

Total No. of Questions :4]

SEAT No. :

P5

FE/Insem./APR-5  
F.E. (Semester - II)

[Total No. of Pages : 1

**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  $5\sin \omega t$ . 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  $R_f = 20k\Omega$  and  $R_1 = 1k\Omega$ ,  $V_{cc} = \pm 15V$ . Calculate Output voltage for  $v_{in} = 3V$  and comment on the result. [5]

OR

Q4) a) Define transistor. Mention its types. For BJT, if  $I_B = 20\mu A$  and  $I_E = 2MA$ . Calculate value of  $I_C$  and  $\beta$  (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]

