12169

21314

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. Attempt **any ten** of the following : **20**

a) State Ohm's law and write equation for finding current.

b) Write the principle on which transformer works.

c) State two applications of stepper motor.

d) What is positive and negative return system.

e) Define analog signal and digital signal.

f) Draw the symbol of NOR and NAND gate.

g) What is LVDT ? State two application of it.

h) Draw symbol and construction of NPN transistor.

i) State the working principle of AC motor.

j) List the two application of zener diode, also draw symbol of it.

k) Write names of different photoelectric type transducer.

l) Write working of seven segment LED display.

P.T.O.

MARKS

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

   a) Explain the importance of colour coding in a automobile wiring.

   b) Draw and explain the phasor diagrams for purely resistive and purely inductive circuit.

   c) State the different transducers used for temperature measurement and explain working principle of any one type.

   d) With neat circuit diagram, draw forward and reverse characteristic of P-N junction diode.

   e) Explain operating principle of alternator.

   f) Explain working of 4 : 1 multiplexer with logic diagram.

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

   a) Draw logic circuit of 2 : 4 decoder and explain with truth table.

   b) A single-phase transformer has 350 primary and 1050 secondary turns. The primary is connected to a 400 V, 50 Hz supply. If the net cross-sectional area of core is 50 cm^2, find

      i) the maximum value of flux density in the core

      ii) voltage induced in the secondary winding.

   c) Why symbols are necessary in Electrical Engineering ? State necessity of wiring harness.

   d) Draw symbols of OR, AND logic gates with their truth table.

   e) With neat diagram explain working of ultrasonic flow meter.

   f) Draw neat diagram of bridge rectifier. Explain its working with input-output waveforms.

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

   a) Compare core type and shell type transformer on the basis of

      i) Capacity

      ii) Construction

      iii) Cost

      iv) Application.

MARKS

b) Draw speed-torque characteristics of (i) D.C. series motor (ii) D.C. shunt motor.

c) Write four applications of shift registers and counters.

d) Explain measurement of force by load cell with diagram.

e) Compare insulated and ground return system (any four parameters).

f) Draw symbols of LED, SCR, TRIAC, PNP transistor.

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

a) Define the following terms :

i) Permeability

ii) Reluctance

iii) Magnetic field intensity

iv) Magnetic flux.

b) Explain battery ignition and magneto ignition.

c) What are the main parts of D.C. motors ? State the function of each part.

d) State the working principle of piezo-electric transducer with diagram.

e) Explain the working principle of contact less electrical tachometer.

f) Draw symbol and working of phototransistor. Also state two application of it.

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

a) Draw connection diagram of ammeter, voltmeter for a DC load. Write any four applications of multimeter.

b) What is oscillator ? Write its four applications.

c) Explain concept of electrical method for moisture measurement.

MARKS

d) Define the following terms :

i) Power factor

ii) Reactive power

iii) Frequency

iv) Resistance.

e) Draw neat circuit diagram of common emitter amplifier. Draw neat V-I characteristics of SCR and state its two application.

f) Write four difference between mechanical and electrical/electronic instruments.
