SARDAR PATEL UNIVERSITY V.V.NAGAR

B.Sc. (V[th] SEM.) ELECTRONICS
20[th]NOVEMBER-2019 EXAMINATION
SUB. - INDUSTRIAL ELECTRONICS- I
SUB.CODE-US05CELE05

TIME:-10:00 am to 1:00 pm   MARKS-70

Q-1   Choose correct answer   [10]

1.   Thyristor mainly used for_____.
      (A) Power controlling   (C) Relaxation oscillation
      (B) Rectification   (D) None of above

2.   Recommended method to TURN-ON SCR is_____.
      (A) Triggering by A.C signal   (C) Triggering by D.C signal
      (B) Triggering by pulse signal (D) None of above

3.   Dc motor consists of _____.
      (A) TRIAC   (C) SCR
      (B) Stator   (D) None of above

4.   Stepper motor used for _____speed variation.
      (A) Discrete   (C) Linear
      (B) Constant   (D) None of above

5.   SCS means _____.
      (A) silicon control switch   (C) silicon collector switch
      (B) silicon common switch   (D) None of above

6.   UJT and CSCR mainly used for_____.
      (A) rectification   (C) amplification
      (B) relaxation oscillator   (D) None of above

7.   DIAC _____ type of device.
      (A) multi-directional   (C) bi-directional
      (B) uni-directional   (D) None of above

8.   _____ Connection of SCR used for controlling very high current.
      (A) series   (C) bi-directional
      (B) parallel   (D) None of above

9.   Static equalising circuit is external compensating circuit to produce uniform voltage in _____ operation of SCR.
      (A) parallel   (C) normal
      (B) series   (D) None of above

10.   _____ is a circuit which convert DC power in to AC power at desired output voltage.
      (A) Rectifier   (C) Filter
      (B) Inverter   (D) None of above

Q-2 **Short answer type question. (any ten)** [20]

1. Define holding current I_h.
2. State principle of operation of stepper motor.
3. Differentiate TRIAC and SCR.
4. What do you mean by power controlling action?
5. Differentiate between D.C. motor and stepper motor.
6. Define string efficiency.
7. Define reverse recovery current I_{RR}.
8. State function of gate in SCR.
9. List application of thyristor device.
10. Differentiate between semiconductor and thyristor device.
11. Briefly explain overvoltage protection circuit.
12. State different type of inverter circuit.

Q.3(A) Discuss principle of operation and characteristics of SCR. [06]
Q.3(B) Explain TURN-OFF mechanism of SCR. [04]

OR

Q.3(A) Discuss different method of turning on a SCR with TURN-ON characteristics. [06]
Q.3(B) Briefly discuss gate control circuit in SCR. [04]

Q.4 Discuss the series operation of SCR with necessary diagram and compensation circuits. [10]

OR

Q.4 Discuss the parallel operation of SCR with necessary diagram and compensation circuits. [10]

Q.5(A) Discuss characteristics and operation of UJT with necessary diagram. [06]
Q.5(B) Discuss application of UJT as a relaxation oscillator. [04]

OR

Q.5(A) Explain different triggering modes of TRIAC. [06]
Q.5(B) Discuss application of SCR as static circuit breaker. [04]

Q.6 Draw the schematic diagram of D.C motor and discuss its working in detail. [10]

OR

Q.6(A) Discuss series inverter giving necessary diagram and waveforms. [06]
Q.6(B) Write a note on stepper motor [04]

— X —
②