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 $R_F = 10\ K\Omega$, $R_1 = 1\ K\Omega$, $V_{cc} = \pm 12V$, $V_i = 100mv$. 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]**