PA-1205

[5925]-227

S.E. (Elecrical)

ANALOG AND DIGITAL CIRCUITS ELECTRONICS

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

Time : 2½ Hours]   *[Max. Marks : 70*

Instructions to the candidates:

1) *Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Use of Calculator is allowed.*
5) *Assume Suitable data is necessary.*

Q1) a) Write a short note on FPGA. **[6]**

b) What is DRAM? What are its advantages and disadvantages? **[6]**

c) Describe in detial Read Only Memory (ROM). **[6]**

OR

Q2) a) What is semiconductor memory? Enlist advantages of it. **[6]**

b) Write a short note on sequential memories. **[6]**

c) Write a short note on CPLD. **[6]**

Q3) a) Explain with neat diagram and output waveforms, Op-Amp as a zero crossing detector? **[5]**

b) Draw circuit of Op-Amp as V-I converter. Also explain its working. **[5]**

c) Explain generation of saw tooth waveform using OP-AMP. Draw input & output waveforms. **[8]**

OR

Q4) a) Draw neat diagram of Op Amp as a Schmitt trigger and explain its working. **[5]**

b) With neat pin diagram explain function of each pin of IC 741 **[5]**

c) Explain generation of sine waveform using OPAMP. Draw input & output wave froms **[8]**

P.T.O.

Q5) a) Explain the function of LM 317 as adjustable voltage regulator. **[5]**

b) With neat diagram explain working of IC 555 as a Astable Multivibrator. **[5]**

c) Explain High pass filter using op-amp with its frequency response. **[7]**

OR

Q6) a) What is voltage regulator? Write any two applications of voltage regulator. **[5]**

b) Explain Low pass filter using op-amp with its frequency response. **[7]**

c) With neat diagram explain working of IC 555 as a Monostable Multivibrator. **[5]**

Q7) a) Explain working of single phase half wave rectifier with RL load. **[5]**

b) Explain the working o single-phase full wave centre tapped rectifier with pure resistive laod. **[7]**

c) Define following terms **[5]**

  i) form factor

  ii) Ripple factor

  iii) TUF

OR

Q8) a) With the help of circuit diagram and relevant waveforms, explain the operation of a 3-phase bridge rectifier with resistive load. **[7]**

b) Compare single phase HWR and single phase FWR. **[5]**

c) Draw neat diagram and explin single phase half wave rectifier with pure resistive laod. **[5]**

❖ ❖ ❖

[6002]-127

S.E. (Electrical)

ANALOG AND DIGITAL ELECTRONICS

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

Time : 2½ Hours]   *[Max. Marks : 70*

Instructions to the candidates:

1) *Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Use of Calculator is allowed.*
5) *Assume suitable data if necessary.*

Q1) a) What is PAL? Explain in detail with suitable diagram. **[6]**

b) Write a short note on FPGA. **[6]**

c) What is RAM? Explain SRAM & DRAM in detail. **[5]**

OR

Q2) a) Write a short note on PLA. **[6]**

b) Explain CPLD with the help of neat logic diagram. **[6]**

c) What is ROM? Explain PROM and EPROM in detail. **[5]**

Q3) a) Explain the working of OP-AMP as zero-crossing detector with circuit diagram and waveforms. **[6]**

b) Write a short note on V to I converter with grounded type load. **[6]**

c) Explain working of OP-AMP as instrumentation amplifier. **[6]**

OR

Q4) a) Explain operation of OP-AMP as peak detector. Draw circuit diagram and waveforms. **[6]**

b) Explain sine wave generator with neat circuit diagram and waveforms. **[6]**

c) With the help of circuit diagram and waveforms explain application of OP-AMP as comparator. **[6]**

P.T.O.

Q5) a) Draw and explain frequency response characteristics of low pass & high pass filters. **[6]**

b) Explain working of IC 555 as astable multivibrator. **[6]**

c) Draw a neat circuit diagram of LM-317 and derive formula for variable voltage available at the output in terms of circuit parameters. **[5]**

OR

Q6) a) Explain high pass filter using OP-AMP with its frequency response. **[6]**

b) Explain working of IC 555 as monostable multivibrator. **[6]**

c) Explain the function of 78XX and 79XX voltage regulator. **[5]**

Q7) a) Draw neat diagram and waveforms of single phase half wave rectifier with resistive load. Define: **[6]**
   i) Efficiency.
   ii) Form factor.
   iii) Ripple factor.
   iv) Peak inverse voltage.

b) Explain full wave centre tapped rectifier supplying resistive load with circuit diagram and waveforms. **[6]**

c) Draw and explain the operation of single phase bridge rectifier supplying RL load. **[6]**

OR

Q8) a) Explain the working of single phase full wave bridge rectifier with RL load. **[6]**

b) A voltage of 200 sin (100π*t) is applied to a half wave rectifier with a load resistance of 10 kΩ. Calculate the maximum current, RMS current, average current, AC input power and ripple factor. **[6]**

c) Draw neat diagram of three phase full wave bridge rectifier with R load and explain its working. **[6]**

✿ ✿ ✿

[6179]-218

S.E. Electrical
ANALOG & 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) *Neat diagrams must be drawn wherever necessary*
3) *Figures to the right indicate full marks.*
4) *Use of calculator is allowed.*
5) *Assume suitable data if necessary.*

Q1) a) Write a short note on sequential memories (Definition, Characteristics, Examples). **[6]**

b) Explain Programmable Array Logic in detail. **[6]**

c) What is semiconductor memory? Enlist advantages of it. **[5]**

OR

Q2) a) Describe in detail Read only memory (ROM). **[6]**

b) Write a short note on FPGA. **[6]**

c) What is DRAM? What are its advantages and disadvantages? **[5]**

Q3) a) Explain how sine wave is generated by using Op-amp. **[6]**

b) Draw neat diagram of Op Amp as a Schmitt trigger and explain its working. **[6]**

c) Define the characteristics of practical OPAMP **[6]**

OR

Q4) a) With neat pin diagram explain function of each pin of IC 741. **[6]**

b) Explain working of OPAMP as instrumentation amplifier. **[6]**

c) Draw input and output waveforms of Op Amp as a Zero crossing Detector. Explain its working. **[6]**

Q5) a) Explain functioning of LM 317 as a voltage regulator. **[6]**

b) With neat diagram explain working of IC 555 as a Monostable Multivibrator. **[6]**

c) Draw and explain frequency response of high pass filter. **[5]**

OR

Q6) a) With neat diagram explain working of IC 555 as a Astable Multivibrator. **[6]**

b) Draw and explain frequency response characteristic of ideal and practical Low Pass Filter. **[6]**

c) What is voltage regulator? Write any two applications of voltage regulator. **[5]**

Q7) a) Compare single phase Half Wave Rectifier and single phase Full Wave Rectifier. **[6]**

b) With the help of circuit diagram and relevant waveforms, explain the operation of a 3-phase bridge rectifier with resistive load. **[6]**

c) Define following terms **[6]**
   i) Form factor
   ii) Ripple factor
   iii) TUF

OR

Q8) a) Explain working of single phase half wave rectifier with RL load. Draw output waveforms. **[6]**

b) State values of output Performance parameters of single phase full wave bridge rectifier. **[6]**
   i) DC output voltage
   ii) DC output current
   iii) Output DC power.
   iv) Rectification Efficiency
   v) Form Factor
   vi) PIV

c) Explain in detail the working of center tapped rectifier connected to the R load. **[6]**

✿ ✿ ✿

PB3613

[6261]-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 Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
2) *Neat diagrams must be drawn wherever necessary.*
3) *Figures to the right indicate full marks.*
4) *Assume Suitable additional data if necessary.*
5) *Use of non-programmable calculator is allowed.*

Q1) a) Mention the advantages of PLD's. **[4]**

b) Differentiate between RAM and ROM. **[6]**

c) With neat diagram explain PAL. Mention its advantages and disadvantages. **[8]**

OR

Q2) a) Write a short note on semiconductor memories. **[4]**

b) What is CPLD? Mention the features of CPLD. **[6]**

c) With neat diagram explain the detail architecture of FPGA. **[8]**

Q3) a) Draw the pin diagram of IC 741 and name the pins. **[3]**

b) Explain with neat diagram and output waveforms, Op-Amp as a zero crossing detector. **[6]**

c) Draw and explain V-I converter using operational amplifier. **[8]**

OR

P.T.O.

Q4) a) Mention the applications of instrumentation amplifier. **[3]**

b) With neat diagram explain op-amp as peak detector circuit. **[6]**

c) Explain generation of sine waveform using OPAMP. Draw the required waveforms. **[8]**

Q5) a) Define filter and mention its type. **[4]**

b) Draw and explain the three terminal fixed voltage regulator IC. **[6]**

c) With neat diagram explain astable multivibrator using IC 555. **[8]**

OR

Q6) a) Draw the block diagram of regulated power supply. **[4]**

b) Explain the internal structure of IC 555 with proper diagram. **[6]**

c) With neat diagrams analyze first order low pass filter using Op-Amp.**[8]**

Q7) a) Compare HWR and FWR circuits. **[3]**

b) Explain the working of single-phase full wave centre tapped diode rectifier with pure resistive load. **[6]**

c) With the help of circuit diagram and relevent waveforms, explain the operation of a 3-phase diode bridge rectifier with resistive load. **[8]**

OR

Q8) a) Define following terms. **[3]**

i) Form factor

ii) Ripple factor

iii) TUF

b) With relevant diagrams explain half wave diode rectifier with RL load. **[6]**

c) Explain the working of single-phase full wave diode bridge rectifier with pure resistive load. **[8]**