17524

21415

3 Hours/100 Marks

Seat No. | | | | | | | | |

Instructions : *(1)* ***All*** *questions are* ***compulsory****.*
(2) Answer ***each next*** *main question on a* ***new*** *page.*
(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

I. A) Attempt **any 3** of the following : **(3×4=12)**

i) Define the following terms and give their units also :
1) Emf
2) Current
3) Resistance
4) Potential difference.

ii) Draw a neat schematic diagram of DC shunt and DC series motor.

iii) State the importance of colour code in automobile electric wiring.

iv) Define the term depletion Region with suitable diagram.

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

i) Explain in details the concept of self inductance and mutual inductance.

ii) Draw the graphic symbols for the following :
1) Earth
2) Two way switch
3) Variable resistance
4) Fixed capacitor
5) Transformer
6) Energy meter.

P.T.O.

MARKS

II. Attempt **any four** of the following : **(4×4=16)**

i) Give the definition of the following :

1) Magnetic lines of force

2) Magnetic flux

3) Magnetic flux density

4) Reluctance.

ii) Describe with necessary diagram, the wiring system for ground return system.

iii) With neat sketch, explain the construction of any one type of stepper motor.

iv) With the aid of neat diagram, explain the working of PNP transistor.

v) Draw the block diagram of instrumentation system and state the function of each component.

vi) Differentiate between L filter and C filter on the following parameters :

1) Place of filter

2) Size of filter

3) Expression for ripple factor

4) Application.

III. Attempt **any four** of the following : **(4×4=16)**

i) Discuss the working of piezoelectric transducer.

ii) a) State the principle of working of a DC motor. **2**

b) Draw the VI characteristics of SCR. **2**

iii) Draw the symbols of NAND gates. Give their truth tables.

iv) Draw and describe power triangle of AC circuit.

v) Define the following dynamic characteristics :

1) Speed of response

2) Lag

3) Fidelity

4) Dynamic error.

MARKS

IV. A) Attempt **any three** of the following : **(3×4=12)**

i) Define the following terms related to alternating quantity :

1) Waveform

2) Phase difference

3) Time period

4) Form factor.

ii) Draw the wiring diagram for turn indicator and describe its function.

iii) Describe the working of LVDT.

iv) What are the different types of transformer (constructional types) ? Describe them with suitable diagrams.

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

i) Draw the symbol of photodiode. Describe its working and give any two application of the same.

ii) a) List the necessity of multiplexers (any 2 points). **2**

b) With the help of suitable block diagram, describe the operation of a multiplexer. **4**

V. Attempt **any four** of the following : **(4×4=16)**

i) Describe in brief the working of Pirani vacuum gauge.

ii) Draw a neat schematic diagram of shaded pole motor and give any two application of the same.

iii) Describe the principle of working of SCR with necessary sketches.

iv) Draw and explain the wiring diagram of wind shield wiper.

v) A step down transformer operates on a 50 Hz ac supply with a primary voltage of 230 V. The cross sectional area of the core is 50 cm^2. Calculate :

1) The maximum flux ϕm. **1**

2) The maximum flux density Bm. **1**

3) Voltage induced in the secondary side. **2**

Assume primary and secondary turns to be 500 and 250 respectively.

vi) Describe the working of seven segment LED display.

MARKS

VI. Attempt **any four** of the following : **(4×4=16)**

i) Define the terms gate and flip flop. Draw symbols of RS (Using NAND Gate) and D flip flop.

ii) Compare series and parallel circuit on any four points.

iii) Describe how amplification takes place in a transistor amplifier.

iv) Draw a neat labeled diagram of RTD and state its operating principle.

v) Draw a neat diagram of electromagnetic flow meter and describe its working.
