BACHELOR OF VOCATION
Automotive Mechatronics
Subject: Electrical Machines & Control Systems
Subject Code: ABEE-201
Semester: Third
January 2021
Theory (External): 35 Marks
Time: 03 Hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number

SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x1=10 Marks)

A Explain why armature core of a DC motor is made of laminated silicon sheet steel.

B Write two points on potentiometer.

C Explain why the induced emf in a DC motor is called back emf?

D Define node, branch, path and loop in a signal flow graph.

E Why DC motor has nigh starting current.

F Explain why salient pole type rotors are not used in alternators driven by steam turbines.?

G Explain the working of commutator in DC machine.

H Explain the working of synchro transmitter and receiver.

I Define V curves in synchronous motor.

J Explain Mason gain's formulae.

SECTION –B (ESSAY TYPE QUESTIONS)
(5x5=25 Marks)

Q1 Explain the speed and torque characteristics of a separately excited DC motor.

Q2 The induced emf in a DC machine while running at 500 rpm is 180V. Assuming constant magnetic flux per pole, calculate the induced emf when the machine runs at 600 rpm.

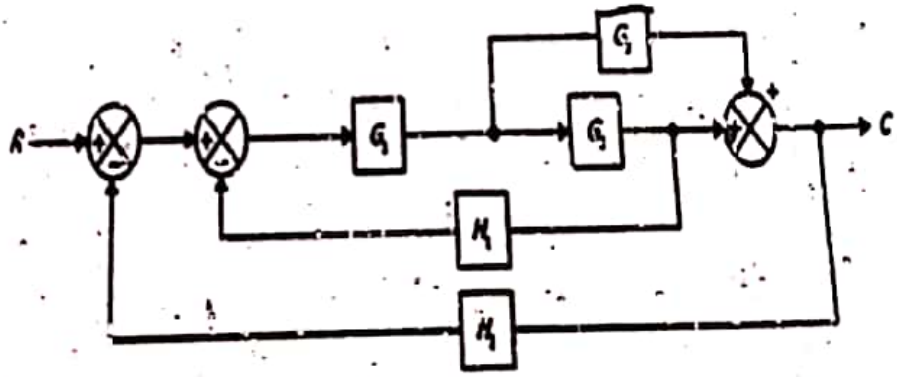
Q3 Explain armature reaction of synchronous generator.

Q4 Discuss the behaviour of synchronous generator under no loaded condition and develop its equivalent circuit.

Q5 Explain the principle of working of a three phase induction motor.

Q6 Explain the terminologies associated with Signal Flow Graphs with a suitable example.

Q7 For the system represented by the block diagram shown in figure. Find C/ R .



Q8 Write a note on the following
- (i) Traffic control system
- (ii) PID Controllers

*****END OF THE PAPER*****