**21718**

**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) Use of Non-programmable Electronic Pocket Calculator is permissible.

(5) 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) Define the following terms related to AC quantity :

(i) Instantaneous value

(ii) RMS value

(iii) Time period

(iv) Frequency

(b) Compare conductor and insulator for two points.

(c) State the significance of colour code in automobile electric wiring.

(d) Draw the symbols of

(i) LDR

(ii) Multicell - Battery

(iii) Dual filament bulb

(iv) Speaker

(e) Draw wiring diagram of wind shield wiper. Describe how the speed of wiper is adjusted.

(f) State meaning of multiplexer. Draw a schematic of 4 to 1 line multiplexer.

(g) Draw the symbols and truth table for two input NAND and NOR gate.

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

(a) Write working principle and applications of resistance split phase motor.

(b) Describe the working principle of shaded pole motor.

(c) Describe the harness of wiring and cable connector with diagram.

(d) Describe self inductance and mutual inductance.

(e) Draw a neat labelled diagram of RTD and explain it's operating principle.

(f) State Fleming's Right hand and Left hand rule.

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

(a) Draw the symbolic representation of SCR and define

(i) Holding current (ii) Breakdown voltage (iii) Forward current rating

(b) Draw the circuit diagram of Bridge full wave rectifier and explain it's operation.

(c) Draw the diagram of LVDT and explain the measurement of displacement.

(d) Draw and describe the VI characteristic of P-N junction.

(e) Draw the symbols of RS filp flop and D flip flop. Write their truth table.

(f) State working principle of single phase transformer.

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

(a) Draw a neat diagram of ultrasonic flowmeter and describe it's working.

(b) Describe the working of transistor as an amplifier.

(c) Describe the working of LED with neat diagram.

(d) Draw the symbol of photodiode. Describe it's working and give any two applications.

(e) Define transformation ratio, turns ratio for single phase transformer.

(f) Describe the concept of stepper motor.

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

(a) State the working principle of pirani vacuum gauge with a labelled diagram.

(b) State the difference between thermistor & RTD on four points.

(c) Define the following terms :

(i) Intrinsic semiconductor

(ii) Extrinsic semiconductor

(d) What are positive and negative return system in wiring system ? Compare them.

(e) State Ohm's law. Compare series and parallel circuits for two points.

(f) Describe the working of DC motor.

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

(a) Draw a neat sketch of elementary alternator and name the parts. Explain it's working principle.

(b) Define the following terms – accuracy, precision, sensitivity and reliability.

(c) Compare PNP & NPN transistor for following points :

(i) symbol (ii) construction

(d) Draw the symbol of Demultiplexer and describe working of 1 : 4 demultiplexer.

(e) Draw a neat sketch of stroboscope and explain it's working principle.

(f) Describe the working of 7-segment LED display.

---