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# MAO-003-001603 Seat No. _____

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

**March / April - 2018**

## Physics : Paper - 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) A multivibrator which generates waves without any external triggering pulse is known as _____ multivibrator.

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

(3) A bidirectional avalanche diode is also known as _____.

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

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

(6) The angle at which the device is triggered is known as _____.

(7) _____ can not fabricated in monolithic IC.

(8) A TRIAC is a _____ layer device.

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

(10) In OPAMP as an integrator, the feedback component is _____.

(11) When the input fed to differentiating circuit is a triangular wave, the output will be _____ wave.

(12) In monolithic IC capacitor, the $SiO_2$ layer acts as _____.

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

(14) Write full name of SCS.

(15) Write full name of LASCR.

(16) A microphone is classified as an _____transducer.

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

(18) A tourmaline crystal represents _____ transducer.

(19) Thermopiles are made by connecting thermocouples in _____.

(20) An ideal OP–AMP has _____ voltage gain.

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

(1) State the disadvantages of mechanical switch ?

(2) State the circuit symbol and forward biased characteristics of an SCR.

(3) State circuit symbol of any two thyristor.

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

(5) State any two photovoltaic transducer,

(6) State any two disadvantages of an IC.

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

(1) Explain in brief classification of transducer.

(2) Explain in brief switching action of a transistor.

(3) Explain in brief multivibrator.

(4) Explain in brief OP–AMP as an adder.

(5) Explain in brief inductive pressure 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 a monostable multivibrator.

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

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

(5) Explain OP–AMP as differentiator with circuit diagram.

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

(1) What is demultiplexer ?

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

(3) Compare transistor and triac.

(4) State advantages of ICs.

(5) What is transducer ?

(6) What is flip-flop ?

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

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

(2) Explain the truth table of RS flip-flop.

(3) Explain in brief any one-rectifier circuit using SCR.

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

(5) Write a short note on OP–AMP as an integrator.

(6) Write a short note on TRIAC.

(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 bi stable multivibrator.

(4) Explain the capacitive pressure transducer with diagram.

(5) Explain the combinational and sequential logic circuits.

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