Total No. of Questions : 10]

SEAT No. :

**PF12252**

[Total No. of Pages : 2

# [6624]-604
# F.E. (All Branches)
# ESC-101-ETC : BASIC ELECTRONICS ENGINEERING
## (2024 Credit Pattern) (Semester - I/II)

*Time : 2½ Hours]* *[Max. Marks : 60*

***Instructions to the candidates:***

1) ***Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***
5) ***Use of non-programmable calculator is allowed.***

***Q1)*** a) Explain Impact of Electronics on Industry and Society. **[6]**

b) Compare performance parameter of Half Wave Rectifier, Full Wave (Center Tapped) Rectifier and Bridge Rectifier. **[6]**

OR

***Q2)*** a) With neat sketch Explain V-I Characteristics of PN junction Diode. **[6]**

b) With the help of diagram, explain working of Photodiode and its application. **[6]**

***Q3)*** a) Define transistor. Explain construction of BJT with respect to area and doping concentration. Mention its types. For BJT, if $I_B$=20μA and $I_E$=2mA Calculate value of $I_C$ and β (Beta). **[6]**

b) Draw and explain operation of Enhancement Type N channel MOSFET. **[6]**

OR

***Q4)*** a) Draw and Explain Output Characteristics of common emitter mode. **[6]**

b) Explain N well method of VLSI CMOS Fabrication. **[6]**

***Q5)*** a) Write the difference between Microprocessor and Microcontroller. **[6]**

b) Explain the working of JK and T flip-flop with neat Diagram truth table. **[6]**

OR

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***Q6)*** a) Convert **[6]**

i) (1101.101)2 into Decimal

ii) (3 5.567) 10 into Binary

b) Explain Full adder with truth table and logic diagram. **[6]**

***Q7)*** a) For the Non - Inverting amplifier using op-amp if $R_F$=10 KΩ, $R_i$=1 KΩ, Vcc= ± 12V, $V_i$=100mv Calculate Voltage gain & Output voltage. **[6]**

b) Draw and Explain Block Diagram of Digital Storage Oscilloscope (DSO). **[6]**

OR

***Q8)*** a) Write Ideal and Practical characteristic of Op-Amp IC 741. **[6]**

b) Draw and Explain Block Diagram of Digital Multimeter (DMM). **[6]**

***Q9)*** a) Draw and explain Electromagnetic Frequency Spectrum with their applications. **[6]**

b) Draw & Explain block diagram of IoT based Data Acquisition System. **[6]**

OR

***Q10)***a) Explain the strain gauge in detail with construction, working, and applications. **[6]**

b) Draw and Explain detail architecture of GSM system. **[6]**

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