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**F.E. Semester- I (Revised Course 2019-20)**  
**EXAMINATION OCTOBER 2020**  
**Basic Electrical & Electronics Engineering**

[Duration : Two Hours]

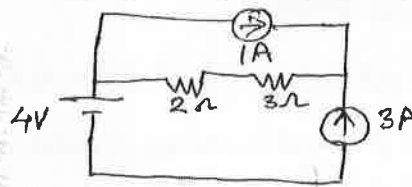
[Total Marks : 60]

**Instructions:**

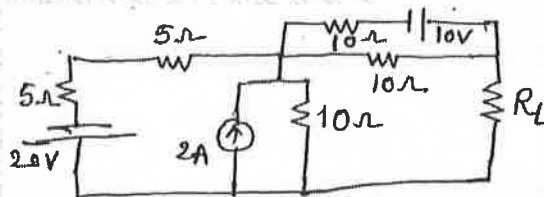
- 1) Answer THREE FULL QUESTIONS with ONE QUESTION FROM EACH PART

Part A

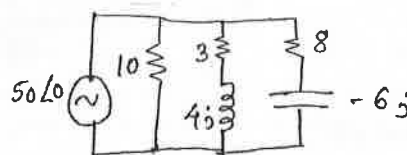
- Q.1 a) State and explain Kirchhoff's laws. (8)  
 b) In the following circuit what is the voltage across both current sources. (12)



- Q.2 a) Explain maximum power Transfer Theorem. Derive the condition for maximum power Transfer in DC circuit. (6)  
 b) Find the value of ' $R_L$ ' to Receive maximum power in following circuit. Also get the value of maximum power. (14)



- Q.3 a) Derive expression for RMS value of Ac supply of sinusoidal wave shape. (8)  
 b) In the following circuit find the current supplied by the source. Draw phasor diagram of all branch currents. (6)



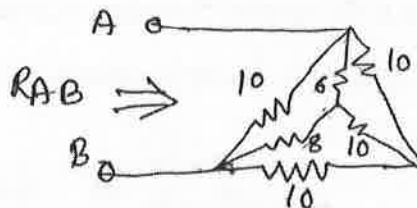
- c) What do you mean by power factor? Explain (6)
- 1) Zero power factor
  - 2) Leading power factor
  - 3) Lagging power factor

Part B

- Q.4 a) Draw neat circuit of full wave bridge rectifier and explain its working. Draw neat sketch of output wave forms (8)
- b) Explain voltage regulator circuit using zener diode (8)
- c) Explain briefly working of an LED. (4)
- Q.5 a) What do you mean by biasing of an transistor why it is required? Explain voltage divider bias circuit, with neat circuit diagram. (10)
- b) Explain the construction and working of JEET. Draw its  $V_{DS} - I_d$  characteristics. (10)
- Q.6 a) Explain how SCR is used to control the voltage in phase control circuit. (8)
- b) Explain following terms for transistor (8)
- 1) Quiescent point
  - 2) Saturation and cut off regions
  - 3) Power dissipation
  - 4)  $\alpha, \beta$  current gains
- c) Draw a neat circuit of CE configuration of transistor. (4)

Part C

- Q.7 a) Derive emf equation of  $1\phi$  transformer (8)
- b) Find RAB in the circuit below (6)



- c) Explain construction of BJT. (6)

- Q.8
- a) State and explain Norton's Theorem (6)
  - b) With neat circuit explain working of full rectifier circuit with center-top transformer (8)
  - c) Explain how transistor can be used as amplifier. Draw relevant circuit and characteristics. (6)

