

[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-N 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 $R_L = 1 \text{ K}\Omega$ $R_s = 470 \Omega$

- 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

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