17563

11819

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.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any TEN of the following: **20**

a) Give two examples of active components and passive components.

b) Determine the value of resistance for given color code :

Red, Red, Orange.

c) State different types of capacitors.

d) Give two examples of trivalent and pentavalent impurities.

e) Draw Pin Diagram of IC-741.

f) Draw circuit diagram of Inverting Amplifier.

g) Draw symbol of PNP and NPN transistor.

h) Draw symbol of LDR and Photodiode.

Marks

i) List different types of temperature sensors.

j) Draw labelled diagram of optocoupler.

k) Give detailed classification of type of control system.

l) What is combined loop system.

m) Convert the following.

(i) $(28)_{10} = (?)_2$

(ii) $(39)_{10} = (?)_2$

n) Draw symbol and truth table for NAND gate.

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

a) Define resistor. Draw its symbol and write its formula.

b) Compare conductor and insulator with suitable example.

c) Draw diagram and waveform for full wave rectifier and explain its working.

d) Explain how LVDT is used for displacement measurement using suitable diagram.

e) Explain closed loop control system and how it differ from open loop system.

f) Differenciate Analog and Digital electronics.

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

a) List different types of Inductors and state the property of Inductor.

b) Draw V-I characteristics of forward biased and reversed biased PN - Junction diode.

c) Draw and explain capacitive sensor for level measurement.

d) State the applications of tensile testing sensor in Textile Industry.

e) Compare ROM and RAM (4-points)

f) Using NOR-gate draw -

(i) OR - gate

(ii) NAND - gate

Marks

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

a) Draw and explain the working of transistor as a switch.

b) Explain active and saturation region of transistor with help of graph.

c) Compare RTD and Thermistor. (4-points).

d) Explain construction and working of Bourdon Tube.

e) Explain working of SR-Flip-Flop with logic circuit.

f) Draw Architecture of 8051-μc (block diagram)

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

a) Explain P&N - Type semiconductor.

b) State need of bridges in signal conditioning.

c) Explain PLC with block diagram.

d) Describe 3-bit up counter (asynchronous) with diagram and waveform.

e) Explain the working of yarn evenness tester.

f) Explain the mechanism of automatic weft straightening.

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

a) Explain the virtual ground concept using circuit diagram.

b) What is strain gauge, state its principle and its applications.

c) State 2 - Applications of open loop control system and closed loop control system.

d) Write features of 8051 - microcontroller.

e) State working principle of card auto leveller, state its 2 - Applications.

f) Explain in brief tensile testing method.

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