Total No. of Questions : 8]

SEAT No. :

PE4247

[Total No. of Pages : 2

[6582]-18

S.E. (Electrical Engineering)

ANALOG AND DIGITAL ELECTRONICS

(2019 Pattern) (Semester - III) (203143)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.***
2) ***Figures to the right indicate full marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable additional data, if necessary.***
5) ***Use of non-programmable calculator is allowed.***

Q1) a) Write a comparison between CPLD and FPGA. **[4]**

b) Draw a circuit of basic static MOS RAM cell. Explain how information is stored in it. **[6]**

c) State two advantages of PLD over fixed function IC and application specific IC. What is the difference between PLA, PAL and PROM. **[8]**

OR

Q2) a) What do you mean by configurable device. **[4]**

b) What is FPGA? Explain its basic structure. **[6]**

c) Design a 3-bit Gray to Binary code converter. Implement it using suitable PROM. Draw the PROM table and logic Diagram. **[8]**

Q3) a) What is the role of OP-AMP as an instrumentation amplifier? **[3]**

b) Explain how OP-AMP work as a closed loop inverting amplifier, Draw neat waveforms. Also derive gain of OP-AMP for the same. **[6]**

c) Explain with neat diagram Schmitt trigger as an application of OP-AMP. **[8]**

OR

Q4) a) Write classification of open loop configuration of OP-AMP? Explain any one form it. **[3]**

b) Draw neat diagram. Explain OP-AMP as a Peak detector. **[6]**

c) Explain voltage and current converter for grounded type load. **[8]**

P.T.O.

Q5) a) Explain the function of 78XX. **[4]**

b) Draw and explain IC 555 as an Astable multivibrator with neat connection diagram. **[6]**

c) Explain how triangular waveform can be generated using OP-AMP? Also draw waveform. **[8]**

OR

Q6) a) Draw the diagram and waveform of IC 555 as monostable multivibrator. **[4]**

b) Explain the operation of low pass filter with a neat circuit diagram. **[6]**

c) Explain the function of LM 317 as a voltage regulator. **[8]**

Q7) a) Define for half wave rectifier : **[3]**

i) Efficiency

ii) Form factor

iii) Ripple factor

b) Explain the working of single phase half wave rectifier with RL load with neat sketch and draw its waveform. **[6]**

c) Draw and explain three-phase bridge rectifier with R-Load. Also draw input voltage and output voltage waveform. **[8]**

OR

Q8) a) Define for Full wave rectifier : - **[3]**

i) Average output voltage

ii) RMS output voltage

iii) Peak inverse voltage

b) Compare single phase half-wave and full - wave rectifier. **[6]**

c) Draw and explain three-phase half wave rectifier with R load with adequate wave form. **[8]**