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SEAT No. _____

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SARDAR PATEL UNIVERSITY

B.Sc. (IVth SEM.) INSTRUMENTATION (V)

Friday **5th APRIL-2019 EXAMINATION**

SUBJECT- POWER ELECTRONICS

SUB.CODE-US04CINV01

TIME: 10:00 am to 1:00 pm

MARKS-70

Q-1 Choose correct answer

[10]

1. SUS full name _____.
(A) semiconductor uni-lateral switch (C) silicon uni-polarswitch
(B) silicon uni-lateral switch (D) none of above
2. _____ is bi-lateral device with three terminals.
(A) SCR (C) DIAC
(B) TRIAC (D) none of above
3. _____ is triggered in conduction by applying only positive voltage for gate signal.
(A) SCR (C) UJT
(B) DIAC (D) all of above
4. _____ is used as a relaxation oscillation.
(A) CSCR (C) UJT
(B) SCS (D) all of above
5. Thyristor device is mainly used for _____.
(A) amplification (C) power controlling
(B) rectification (D) none of above
6. The total turn on time depends on _____.
(A) rise time (C) anode circuit parameter.
(B) gate signal amplitude (D) all of above
7. Megger is a portable instrument. It is used for the measurement of _____.
(A) Low resistance (C) Medium resistance
(B) High resistance (D) none of above
8. _____ coils are required in Megger.
(A) Two (C) Four
(B) Three (D) none of above
9. Parallel connected SCR to improve the _____ rating.
(A) voltage (C) resistance
(B) current (D) none of above
10. The relaxation period of the UJT can be changed by varying the changing rate of _____.
(A) capacitor (C) both (A) & (B)
(B) inductor (D) none of above

Q-2 Short answer type question. (any Ten)

[20]

- 1 Differentiate SCR and TRIAC.
- 2 Define string efficiency of series and parallel connected SCR.
- 3 List points designing a gate control circuit of Turn-On mechanism.
- 4 Briefly explain cycloconverter.
- 5 List factors contribute to internal losses of thyristor.
- 6 Briefly explain snubber circuit.
- 7 List advantage of A.C circuit over D.C circuit phase control.
- 8 Enlist hair drier Possible faults, their causes and remedies.
- 9 Draw DIAC characteristics and symbol.
- 10 Draw characteristics of series connected SCR.
- 11 Briefly explain time delay circuit.
- 12 Enlist Non-automatic iron parts.

(1)

(P.T.O.)

- Q.3 Discuss series connected operation of SCR with necessary figure. [10]
- OR**
- Q.3 (a) Explain SCR principle of operation and characteristics with necessary diagram. [06]
- Q.3 (b) Explain Turn-OFF mechanism of an SCR. [04]
- Q.4 (a) Discuss the constructional mechanism and triggering mode of TRIAC with necessary figure. [07]
- Q.4 (b) Explain DIAC phase controlled circuit with necessary diagram. [03]
- OR**
- Q.4(a) Draw symbol, basic structure and characteristics diagram of an UJT and explain it in detail. [07]
- Q.4(b) Explain UJT as a relaxation oscillator. [03]
- Q.5 (a) Explain logical and digital circuit diagram in detail. [07]
- Q.5 (b) Briefly explain DC static breaker circuit. [03]
- OR**
- Q.5 Explain thyristor application: (a) Zero voltage switch [10]
(b) Over voltage protection
- Q.6 Explain principle of working electric iron and possible fault in automatic iron with their causes and remedies. [10]
- OR**
- Q.6 Write a note on Megger. [10]

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