SEAT No. :

# [6178]-6
## F.E.
# BASIC ELECTRONICS ENGINEERING
## (2019 Pattern) (Semester - I/II) (104010)

*Time : 2½ Hours]*          *[Max. Marks : 70*

*Instrictions to the candidates:*
1) *Attempt Q.1 or Q.2, Q.3 or 4,Q.5 or Q.6, Q.7 or Q.8.*
2) *Figure to right indicate full mark.*

**Q1) a)** Draw and Explain full adder using two half adders with a Truth Table and give its sum and carry equation. **[6]**

**b)** Give the expression and truth table of the Basic Gates. **[6]**

**c)** State and prove De Morgan's laws. **[6]**

**OR**

**Q2) a)** Convert the following.

i) $(5F1.6C)_{16}$ to octal     ii) Convert the $(9D.33)_{16}$ to Decimal. **[6]**

**b)** Draw and explain block diagram of Microprocessor. **[6]**

**c)** Classify Gates and write the IC numbers with Truth Table. **[6]**

**Q3) a)** Explain Function Generator with block diagram. **[6]**

**b)** Explain the working principle of Autotransformer. Give its three applications. **[5]**

**c)** Draw and explain the block diagram of digital Multi meter. **[6]**

**OR**

*P.T.O.*

**Q4) a)** Explain how to convert Galvanometer to Analog Ammeter and how to use multi range Ammeter. **[6]**

**b)** Draw and explain the block diagram of AC/DC power supply. **[5]**

**c)** Compare CRO and DSO. **[6]**

**Q5) a)** Draw the construction of LVDT and explain its operation. Write its advantages, disadvantages and applications. **[6]**

**b)** Explain working, principle and one application of biosensors. **[6]**

**c)** Explain the working principle of strain gauge. Explain load cell. **[5]**

*OR*

**Q6) a)** Differentiate active and passive sensors. **[6]**

**b)** What is mean by thermocouple? Explain the principle, construction and working of thermocouple. Also state its advantages, disadvantages and applications. **[6]**

**c)** State and explain the selection criteria of Sensors. **[5]**

**Q7) a)** Explain IEEE electromagnetic frequency spectrum and state allotment of frequency bands for different applications. **[6]**

**b)** Compare types of cables used in Electronic Communication System. **[6]**

**c)** Draw and explain the elements of communication system. **[6]**

*OR*

**Q8) a)** Draw and explain AM transmitter. **[6]**

**b)** Draw and explain the block diagram of GSM system for mobile. **[6]**

**c)** Explain the concept of Cellular Network. **[6]**

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