B. Sc. (Sem. VI) (CBCS) Examination

June / July – 2017

Physics : Paper - 603
(Solid State Electronics)

Faculty Code : 003
Subject Code : 001603

Time : $2\frac{1}{2}$ Hours]   [Total Marks : **70**

Instructions : (1)   Attempt all the questions.

(2)   Figures on right side indicate marks.

1   All questions are compulsory :   **20**

(1)   Bistable multivibrator has _____ stable state.

(2)   If the input to a differentiating circuit is a saw-tooth wave then the o/p will be _____ wave.

(3)   Draw the circuit diagram of integrating circuit.

(4)   How many PN junctions has SCR?

(5)   How many PN layers has Triac ?

(6)   Which terminal is used for control in an SCR ?

(7)   DIAC conduct in _____ direction.

(8)   Give the full name of LASCR.

(9)   Which ICs are the most commonly used ?

(10)   Which passive element can not be fabricated on an IC ?

(11)   The input resistance R_i = _____ of an Op-Amp.

(12)   Give any two applications of Op-Amp.

(13)   What is called transducers ?

(14)   Strain gauge is a _____ transducer.

(15)   Thermistors have _____ temperature co-efficient.

(16)   Give any two names of microphone.

(17)   How many types of logic circuits? Give its name.

(18)   What is the use of Flip-flop in digital electronics?

(19)   What is the use of IC 555 in digital electronics?

(20)   Draw the circuit diagram of J-K flip flop.

2 (a) Give any three answers in brief : **6**

    (1) What is called multivibrator? Give its type.

    (2) What is called clipper? Give the applications of clipping circuit.

    (3) Explain the two transistor analogy of an SCR.

    (4) Give the applications of differentiating circuit and integrating circuit.

    (5) What is called thyristor? Give the applications of thyristor.

    (6) Write short note: Burglar alarm using SCR.

(b) Give any three answers : **9**

    (1) Explain the working of combination clipper.

    (2) What is called clamper? Explain positive clamper circuit.

    (3) Explain a differentiating circuit.

    (4) Write short note: DIAC.

    (5) Explain automatic street light circuit using LDR and SCR.

    (6) Explain automatic water level indicator using SCR.

(c) Give any two answers in detail : **10**

    (1) Explain construction and working of astable multivibrator with circuit diagram.

    (2) Describe construction and working of monostable multivibrator.

    (3) Explain the construction and characteristics of SCR.

    (4) Describe the construction and characteristics of Triac.

    (5) With the help of circuit diagram, explain illumination control using DIAC and Triac.

3 **(a)** Give any three answers in brief :   **6**

        (1) What is called multiplexer? Write the applications of it.

        (2) What is called Flip flop? Give its type.

        (3) Write the scale of integration.

        (4) Discuss Op-Amp as an inverting amplifier.

        (5) Discuss the classification of transducers based on their application.

        (6) Explain Piezoelectric transducers.

(b) Give any three answers :   **9**

        (1) Explain D- flip-flop with the circuit diagram and truth table.

        (2) Write short note: Demultiplexer.

        (3) Discuss Op-Amp as a summing amplifier.

        (4) Explain how a transistor is fabricated in IC.

        (5) Explain capacitive pressure transducer.

        (6) Describe construction and working of thermocouple.

(c) Give any two answers in detail :   **10**

        (1) Explain R-S flip-flop with the circuit diagram and truth table.

        (2) Explain multiplexer in detail with the circuit diagram and truth table.

        (3) Explain LVDT in detail.

        (4) Describe the fabrication of monolithic IC.

        (5) Discuss the classification of ICs by structure.