Total No. of Questions : 10]

SEAT No. :

PF17061

[Total No. of Pages : 2

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F.E.

ESC-101-ETC : BASIC ELECTRONICS ENGINEERING

(2024 Pattern) (Credit System) (Semester - I/II)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) *Answer 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 electron pocket calculator is allowed.*

Q1) a) Explain the working of Full Wave Bridge Rectifier With Neat Diagram. [5]

b) Draw and Explain V- I Characteristics of PN junction Diode. [5]

c) Draw and explain Diode as a Switch. [4]

OR

Q2) a) Write a short note on Evolution of Electronics. [5]

b) Explain working and one application of Photo Diode. [5]

c) Compare Active and Passive Components. [4]

Q3) a) Explain MOSFET as a switch with suitable circuit. [5]

b) Draw and Explain Output Characteristics of common emitter mode. [5]

c) Calculate value of I_c and IE for BJT, if αdc (alpha)= 0.97 and I_B = 50μA. Determine the dc current gain β dc (Beta). [4]

OR

Q4) a) Draw the construction diagram and explain the operation of Enhancement type P-channel MOSFET in detail? [5]

b) Explain N-well method of VLSI CMOS manufacturing. [5]

c) Define Current Gain, α, β and γ. [4]

Q5) a) Draw and Explain S R flip flop with the help of Truth Table. [5]

b) State and prove De-Morgan's Theorem. [5]

c) Solve. [4]

i) Convert $(1111.101)_2$ into Decimal

ii) Convert $(25.567)_{10}$ into Binary

OR

P.T.O.

Q6) a) Explain the Half Adder with the help of Block Diagram, Truth Table & Logic Expression. [5]

b) Draw and explain block diagram of Microcontroller. [5]

c) Draw and Explain T flip flop with the help of Truth Table. [4]

Q7) a) Write any 5 Ideal characteristic of Op-Amp and mention the practical values of each one. [5]

b) Draw the block diagram of Function Generator. Explain the function of each block. [5]

c) For the Non - Inverting amplifier using op-amp if R_f=10 KΩ, R_1=1 KΩ, Vcc= ± 12V, V = 100mv Calculate Voltage gain & Output voltage. [4]

OR

Q8) a) Explain Op amp application as an Inverting amplifier with the help of waveform. [5]

b) Draw the block diagram of Digital Multimeter. Explain the function of each block. [5]

c) Draw and explain the block diagram of Electronic Instruments. [4]

Q9) a) Draw and explain the block diagram of Electronic Communication System. [5]

b) Explain the principle of operation, construction and working of Strain gauge. [5]

c) Draw & Explain block diagram of IoT based Data Acquisition System. [4]

OR

Q10) a) Provide a table of Electromagnetic Frequency Spectrum with their applications. [5]

b) What are the different Selection criteria used while selecting the sensors for particular application? [5]

c) Draw and Explain detail architecture of GSM system. [4]

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