ \beta$ current gains
3) $Quiscent\ point$
4) Power dissipation limit

b) What do you mean by power factor what is its significance in ac circuit **6**

c) Explain working of LED **6**