CBCS SCHEME

USN | | | | | | | | | | |

18EC36

Third Semester B.E. Degree Examination, June/July 2025
Power Electronics and Instrumentation

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Define power electronics and discuss the applications of power electronics. **(06 Marks)**
b. Explain the operation of SCR with VI characteristics. **(08 Marks)**
c. Discuss various types of turn ON methods for SCR. **(06 Marks)**

OR

2 a. Define commutation differentiate natural and forced commutation. **(06 Marks)**
b. With neat circuit diagram, explain the operation of full wave RC firing circuit for SCR. **(08 Marks)**
c. Discuss basic operation of UJT. **(06 Marks)**

Module-2

3 a. With neat circuit diagram, explain the operation of 1ϕ half wave phase controlled rectifier with resistive load. **(10 Marks)**
b. Explain the followings with respect to choppers :
i) Step up chopper
ii) Step down chopper. **(10 Marks)**

OR

4 a. Classify the choppers based on the operating quadrants and discuss. **(10 Marks)**
b. Explain the operation of full wave phase controlled rectifier with resistive load. **(10 Marks)**

Module-3

5 a. Explain the operation of 1ϕ full bridge inverter with R_L load. **(10 Marks)**
b. Explain the operation of buck converter with circuit diagram. **(10 Marks)**

OR

6 a. Discuss the various types of static error in measurements. **(10 Marks)**
b. With neat diagram, explain multirange ammeter and voltmeter. **(10 Marks)**

Module-4

7 a. With the help diagram, explain the operation of successive approximation type of digital voltmeter. **(10 Marks)**
b. Explain dual slope integrating type of DVM. **(10 Marks)**

OR

8 a. Describe with block diagram the operation of digital frequency meter. **(10 Marks)**
b. Explain the followings:
i) Wheat stone bridge
ii) Wein bridge. **(10 Marks)**

Module-5

9 a. With neat diagram, explain the operation of LVDT. (10 Marks)

b. Describe the followings:

i) Electrical transducer parameters

ii) Resistive position transducer. (10 Marks)

OR

10 a. With neat structure explain the operation of PLC. (10 Marks)

b. Explain operation of instrumentation amplifier using transducer bridge. (10 Marks)

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