12169

13141

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) Use of Non-programmable Electronic Pocket Calculator is ***permissible****.*
(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 : **12**
   1) State Ohm's law. Calculate current 'I', delivered by battery in Fig. 1.

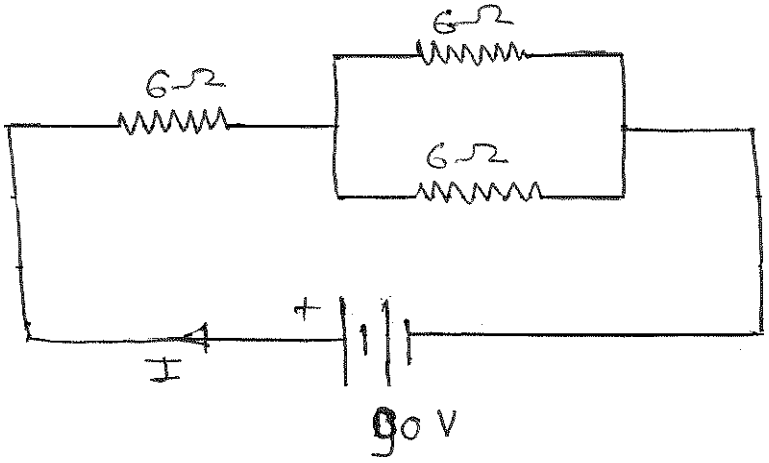

Fig. 1

   2) Explain with the diagram wiring Harness.
   3) What is Intrinsic and Extrinsic semiconductor ?
   4) Differentiate between core type and shell type transformer.

   B) Attempt **any one** of the following : **6**
   1) Explain speed control methods of D.C. shunt and series motor.
   2) State working principle of transformer, A 1 ϕ, 50 Hz transformer has 300 primary and 750 secondary turns. The net cross-sectional area of the core is 64 cm^2. If the primary induced e.m.f. is 440 V, Find.
      i) Maximum Flux density in the core.
      ii) E.M.F. induced in the secondary.

2. Attempt **any four** of the following : **16**
   1) Draw power triangle. Define active and reactive power. State units of both the power.
   2) Explain working of LVDT with diagram.

P.T.O.

MARKS

3) Explain working of PN junction with ac voltage.
4) Draw and explain wiring diagram of turn indicator.
5) Define
   i) Waveform ii) Frequency iii) Time period iv) Amplitude
6) Explain operation of load cell with diagram.

3. Attempt **any four** of the following : **16**
   1) Define transducer. Classify the transducers.
   2) Explain the working of ultrasonic flowmeter with diagram.
   3) Draw symbols of NAND, NOR, AND, NOT logic gates. Give their Truth Tables and logic equations.
   4) State Faraday's laws of electromagnetic induction. Define Flux density and magnetic Flux.
   5) Explain with truth table, RS Flip Flop.

4. A) Attempt **any three** of the following : **12**
      1) What are the precautions to be taken while using measuring instruments ?
      2) Draw the circuit diagram of bridge rectifier. Explain its operation.
      3) Draw and explain Hot Wire anemometer.
      4) Draw any four symbols of electrical circuit used for automobile.

   B) Attempt **any one** of the following : **6**
      1) Draw and explain general measurement system.
      2) Draw a neat sketch of multipolar D.C. Motor. Write function of any four parts.

5. Attempt **any four** of the following : **16**
   1) Compare insulated and ground return system. Which is advisable ? Why ?
   2) Explain transistor as an amplifier.
   3) Draw neat diagram and explain common anode 7 segment LED display.
   4) Give symbol and explain working of photodiode.
   5) Enlist different temperature transducer. Explain measurement of temperature using thermistor.
   6) Draw and explain characteristics of D.C. shunt motor.

6. Attempt **any four** of the following : **16**
   1) Why filter is necessary in rectification ? What are different types of filters.
   2) Explain operation of 4 : 1 MUX with truth table.
   3) What is shift register ? Explain working with diagram.
   4) State different types of stepper motor. Give four applications of it.
   5) Differentiate between electrical and mechanical instruments.

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