17524

15116

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : *(1)* ***All*** *questions are* ***compulsory****.*
(2) Answer each section on same/separate answer sheet.
(3) Answer ***each*** *next main question on a* ***new*** *page.*
(4) Illustrate your answers with ***neat*** *sketches* ***wherever*** *necessary.*
(5) Figures to the ***right*** *indicate* ***full*** *marks.*
(6) Assume suitable data, if ***necessary****.*
(7) Use of Non-programmable Electronic Pocket Calculator is ***permissible****.*

Marks

1. A) Attempt **any three** : **(4×3=12)**

a) Define : 1) amplitude 2) cycle 3) form factor 4) peak factor.

b) With the help of neat diagram explain concept of single turn alternator.

c) Explain insulated and ground return system.

d) State difference between intrinsic and extrinsic semiconductor.

B) Attempt **any one** : **(6×1=6)**

a) Two resistance of 12 Ω and 28 Ω are connected in series and the combination is connected in series with a 10 Ω resistance. If this combination of resistors is put across 40v d.c. supply, find the current in 12 Ω and 28 Ω resistors.

b) With the help of neat diagram explain the wiring of headlight and turn indicator and their function.

2. Attempt **any four** : **(4×4=16)**

a) With the help of neat diagram. Explain self inductance and mutual inductance.

b) Define and draw symbols of EMF, Current, Resistance and Capacitance.

c) Draw labelled diagram and DC shunt motor. State its two application.

d) Explain working of SCR and draw its characteristics. (V – I)

e) What is difference between LVDT and RVPT, give any four point.

f) With the help of diagram, explain working of FWR also draw relevant waveform.

P.T.O.

Marks

3. Attempt **any four**: **(4×4=16)**

a) Define : a) Sensitivity b) Resolution c) linearity d) repeatability. **4**

b) Draw symbol of photodiode and LED also state two application each. **4**

c) Draw symbol of NOR and NAND gate also draw truth table for each. **4**

d) State Fleming's righthand rule and lefthand rule. **4**

e) With neat diagram explain contactless type inductive tachometer. **4**

4. A) Attempt **any three**: **(4×3=12)**

a) Compare core type and shell type transformer.

b) What are the advantages of positive return wiring system ?

c) Explain working of ultrasonic flow meter.

d) The no. of turns of CV winding of 150 KVA, 50Hz and 115V/230V IQ transformer is 36, calculate : 1) Peak value of Q_m 2) IFL on LV side 3) No. of turns on HV side.

B) Attempt **any one** : **(6×1=6)**

a) Draw symbol of PNP and NPN transistor. What is difference between PNP and NPN any two ? How transistor worked as amplifier ?

b) What is meant by demutiplexer ? Explain its working with neat block diagram also draw schematic diagram.

5. Attempt **any four** : **(4×4=16)**

a) Explain working principle of piezo-electric transducer.

b) Why single phase motor is not self starting ? How can it be started ?

c) Compare zener diode and P-N junction diode with following point :

1) construction 2) symbol

3) characteristics 4) application.

d) Give constructional difference between thermistor and RTD any two point.

e) What is principle of stroposcope ? Draw symbol of D flip-flop and give its truth table.

6. Attempt **any four**: **(4×4=16)**

a) Explain working principle of steeper motor.

b) With neat diagram explaining working of shift register.

c) What is the necessity of filter and give different types of filter ?

d) A sinusoidal waveform is represented by $V = 41.44 \sin (2\pi\ \omega t + \pi/2)$

Find out : 1) amplitude 2) frequency 3) time period 4) angular velocity.

e) Draw a neat labelled diagram of RTD and state its operating principles.