

Total No. of Questions : 10]

SEAT No. :

PD-4037

[Total No. of Pages : 2

[6401]-2404

F.Y (Engineering)

**ESC-101-ETC : BASIC ELECTRONICS ENGINEERING
(2024 Pattern) (Semester - I)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Figures to the right indicate full marks.*
- 3) *Assume suitable data, if necessary.*
- 4) *Use of electronic pocket calculator is allowed.*

- Q1)** a) Draw and Explain V-I Characteristics of PN junction Diode. [5]
b) Explain Impact of Electronics on Industry and Society. [5]
c) Write a short note on Active and Passive Components. [4]

OR

- Q2)** a) Draw & Explain Circuit diagram of Half Wave Rectifier with waveforms. [5]
b) Explain construction & operation of Light Emitting Diode (LED). [5]
c) Draw and explain Diode as a Switch. [4]

- Q3)** a) Draw and explain operation of Enhancement Type N channel MOSFET. [5]
b) Draw and Explain Output Characteristics of common emitter mode. [5]
c) Explain N-well method of VLSI CMOS manufacturing. [4]

OR

- Q4)** a) Explain with a circuit diagram a Single Stage Common Emitter Amplifier. [5]
b) Compare BJT and MOSFET. [5]
c) Determine the dc current gain β (Beta) and Calculate value of I_C for BJT, if $I_B = 20 \mu A$ and $I_E = 2mA$. [4]

P.T.O.

- Q5)** a) Draw and Explain D flip flop with the help of Truth Table. [5]
 b) State and prove De-Morgan's Theorem. [5]
 c) Solve [4]
 i) Convert $(1101.101)_2$ into Decimal
 ii) Convert $(35.567)_{10}$ into Binary
- OR
- Q6)** a) Explain the full Adder with the help of Block Diagram, Truth Table & Logic Expression. [5]
 b) Draw and explain block diagram of Microprocessor. [5]
 c) Draw and Explain JK flip flop with the help of Truth Table. [4]
- Q7)** a) Draw and explain the functional block diagram of an Operational amplifier (OP-AMP)? [5]
 b) Draw and Explain Block Diagram of Digital Storage Oscilloscope (DSO). [5]
 c) Define with typical & ideal values for IC 741, the following Operational amplifier (OP-AMP) parameters? [4]
 i) CMRR
 ii) Bandwidth
- OR
- Q8)** a) Draw & Explain Block Diagram of Digital Multimeter (DMM). [5]
 b) For the Non - Inverting amplifier using op-amp if $R_F = 10\text{ K}\Omega$, $R_1 = 1\text{ K}\Omega$, $V_{cc} = \pm 12\text{V}$, $V_i = 100\text{mv}$. Calculate Voltage gain & Output voltage. [5]
 c) Explain Op amp application as an Inverting amplifier with the help of waveform. [4]
- Q9)** a) Draw & Explain block diagram of IoT based Data Acquisition System.[5]
 b) With the help of block diagram, explain operation of Electronic Communication System. [5]
 c) Compare Thermocouple and RTD. [4]
- OR
- Q10)** a) Explain wired and wireless communication media. [5]
 b) Explain the principle of operation, construction and working of LVDT.[5]
 c) Draw and Explain detail architecture of GSM system. [4]

