

Total No. of Questions : 8]

SEAT No. :

P4936

[Total No. of Pages : 2

[5667]-1006

F.E. (Semester - I)

BASIC ELECTRONICS ENGINEERING

(2019 Pattern)

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates :*

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to right indicate full marks.*
- 3) *Assume suitable data, if necessary.*

- Q1)** a) State and prove De’Morgan’s sum & product theorem with the help of truth table. [6]
- b) Design and implement full adder circuit. Write the expressions for sum and carry. [6]
- c) i) Convert  $(105.15)_{10}$  to binary
- ii) Convert  $(4057.068)_8$  to decimal
- iii) Convert  $(1101101110.1001101)_2$  to hexadecimal
- iv) Find 1’s complement of 111001
- v) Find  $(11100-01111)_2$  using two’s complement. [5]

OR

- Q2)** a) What is flipflop? Draw & Explain the working of clocked SR Flip flop. [6]
- b) Compare microprocessor and microcontroller. [6]
- c) Design and Implement half adder circuit. [5]

- Q3)** a) Draw and Explain the block diagram of digital multimeter. [6]
- b) Explain the block diagram of AC/DC power supply. [6]
- c) Explain the working of function generator with neat diagram. [6]

OR

*P.T.O.*

- Q4)** a) Draw and explain the block diagram of digital storage oscilloscope. [6]  
b) Explain DC ammeter. Explain, how the range of DC ammeter can be extended. Determine expression for shunt resistance. [6]  
c) Explain construction and working of an autotransformer. [6]

- Q5)** a) Explain the construction and working of LVDT. [6]  
b) Write a short note on two temperature transducers / sensors. [6]  
c) Explain the construction and working of load cell. Give one application. [5]

OR

- Q6)** a) Explain the working of biosensors with the help of neat block diagram Give one application. [6]  
b) Draw and explain the working of accelerometer. [6]  
c) An RTD is inserted in an oven is having a resistance  $160\Omega$ . At  $0^\circ\text{C}$  resistance is  $100\Omega$  and it's resistance temperature coefficient is  $0.00392$ . Determine the change in temperature. [5]

- Q7)** a) Explain the block diagram of electronic communication system. [6]  
b) Distinguish between co-axial cable and optical fiber cable. [6]  
c) Describe the block diagram of AM-transmitter. [6]

OR

- Q8)** a) Draw and explain electromagnetic spectrum along with their applications. [6]  
b) Draw and explain the block diagram of FM receiver. [6]  
c) Diagrammatically explain GSM architecture. [6]

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