B.TECH SEM – IV (2007 COURSE) (ELECTRICAL ENGG.) :

WINTER - 2017

SUBJECT : LINEAR & DIGITAL INTEGRATED CIRCUITS

Day : **Monday** Time : **02.30 PM TO 05.30 PM**

Date : **20/11/2017** **W-2017-2410** Max. Marks : 80

N.B.:

1) **Q.No.1** and **Q.No.5** are **COMPULSORY**. Out of the remaining attempt **ANY TWO** questions from each section.
2) Answers to both the sections should be written in the **SEPARATE** answer books.
3) Use of non programmable **CALCULATOR** is allowed.
4) Figures to the right indicate **FULL** marks.
5) Assume suitable data if necessary.

SECTION – I

Q.1 **a)** Define : **i)** Input offset voltage **ii)** Slew rate. **[04]**

b) Draw circuit diagram of precision half wave rectifier and explain the operation with waveforms. **[05]**

c) What are the applications of IC 556? Draw its block diagram. **[05]**

Q.2 **a)** Draw pin diagram and equivalent circuit of operational amplifier. State open loop and closed loop gain of an amplifier and sketch its frequency response. **[07]**

b) Draw circuit of operational amplifier as non-inverting amplifier. With gain of 200 for input voltage of 10mv sinusoidal signal. Draw input and output waveforms. Describe virtual ground. **[06]**

Q.3 **a)** Draw circuit diagram of inverting Schmitt trigger and describe its operation for sine wave input. State formula for UTP and LTP. **[06]**

b) Describe operation of precision full wave rectifiers with neat circuit diagram and waveforms. **[07]**

Q.4 **a)** Draw block diagram of IC 8038. State its specifications and applications. **[06]**

b) Explain the operation of integrator using operational amplifier. **[07]**

SECTION – II

Q.5 **a)** Perform the following using 2's complement method: **[05]**
i) $(64)_8 - (25)_8$ **ii)** $(69)_{10} - (32)_{10}$.

b) Explain IC 7485 (Digital Comparator). **[05]**

c) Write specification of CMOS family. **[04]**

Q.6 **a)** Write a short note on ASCII code. **[06]**

b) Explain Hexadecimal number system. **[07]**

Q.7 **a)** Describe characteristics of TTL family. **[07]**

b) Write a short note on tri state output. **[06]**

Q.8 **a)** Write a short note on 4- bit ALU. **[06]**

b) Write the operation of Encoder with truth table. **[07]**

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