Mar. Athanasius College of Engineering (Autonomous), Kothamangalam

Department of Electrical & Electronics Engineering

First Sessional Examination, October 2026

B24ES1T07_FUNDAMENTALS OF ELECTRICAL ENGINEERING (S1MA &MB)

Time: 1 Hr 30 Min **Max Marks: 40**

Part A

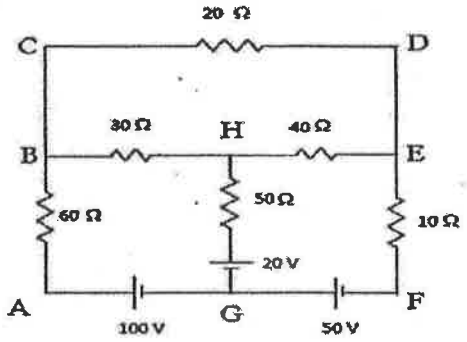
Answer all Questions, Each question carries 3 Marks

1. *Define voltage, current, and power in an electrical circuit.* *[CO 1]*
2. *Explain series and parallel circuits in terms of current and voltage with neat figure.* *[CO 1]*
3. *Explain the necessary conditions for voltage build up in a self-excited dc generator.* *[CO 2]*
4. *A 4 pole DC generator has 400 Lap winding connected conductors. The flux per pole is 0.01Wb. If the generated voltage is 200 volts, Solve and find the speed of the generator.* *[CO 2]*

Part B

Answer all Questions, Each question carries 14 Marks

5. *Use mesh analysis to estimate the current through the 50V source and the voltage across 40 Ω resistance of the circuit given below,* *[CO 1]*



6. *a.) A DC shunt generator delivers 195 A, 250 V. The armature resistance and shunt field resistance are 0.02 Ω and 50 Ω respectively. The iron and friction losses equal 950 W. Solve, (a) E.M.F. generated (b) armature Cu loss (c) Input to the Generator (d) efficiency.* *(8 marks) [CO 2]*

   b.) Draw and explain a short shunt DC compound Generator with necessary equations. (6 marks) [CO 2]

Students will be able to:

***CO1**: Understand the fundamental concepts of electric circuits and apply circuit laws to solve basic DC electric circuits.*

***CO2**: Analyse the characteristics of DC machines and select appropriate machines for different applications.*