17563

21415

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****.*

MARKS

1. Attempt **any five** : **20**
   a) Define active and passive components. Write two examples of each.
   b) Define intrinsic and extrinsic semiconductor. Write the materials used for P-type and n-type dopants.
   c) Explain level measurement using capacitive sensor.
   d) Define transducer and actuator. Write two examples of pressure and temperature transducers.
   e) List the classification of control systems. Draw the block diagram of closed loop control system.
   f) Convert the following :
   $(45)_{10}$ into binary number and $(11000110)_2$ into decimal number.
   g) Explain any one type of memory with neat diagram.

2. Attempt **any two** : **16**
   a) Explain the Yarn Evenness Tester using block diagram.
   b) Draw the architecture diagram of 8051. Write the function of A and B registers.
   c) Draw the pin-out diagram of IC741. Write four applications of it and write four specifications of it.

3. Attempt **any four** : **16**
   a) Draw the V-I characteristics of diode. Write the value of knee voltage for silicon diode.
   b) Explain the principle of strain gauge. How it is used for weight measurement ?
   c) Write the colour code for the resistors of value – 1) 47 Ω , 2) 1.2 KΩ .
   d) Write the truth table of AND gate and OR gate and draw its logical symbol.
   e) Compare advantages and disadvantages of open loop and closed loop control system.
   f) List the types of resistor. State their specification.

P.T.O.

MARKS

4. Attempt **any four** : **16**
   a) What is flip-flop ? Write the truth table of J-K flip-flop.
   b) Draw the construction diagram and symbol of NPN and PNP transistor.
   c) List the electronic sensors and devices used in blow room and sizing.
   d) Draw the circuit diagrams for P-N junction diode in forward and reverse bias mode.
   e) Write two properties and two applications of inductor.
   f) i) Draw the diagram of Bourdon tube.
      ii) Write the principle of thermocouple.

5. Attempt **any four** : **16**
   a) Define PLC. Draw its block diagram.
   b) Draw the symbol of LDR, LED, phototransistor. Write the application of any one optical sensor.
   c) Compare conductor and insulator (any four points).
   d) What is the need for signal conditioning circuit ?
   e) Explain the application of card auto leveller.
   f) Draw the block diagram of combined loop control system and list the advantages of it.

6. Attempt **any four** : **16**
   a) Explain displacement measurement using LVDT.
   b) Compare RAM and ROM.
   c) i) Write two applications of differential amplifier.
      ii) Write two application of diode.
   d) i) Define humidity.
      ii) Write the principle of humidity sensor (any one sensor).
   e) i) What is RTD ?
      ii) Write the materials used and range of RTD and thermistor.
   f) Draw the full wave rectifier circuit. Write application of it.
