

Total No. of Questions : 8]

SEAT No. :

**P4406**

[Total No. of Pages : 2

**[5458]-106**

**F.E.**

**BASIC ELECTRONICS ENGINEERING**

**(2015 Pattern)**

*Time : 2 Hours]*

*[Max. Marks : 50*

*Instructions to the candidates:*

- 1) *Figures to the right indicate full marks.*
- 2) *Neat diagram must be draw wherever necessary.*
- 3) *Use of electronic pocket calculator is allowed.*
- 4) *Assume suitable data, if necessary.*
- 5) *Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.*

**Q1)** a) Explain with neat circuit diagram bridge rectifier with its input and output waveforms. **[6]**

b) What is d.c. load line? Explain the role of 'Q' point on d.c. load line in BJT. **[6]**

OR

**Q2)** a) Draw and explain the working principle of photodiode and LED along with its characteristics. **[6]**

b) Define  $\alpha$ ,  $\beta$  and  $\gamma$  in CB, CE & CC configurations in BJT, if  $\beta = 100$ , calculate the value of ' $\alpha$ '. **[6]**

**Q3)** a) Draw the block diagram of op-amp and explain each block in brief. **[6]**

b) State and prove Demorgens theorem. **[6]**

OR

**Q4)** a) For Inverting amplifier using op-amp, if  $R_f = 100k\Omega$ ,  $R_i = 10k\Omega$ ,  $V_{cc} = \pm 10V$  &  $V_{in} = 2V_{dc}$

i) Calculate output voltage

ii) Is the result in part (i) practically possible? Justify.

**[6]**

b) Implement Half adder using gates, truth table and give equations for sum & carry. **[6]**

**P.T.O.**

- Q5)** a) Define Transducer. Enlist various types of transducers. Explain with neat diagram the construction & working of LVDT. [7]  
b) Draw Instrumentation system and explain the function of each block. [6]

OR

- Q6)** a) What are the types of temperature transducers. Explain in detail Thermo couple. [7]  
b) Explain the operation of SCR with the help of V-I characteristics. [6]

- Q7)** a) Draw the block diagram of communication system and explain each block in brief. [7]  
b) What is the need of Modulation? Explain modulation index for AM and FM techniques. [6]

OR

- Q8)** a) Write a short note on Wired communication. [7]  
b) Draw and explain the block diagram of GSM. [6]

