

22225

11920

3 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following:

10

- a) Define resistor and draw symbol of variable resistor.
- b) State need of Regulated power supply.
- c) List specification of BJT.
- d) State advantages of MOSFET.
- e) Give different types of IC.
- f) State selection criteria of transducer.
- g) Define Analog Transducer and give examples of it (any two).

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) State different types of electrical signal and draw all types of waveforms.
 - b) Define PIV, TUF, ripple factor, efficiency of rectifier.
 - c) Draw V-I characteristics of P-N junction diode and explain it.
 - d) Compare CB, CE and CC configuration of BJT.
- 3. Attempt any THREE of the following:** **12**
- a) Sketch N-channel MOSFET and describe its working.
 - b) Describe strain gauge with labelled diagram.
 - c) With the help of circuit diagram describe conversion of VG. source to current source.
 - d) Draw circuit diagram of single stage RC coupled CE amplifier and describe with the help of input and output waveform.
- 4. Attempt any THREE of the following:** **12**
- a) Describe LVDT with labelled diagram.
 - b) Draw a circuit diagram of bridge rectifier. Draw its input output waveforms and describe its operation.
 - c) Draw O/P characteristics of CB configuration and explain its working.
 - d) Give the relations between AC drain resistance (r_d), Transconduction (g_m) and amplification factor.
 - e) Sketch the constructional diagram of LED and describe its working.

5. Attempt any TWO of the following:**12**

- a) State the applications and specification of
 - (i) Resistor
 - (ii) Capacitor
 - (iii) Inductor
- b) Describe how transistor can be used as a switch and draw waveforms.
- c) Draw block diagram of regulated power supply, explain function of each block and draw waveforms of each stage.

6. Attempt any TWO of the following:**12**

- a) With the help of N-channel JFET describe the effect of input voltage V_{GS} on output current I_D .
 - b) Draw frequency response of RC coupled two stage amplifier write formula to calculate bandwidth and state any two methods to improve bandwidth.
 - c)
 - i) Compare
 - 1) Active and passive transducer.
 - 2) Analog and digital transducer.
 - ii) Differentiate following transducer in active and passive.
 - 1) Strain Guage
 - 2) Photovoltaic cell
 - 3) Thermocouple
 - 4) Thermister
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