C.U.SHAH UNIVERSITY
Summer Examination-2019

Subject Name :Analog and Digital Electronics
Subject Code :5SC01ADE1　　　　　　　　**Branch: M.Sc. (Physics)**
Semester : 1　　　　**Date :19/03/2019**　　**Time : 02:30 To 05:30**　　　**Marks : 70**

Instructions:
(1) Use of Programmable calculator and any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

SECTION – I

Q-1	**Attempt the Following questions**	**(07)**
a.	What is a reverse recovery time of diode?	
b.	Differentiate between UTP and LTP.	
c.	What is meant by precision rectifier?	
d.	Define photo-detectors.	
e.	Write applications of photodiode.	
f.	What is a comparator?	
g.	What is an optocoupler? Write its applications.	

Q-2	**Attempt all questions**	**(14)**
a.	What do you mean by clipper? Explain briefly positive and negative peak clipper circuits using diode with suitable diagrams.	**(07)**
b.	What is LDR? Give its construction and characteristics. How an LDR can be used as an overlight detector?	**(07)**

OR

Q-2	**Attempt all questions**	**(14)**
a.	What is clamper? Explain briefly positive and negative peak clamping circuits using diode with neat and clean diagrams.	**(07)**
b.	What is LED? Give its principle of working, construction and write its applications.	**(07)**
Q-3	**Attempt all questions**	**(14)**
a.	Discuss how an OPAMP can be made to act as an astable multivibrator? Obtain an expression for frequency of oscillations.	**(07)**
b.	What is the difference between a basic comparator and the Schmitt trigger? Explain briefly.	**(07)**

OR

Q-3	**a.**	Describe OPAMP circuit for bistable multivibrator. Explain their operations.	**(07)**
	b.	Write short notes on switching applications of OPAMP and OPAMP inverter.	**(07)**

SECTION – II

Q-4   **Attempt the Following questions**   **(07)**
- **a.** Which type of amplifiers operate with least distortion?
- **b.** What type of bias is used in a true class B push-pull amplifier?
- **c.** State common difference between voltage and power amplifiers.
- **d.** What is a tuned amplifier?
- **e.** Write full name of DAC and ADC.
- **f.** What do you mean by binary ladder?
- **g.** How counters can be used for the measurement of frequency?

Q-5   **Attempt all questions**   **(14)**
- **a.** State clearly the meaning of class A, B and C as applied to power amplifiers. What is meant by 'angle of flow'?   **(07)**
- **b.** Draw the circuit of a class B push-pull amplifier and explain its operation. Derive an expression for its maximum conversion efficiency.   **(07)**

<div align="center">OR</div>

Q-5
- **a.** Explain briefly class A power amplifier. How power is distributed in it?   **(07)**
- **b.** What do you mean by double tuned amplifier? Show that in case of double tuned amplifier the 3dB bandwidth exceeds that a single tuned amplifier.   **(07)**

Q-6   **Attempt all questions**   **(14)**
- **a.** Describe the operation of half and full adder with suitable diagram. What is parallel adder?   **(07)**
- **b.** Write notes on multiplexers and de-multiplexers.   **(07)**

<div align="center">OR</div>

Q-6   **Attempt all Questions**   **(14)**
- **a.** Explain the various types of memory and their merits and demerits.   **(07)**
- **b.** What do you understand by sequential and combinational logic circuits? Describe the operation of S-R latch.   **(07)**