U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

August 2023 Semester End Make-Up Examinations

Programme: B.E. **Semester: I**
Branch: Common to all Branches **Duration: 3 hrs.**
Course Code: 22EE1ESEEE **Max Marks: 100**
Course: ELEMENTS OF ELECTRICAL ENGINEERING **Date: 11.08.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1 a) State and explain Ohm's law, mention its limitations. **05**

b) With neat sketch, explain the construction of the various parts of a DC motor. **08**

c) Find currents in the battery, the current in each branch and potential difference across AB in the network shown in figure 1. **07**

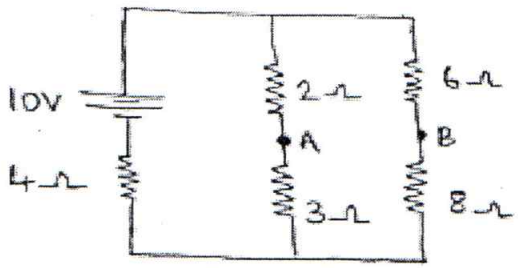

Figure 1

OR

2 a) State and explain Kirchhoff's laws. **05**

b) Explain the characteristics of a DC series motor **08**
(i) Torque V/S Armature current
(ii) Speed V/S Armature current.

c) A DC shunt motor runs at 750 rpm from 250V supply and taking a full load line current of 60A, its armature resistance is 0.4Ω and field resistance of 125Ω. Assuming 2 volt brush drop and negligible armature reaction effect, find the no-load speed for a no-load current of 6A. **07**

UNIT - II

3 a) Define RMS value of a sinusoidal varying alternating current and find its relation with its maximum value. **05**

b) Derive an equation for the power consumed by an RL series circuit. Draw the waveforms of voltage, current and power. **08**

c) A resistor of 100Ω is connected in series with a 50 μF capacitor to a supply of 200V, 50Hz. Find (i) the impedance (ii) the current (iii) the power factor (iv) the phase angle (v) the voltage across resistor and capacitor. **07**