

Total No. of Questions : 4]

SEAT No. :

**PA-1683**

[Total No. of Pages : 2

**[5931]-1006**

**First Year (Engineering)**

**BASIC ELECTRONICS ENGINEERING**

**(2019 Pattern) (Semester - I) (104010)**

*Time : 1 Hour]*

*[Max. Marks : 30*

*Instructions to the candidates:*

- 1) Attempt Q.1 or Q.2 and Q.3 or Q.4.
- 2) Figures to the right indicate full marks.
- 3) Assume suitable data, wherever necessary.
- 4) Use of electronic pocket calculator is allowed.

**Q1)** a) How electronic components are categorised in active and passive components and compare them. **[5]**

b) Draw and explain V-I characteristics of P-M Junction Diode and define these parameters. **[5]**

i) Cut-in Voltage

ii) PIV

iii) Reverse saturation current

c) Explain how Zener Diode can be used as voltage regulator. **[5]**

OR

**Q2)** a) Explain impact of electronics on industry and society. **[5]**

b) Explain working of Bridge Rectifier circuit with the help of wave forms. **[5]**

c) Determine the minimum and maximum input voltage for which zener Diode works as voltage regulator, **[5]**

For zener assume

$I_z (\text{min}) = 1 \text{ MA}$

$I_z (\text{max}) 10 \text{ MA}$

$Z_Z = 0-\Omega$   $V_Z = 5\text{V}$

and  $R_L = 1\text{K}\Omega$   $R_s = 470\Omega$

**P.T.O.**

- Q3)** a) Draw output characteristics of BJT in common Emitter configuration. Indicate different operating regions in it. [5]
- b) Draw circuit diagram of single stage E-MOSFET amplifier in common source configuration and explain functions of each component used in it. [5]
- c) Draw and explain functional block diagram of operational amplifier. [5]

OR

- Q4)** a) Draw circuit diagram of single stage BJT amplifier in common emitter configuration and explain function of each components. [5]
- b) Explain working of N-channel E-MOSFET with the help of its construction. [5]
- c) Define following parameters of op-amp and mention their ideal and practical values. [5]
- i) CMRR
  - ii) Input Bias Current
  - iii) Input offset voltage
  - iv) Slew Rate
  - v) PSRR

