17563

14115

3 Hours/100 Marks

Seat No. | | | | | | | | |

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) Assume suitable data, if ***necessary****.*
(6) ***Use*** *of Non-programmable Electronic Pocket Calculator is* ***permissible****.*

MARKS

1. Attempt **any five** : **20**
   a) Define and give two examples of :
      i) Active component
      ii) Passive component
   b) Compare conductors and insulators (any 4 points).
   c) Explain formation of 'P'-type semi conductor with neat structural diagram.
   d) How capacitance sensor are used for level measurement ? Explain.
   e) Compare open loop and closed loop control system (any 4 points).
   f) List 8 features of 8051 microcontroller.
   g) Explain working principle of card autoleveller.

2. Attempt **any four** : **16**
   a) Explain basic working principle of inductor. State any 4 specification of inductor.
   b) Define and give example of :
      i) Intrinsic semiconductor
      ii) Extrinsic semiconductor.
   c) With aid of neat sketch, explain working principle of LVDT.
   d) What is combined loop control system ? Explain in brief.
   e) Compare analog electronics and digital electronics (any 4 points).
   f) Explain working of yarn evenness tester.

MARKS

3. Attempt **any four** : **16**
   a) Draw block diagram of OP-AMP. State function of each block.
   b) Explain application of OP-AMP as non-inverting amplifier.
   c) With neat diagram, explain how weight can be measured using strain-gauge.
   d) Explain working principle of thermo couple.
   e) Explain why NAND gate is called as universal gate.
   f) Compare RAM and ROM (any 4 points).

4. Attempt **any four** : **16**
   a) Draw constructional diagram and explain working principle of electrolytic capacitor.
   b) Explain operation of transistor as a switch.
   c) Explain basic working principle of pneumatic actuators.
   d) Explain any one application of closed loop control system.
   e) With aid of truth table, explain working of JK-flip-flop.
   f) How tensile testing can be carried out ? Explain.

5. Attempt **any four** : **16**
   a) Draw circuit diagram of full ware bridge rectifier. Explain its working.
   b) Explain working of PNP transistor, with the help of constructional diagram.
   c) Draw diagram of bourdon tube and bellows. How pressure can be sense using this element ?
   d) Explain basic principle of operation of automatic textile control system.
   e) Draw and explain basic block diagram of PLC.
   f) How D-flip-flop can be implemented using R-S flip-flop ? Explain.

6. Attempt **any four** : **16**
   a) Find resistance value for given color code :
      i) Brown, Black, Black, Silver
      ii) Green, Blue, Green, Gold.
   b) Draw and explain output characteristics of common emitter configuration of a NPN transistor. Mark all regions.
   c) Explain working principle of opto-coupler. State its advantages.
   d) Explain working of 3-bit asynchronous UP counter.
   e) Draw symbol and truth table of :
      i) AND ii) NOR iii) EX-OR iv) EX-NOR
   f) Explain mechanism of automatic weft straightening.