PB-003-001603 Seat No. _____

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

March / April - 2020

Physics : P-603

(Solid State Electronics)

Faculty Code : 003
Subject Code : 001603

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

Instructions : (1) All the questions are compulsory.
(2) Give answer of all questions in answer book only.
(3) Figures on the right indicate full marks.

1 Objective Questions : **20**

(1) If a d.c or constant input is applied to differentiating circuit, the output will be _____.

(2) A transistor can be used as a switch by driving it back and forth between _____ and _____ regions.

(3) When a transistor is driven to saturation, ideally the I_c _____ and V_{ce} = _____.

(4) A small portion of positive and negative half cycle of the signal can be removed with the help of _____ circuit.

(5) The temperature sensing element thermistor has _____ temperature coefficient.

(6) A DIAC is a _____ layer _____ junction device.

(7) A DIAC - TRIAC built in the same chip is called a _____

(8) An SCR is a _____ layer - junction device.

(9) A device that convert energy in one form to energy in another form is known as _____.

(10) A single-phase full wave fully controlled bridge uses _____ SCR.

(11) In OPAMP as an integrator, the feedback component is_____.

(12) Write full name of LASCR.

(13) A microphone is classified as an _____ transducer.

(14) A thermocouple is a _____ generating type transducer.

(15) A tourmaline crystal represents a _____ transducer.

(16) The value of gauge factor for _____ gauges is varies from 50 - 200.

(17) An ideal OP - AMP has _____ voltage gain.

(18) The outputs at any instant of time depend only on the inputs applied at that instant of time is known as _____ circuits.

(19) In D flip - flop D = high gives a _____ state.

(20) In order to implement an variable switching function, a multiplexer must have _____ inputs.

2 (a) Answer any three question : **6**

(1) State the disadvantages of mechanical switch?

(2) Draw circuit diagram for two-transistor analogy of an SCR.

(3) Draw the V-I characteristics for the any two of the following thyristor

(a) SCR (b) diac

(c) triac (d) SCS

(4) State the classification of ICs based on scale of integration.

(5) State any two disadvantages of an IC.

(6) What is transducer?

(b) Answer any three question : **9**

(1) Explain in brief integrating circuit.

(2) Explain in brief multivibrator.

(3) Explain in brief positive clippers.

(4) Explain in brief an ideal OP - AMP.

(5) Explain in brief classification of transducer.

(6) Explain in brief multiplexer.

(c) Answer any two question : **10**

(1) Draw the V-I characteristic of an SCR and explain its working principle.

(2) With a neat circuit diagram, explain working of an astable multivibrator.

(3) Explain the working of an automatic street lighting circuit using LDR and SCR.

(4) Explain JK flip flop with circuit diagram and truth table.

(5) Explain the working of illumination control circuit using DIAC and TRIAC.

3 (a) Answer any three question : **6**

(1) What is clipper?

(2) Draw the circuit diagram of transistor mono stable multivibrator.

(3) Compare transistor and thyristor.

(4) What is clamping?

(5) What is choppers?

(6) What is memory?

(b) Answer any three question : **9**

(1) Explain in brief fabrication of resistor and capacitor in ICs.

(2) Explain with circuit diagram D flip flop.

(3) Write a shot note on various types of microphones.

(4) Explain in brief fabrication of diode in ICs.

(5) Write a short note on multiplexer.

(b) Write a short note on piezoelectric transducer.

(c) Answer any two question : **10**

(1) Discuss classification of ICs by functions.

(2) Explain the working of automatic street light circuit using thyristor.

(3) With a neat circuit diagram, explain working of bistable multivibrator.

(4) Explain capacitive pressure transducer with diagram.

(5) Explain RS flip flop with circuit diagram and truth table.
