

17524

14115

3 Hours / 100 Marks

Seat No.

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- 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) 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 following terms:
- E.M.F.
 - current
 - resistance
 - potential difference.
- b) Two resistances of 8Ω and 24Ω respectively are connected in parallel. Another resistance of 10Ω is connected in series with this combination. Calculate respective voltages which should be applied across the whole circuit:
- to pass σ A through 10Ω resistance and
 - to pass σ A current in 24Ω resistance.
- c) Define the following terms:
- magnetic flux
 - magnetic flux density, state their units.

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- d) Define the following terms related to A.C. quantity:
- (i) instantaneous value
 - (ii) waveform
 - (iii) time period
 - (iv) frequency.
- e) Compare conductor and insulator for four points.
- f) Draw wiring diagram of wind shield wiper. Describe how the speed of the wiper is adjusted.
- g) Draw symbols of photodiode and LED. Write two applications of each.

2. Attempt any TWO of the following: 16

- a) State the principle on which stepper motor works. Draw a sketch of a stepper motor to indicate various parts of the motor.
- b) Write principle working and application of resistance split phase motor.
- c) Draw the constructional diagram of D.C. motor and write the function of four parts.

3. Attempt any TWO of the following: 16

- a) (i) State Faraday's law.
(ii) Define self and mutual inductance.
- b) Describe the function of wiring harness and cable connector with diagram.
- c) Draw symbolic representation of SCR. State the meaning of the following terms related to SCR:
- (i) holding current
 - (ii) breakdown voltage
 - (iii) forward current rating.

- 4. Attempt any TWO of the following:** **16**
- a) Draw the circuit diagram and working principle of HWR and bridge FWR rectifier.
 - b) Draw a labelled diagram of LVDT and describe its function for displacement measurement.
 - c) Describe the following terms: accuracy and precision, sensitivity, reliability, linearity, resolution, repeatability and reproducibility related to static characteristic in measurement.
- 5. Attempt any TWO of the following:** **16**
- a) (i) State the principle on which pirani vacuum guage works. Draw a labelled block diagram of pirani guage.
(ii) State the difference between thermister and RTD for four points.
 - b) (i) Draw a logical symbol of four to one multiplexer.
(ii) Describe the working of ultrasonic flow meter using neat diagram.
 - c) (i) Draw ckt. of RSF using NAND gate and write its truth table.
(ii) Write the truth table for:
 - 1) NAND gate
 - 2) NOR gate.

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

- a) (i) Draw symbols of AND, OR, NOT gate. Write their truth table.
 - (ii) Describe the working of seven segment LED display.
 - b) What are positive and negative return system, give their comparison.
 - c) (i) Define following terms:
 - 1) intrinsic semiconductor
 - 2) extrinsic semiconductor.
 - (ii) Describe the working of transistor as an amplifier.
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