SARDAR PATEL UNIVERSITY
B.Sc.(ELECTRONICS) SEM.-5
EXAMINATION –NOV.-2013
INDUSTRIAL ELECTRONICS PAPER-1
SUB CODE: US05CELE05

DATE: 22 NOV. 2013   TIME: 10:30 AM TO 1:30 PM
DAY: FRIDAY   TOTAL MARKS: 70

Q. 1   Choose the correct answer.   [10]

(1) Recommended method to TURN-ON SCR is _____ .
    (A) Triggering by D.C signal   (C) Triggering by A.C signal
    (B) Both (A) &(B)   (D) None of above

(2) _____ Connection of SCR used for controlling very high voltage.
    (A) Series   (C) Parallel
    (B) Bi-directional   (D) None of above

(3) V_{B_o} in SCR refer as _____.
    (A) Break down voltage   (C) Break over voltage
    (B) Over voltage   (D) None of above

(4) UJT mainly used for _____.
    (A) Amplifier   (C) Power controlling
    (B) Relaxation oscillator   (D) None of above

(5) SCR _____ type of device.
    (A) Uni-directional   (C) Multi-directional
    (B) Bi-directional   (D) None of above

(6) Thyristor device mainly used for_____.
    (A) Rectification   (C) Amplification
    (B) Power controlling   (D) None of above

(7) SUS means_____.
    (A) Silicon uniport switch   (C) Silicon unmatched switch
    (B) Silicon unilateral switch   (D) None of above

(8) TRIAC used for _____.
    (A) Rectification   (C) Phase controlling
    (B) Generator   (D) None of above

(9) D.C motor consists of _____.
    (A) TRIAC   (C) Rotor
    (B) Amplifier   (D) None of above

(10) Stepper motor used for _____ speed variation .
    (A) Linear   (C) Discrete
    (B) Constant   (D) None of above

Q.2   Answer the following in short.(any ten)   [20]

(1) Define holding current I_h.
(2) State function of gate in SCR.
(3) Define reverse recovery current I_{RR}.
(4) Define string efficiency.
(5) Differentiate between semiconductor and thyristor device
(6) State any three important applications of thyristor device.
(7) Differentiate between DIAC and TRIAC.
(8) What do you mean by power controlling action?
(9) State impotence of overvoltage protector circuit.
(10) Differentiate between D.C motor and Stepper motor.
(11) State principle of operation of stepper motor.
(12) Briefly discuss function of shaft in a motor.

Q.3 (A) Discuss the principle of operation and characteristics of SCR. [07]
    (B) State important points for designing gate control circuit. [03]

OR

Q.3 (A) Discuss different methods of turning on a SCR with TURN-ON characteristics. [06]
    (B) Discuss TURN-OFF mechanism of SCR. [04]

Q.4 (A) Explain series operation of SCR with necessary diagram. [07]
    (B) Briefly discuss concept of string efficiency. [03]

OR

Q.4 (A) Discuss the parallel operation of SCR with necessary diagram. [06]
    (B) Explain different triggering techniques of parallel connected SCR. [04]

Q.5 (A) Discuss application of thyristor device as overvoltage protection circuit. [05]
    (B) Discuss triggering modes of TRIAC. [05]

OR

Q.5 (A) Discuss characteristics and operation of UJT with necessary diagram. [05]
    (B) Discuss the concept of UJT as relaxation oscillator. [05]

Q.6 (A) Draw schematic diagram of D.C motor and discuss its working. [06]
    (B) Write short note on stepper motor. [04]

OR

Q.6 (A) Discuss series inverter giving necessary diagram and wave forms. [05]
    (B) Define inversion action. Briefly discuss single phase half bridge inverter. [05]