

**1E3108**

Roll No. \_\_\_\_\_

Total No. of Pages: **3****1E3108****B. Tech. I - Sem. (Main / Back) Exam., - 2023**  
**1FY3 – 08 Basic Electrical Engineering****Time: 3 Hours****Maximum Marks: 70***Instructions to Candidates:**Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five from Part C.**Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.**Use of following supporting material is permitted during examination.  
(Mentioned in form No. 205)*1. NIL2. NIL**PART – A****[10×2=20]****(Answer should be given up to 25 words only)****All questions are compulsory**

- Q.1 Explain the phasor representation of power.  
Q.2 State Kirchoff's voltage law.  
Q.3 What is fuse?  
Q.4 State the torque-slip characteristics of induction motor.  
Q.5 Discuss the transformer EMF equation.  
Q.6 What are the transformer losses?

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- Q.7 What is BJT?
- Q.8 Explain working principle of induction motor.
- Q.9 Explain MCB.
- Q.10 What is resonance?

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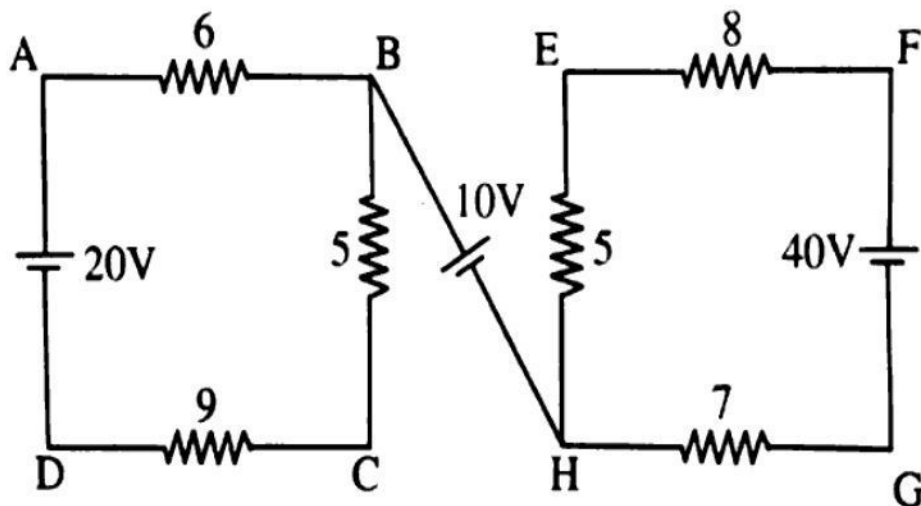
### PART – B

[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1 State maximum power transfer theorem.
- Q.2 For the circuit shown in Fig. find VCE and VAG



- Q.3 An alternating voltage is given by  $V=230\sin 314t$ . Calculate frequency and maximum average & RMS value of voltage.
- Q.4 Describe the construction details of single phase transformer.
- Q.5 With a neat circuit diagram, explain the construction and principle of operation of DC machine.
- Q.6 Explain IGBT in detail with neat diagrams.
- Q.7 With suitable example, explain the calculations for energy consumption.

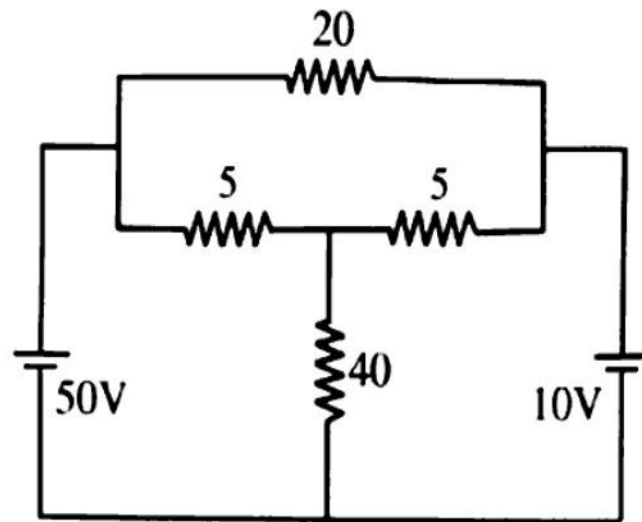
## PART – C

[3×10=30]

### (Descriptive/Analytical/Problem Solving/Design Questions)

#### Attempt any three questions

- Q.1 Use Superposition Theorem to find the current in 40 ohm, in the network shown:



- Q.2 Explain about Star and Delta connected three phase balanced circuits.
- Q.3 Explain the tests on a single phase transformer and develop an equivalent from the above tests.
- Q.4 Explain the different characteristics of DC Motor.
- Q.5 Explain different types of Earthing with suitable diagram.
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