

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]

