Total No. of Questions :4]

SEAT No. :

P5

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FE/Insem./APR-5
F.E. (Semester - II)
104010 : BASIC ELECTRONICS ENGINEERING
(2019 Pattern)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4.***
2) ***Assume suitable data if necessary.***

Q1) a) What is extrinsic semiconductor. Explain P-type & N-type semiconductor. **[5]**

b) Draw and Explain Half Wave Rectifier (HWR) with its corresponding input and output waveforms. **[5]**

c) Compare LED and Photodiode. **[5]**

OR

Q2) a) Define active and passive components. Explain them with suitable examples. **[5]**

b) For full wave bridge rectifier, applied input voltage is 5sin wt. Calculate average output voltage, RMS voltage and PIV rating of diode used. **[5]**

c) Explain V-I characteristics of zener diode. **[5]**

Q3) a) Draw and explain output characteristics of BJT in common emitter configuration. Show different regions of operation. **[5]**

b) Draw and explain MOSFET as a switch. **[5]**

c) For a Non - Inverting amplifier using op-amp if R_f=20kΩ and R_1=1kΩ, V_{cc}=±15V. Calculate Output voltage for vin = 3V and comment on the result. **[5]**

OR

Q4) a) Define transistor. Mention its types. For BJT, if I_B=20μA and IE=2MA. Calculate value of Ic and β (Beta). **[5]**

b) Draw and Explain the drain characteristics of N-channel EMOSFET. Show the different regions of operation on the characteristics. **[5]**

c) Draw and explain functional block diagram of operational amplifier (op-amp). **[5]**