11718

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. (A) Attempt any THREE of the following : **12**

(a) State the various types of D.C. Motor. Give atleast two applications of D.C. Motor.

(b) (i) Define intrinsic and extrinsic semiconductor.

(ii) Draw symbol of Diode and Zener diode.

(c) Draw the wiring diagram of 'Turn Indictor'.

(d) Define : (i) Frequency (ii) Cycle

(iii) Time period (iv) Amplitude

(B) Attempt any ONE of the following : **1 × 6 = 6**

(a) Describe construction and working of single phase transformer.

(b) Define wiring Harness. State the importance of colour coding in automobile electrical wiring.

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

(a) Describe working of ultrasonic flow meter.

(b) State any four difference between self induction and mutual inductance.

(c) Draw any four electrical symbols.

(d) Describe working of resistance split phase induction motor with help of diagram.

(e) Draw symbols of LED, SCR, photodiode and N–P–N transistor.

(f) Define the terms :

(i) Dynamic error (ii) Sensitivity

(iii) Accuracy (iv) Speed of response

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

(a) Draw a labelled diagram of LVDT and describe its function as gauge for displacement measurement.

(b) Describe working of P-N junction diode. Draw characteristics also.

(c) Describe the working of seven segment LED display.

(d) A 200 kVA, 3300/240 V, 50 Hz single phase transformer has 80 turns on secondary winding. Calculate :

(i) Primary and secondary current

(ii) Maximum value of flux

(iii) Number of primary winding turns

(e) Compare the mechanical instruments and electrical instruments.

4. (A) Attempt any THREE of the following : **12**

(a) Define the following terms :

(i) Current

(ii) Resistance

(iii) Magnetic flux

(iv) Reluctance

(b) Compare insulated and earthed return system.

(c) Draw the block diagram of 'General Measurement System'.

(d) Compare between core type transformer with shell type transformer. (4 points)

(B) Attempt any ONE of the following : **6**

(a) Describe with circuit diagram the working of centre tapped full wave rectifier. Draw the wave form of input and output.

(b) Define the terms multiplexer and de-multiplexer. Draw Schematic diagram of 1 : 4 de-multiplexer.

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

(a) Describe construction and working of RJD.

(b) State the types of stepper motor and describe any one.

(c) Compare between PNP transistor and NPN transistor.

(d) What is positive return system and negative return system ?

(e) Three resistance 10 Ω, 15 Ω and 25 Ω are connected in series and the potential difference across them is 250 V. Find

(i) Equivalent Resistance of circuit.

(ii) Total current of the circuit.

(iii) Voltage drop across each resistance

(f) Draw the symbols and truth table for NOR and NAND.

6. Attempt any FOUR of the following : 16

(a) Draw the symbols and truth table of R-S and D-flip-flop.

(b) State Faraday's Law of electromagnetic induction.

(c) Draw & explain V-I characteristics of SCR. Define latching current and holding current.

(d) Draw a neat sketch of stroboscope and describe working to measure speed of induction motor.

(e) Describe the working of strain gauge load cell.
