17563

15116

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory*.

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

(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 : **20**

(a) List different types of passive components. Why these components are called as passive ?

(b) What is meant by intrinsic and extrinsic semiconductors ? Write an examples for these semiconductors.

(c) Draw symbols for PNP & NPN transistors. Also, draw VI-characteristics for PN-junction diode.

(d) Explain working principle of thermocouple with neat sketch.

(e) State four features of 8051. (Any four)

(f) Convert the following decimal nos. into binary :

(i) $(62)_{10}$ & (ii) $(154)_{10}$

(g) Compare open loop and closed loop control system by four points.

2. Attempt any FOUR of the following : **16**

(a) Give classifications of Capacitors. State two specifications of Aluminium electrolytic capacitor.

(b) Draw block-diagram of OP-amp and state functions of each block.

(c) Draw the symbol for LED & LDR. State main features of LED.

P.T.O.

(d) (i) What is an inductor ? Give classification of inductor.

(ii) Obtain the value of resistors for the colour code :

(1) Green, Blue, Yellow and Silver

(2) Red, Blue, Orange and Gold

(e) Write different operating regions of transistors.

(f) Compare RTD and thermistor by four points.

3. Attempt any TWO of the following : **16**

(a) With neat construction, explain the working of NPN transistor. Write two applications of transistor.

(b) Explain working of Bourdon tube with its neat construction.

(c) Differentiate between :

(i) Analog and digital electronics

(ii) ROM & RAM memories

4. Attempt any TWO of the following : **16**

(a) Draw block diagram of PLC and explain function of each block. State four applications of PLC.

(b) Explain applications of following sensors used in Textile with diagram :

(i) Card Autoleveller

(ii) Yarn Evenness Tester

(c) With diagram, explain working of Automatic Textile Control System.

5. Attempt any TWO of the following : **16**

(a) Explain applications of following sensors used in textile industry :

(i) Blow room

(ii) Well straightening

(b) Draw the logic symbol and truth table for following logic gates :

(a) AND

(b) OR

(c) NOT

(d) NAND

(c) Explain with diagram OP-amp as

(i) Inverting amplifier

(ii) Non-inverting amplifier

6. Attempt any FOUR of the following : 16

(a) Draw logic symbol and write truth table for following flip-flops :

(i) D-Flip flop

(ii) JK-Flip flop

(b) Compare conductor and insulator. (Four points)

(c) With neat diagram, explain working principle of phototransistor.

(d) Compare electric and pneumatic actuators by four points.

(e) Give classification of resistor alongwith application of each type.

(f) With neat diagram, explain working of strain gauge for weight measurement.

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