Total No. of Questions : 8]

SEAT No. :

PA-4299

[Total No. of Pages : 2

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F.E.

BASIC ELECTRONICS ENGINEERING

(2019 Pattern) (Semester-I / II) (104010)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) *Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 and Q.7 or Q.8.*
2) *Assume suitable data if necessary.*
3) *Figures to the right indicate full marks.*

Q1) a) i) Convert $(27A.1C)_{16}$ to Octal. **[6]**

ii) Convert $(F89A.83)_{16}$ to Decimal.

iii) Perform (110011–111001) using 2's complement method.

iv) Perform (110011÷101).

b) State and prove De Morgon's theorem. **[6]**

c) Draw block diagram of microcontroller and explain its working. **[6]**

OR

Q2) a) Explain working of Half Adder with the help of truth table, logic expression of sum and carry and circuit diagram. **[6]**

b) Define Universal Logic Gates. Explain why they are known as Universal Logic Gates? **[6]**

c) Explain following Flip-Flops with the help of their truth table, logic diagram and state one application of each. **[6]**

i) T - Flip-Flop

ii) D - Flip-Flop

Q3) a) Explain working of Digital Multimeter with its block diagram. **[6]**

b) Explain working of Digital storage oscilloscope with its block diagram. **[6]**

c) Explain working principle of Auto Transformer. State its applications. **[5]**

OR

P.T.O.

Q4) a) Explain Function Generator with the help of its block diagram. **[6]**

b) Draw block diagram of power scope and explain its working. **[6]**

c) Explain operation of DC Voltmeter. Draw diagram of multi-range Voltmeter. **[5]**

Q5) a) Explain working of LVDT. Draw its construction diagram. State its applications. **[6]**

b) Explain working of RTD. Draw its construction diagram. State its applications. **[6]**

c) Explain working of Piezoelectric type Accelerometer. **[5]**

OR

Q6) a) Explain selection criterias of sensors. **[6]**

b) Explain working of LDR. State its applications. **[6]**

c) Explain operation of bio-sensor. State its application. **[5]**

Q7) a) Draw block diagram of electronic communication system and explain its working. **[6]**

b) Draw IEEE electromagnetic frequency spectrum. State use of each band. **[6]**

c) Draw and explain block diagram of GSM system. **[6]**

OR

Q8) a) Explain need of modulation. State different types of modulation techniques used in electronic communication. **[6]**

b) Draw block diagram of AM receiver and explain its working. **[6]**

c) Explain cellular concept of mobile communication system. **[6]**