



# 17524

11819

3 Hours / 100 Marks

Seat No.

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- Instructions :**
- (1) All questions are **compulsory**.
  - (2) Answer **each** next main question on a **new** page.
  - (3) Illustrate your answers with neat sketches **wherever** necessary.
  - (4) Figures to the **right** indicate **full** marks.
  - (5) Mobile Phone, Pager and any other Electronic Communication devices are **not permissible** in Examination Hall.

**Marks**

1. A) Attempt **any three** of the following.

**(3×4=12)**

- a) Define following terms.
  - i) Magnetic flux
  - ii) Flux density
  - iii) Field intensity
  - iv) Reluctance
- b) Explain working of 'shaded pole motor', with a neat schematic diagram.
- c) State the importance of colour coding in automobile electrical wiring.
- d) What is Intrinsic and Extrinsic semiconductor ?

B) Attempt **any one** of the following.

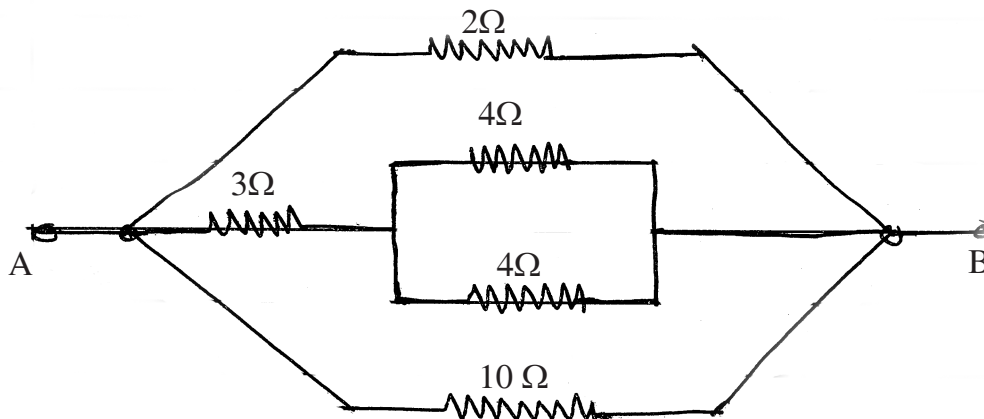
**(1×6=6)**

- a) Draw symbols of D.C. ammeter, voltmeter, wattmeter. What is the procedure of connecting an ammeter and voltmeter in a D.C. ? Give connection diagram.
- b) Draw wiring diagram for turn indicator. Describe it.

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

**(4×4=16)**

- a) Find the total resistance between point A and B of circuit shown below.



P.T.O.



- b) Write a note on 'Wiring Harness'.
- c) Explain, why 1 $\phi$  induction motor are not self starting.
- d) Explain operation of 'Half Wave Rectifier' with circuit diagram.
- e) Draw block diagram and explain in brief 'General Measurement System'.
- f) How transistor works as an amplifier ?

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

(4 $\times$ 4=16)

- a) Define :
  - i) Accuracy
  - ii) Precision
  - iii) Resolution
  - iv) Reliability
- b) State the working principle of D.C. motor. Draw symbols of PN junction and Zener diode.
- c) Draw symbol and write Boolean's equations of following logic gates.
  - i) AND
  - ii) OR
  - iii) NAND
  - iv) NORGive T.T. also.
- d) Define peak factor and form factor. State their values for a sinusoidal quantity.
- e) Compare electrical and mechanical instruments.

4. A) Attempt **any three** of the following.

(3 $\times$ 4=12)

- a) For 1 $\phi$  AC circuit, define 1) Active power 2) Reactive power. Give their units.
- b) Draw the wiring diagram for Windshield Wiper. Describe it.
- c) What is working principle of potentiometric transducer ? Give its advantages and disadvantages.
- d) Give comparison between core and shell type transformer.

B) Attempt **any one** of the following.

(1 $\times$ 6=6)

- a) Explain working of Photodiode and Photo transistor with characteristics.
- b) Draw circuit diagram of common anode seven segment display. Explain its working.



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**Marks**  
**(4×4=16)**

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

- a) Explain with diagram 'Pirani Vacuum Gauge'.
- b) What is a stepper motor ? State its types.
- c) Explain with diagram, working of 'PNP' transistor.
- d) Describe positive and negative return system in a automobile electrical system.
- e) A 2000/200 V, 1 $\phi$ , 50 Hz transformer has the maximum flux of 20 mwb. Find out the number of turns on the primary and secondary windings, if the cross sectional area of core is 1.1 cm<sup>2</sup>.
- f) What is a Flip Flop ? Draw symbol of R.S. Flip Flop.

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

**(4×4=16)**

- a) Draw symbol of 4 : 1 multiplexer. Give T.T. also.
  - b) Draw V.I. characteristics of S.C.R. Describe it.
  - c) Draw a neat sketch of stroboscope. Explain its working.
  - d) With a neat diagram, explain 'Ultrasonic flow meter'.
  - e) Explain briefly working of SISO shift register.
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