B.TECH SEM – V (2007 COURSE) (BIOMEDICAL ENGG.) : SUMMER - 2018

SUBJECT: LINEAR INTEGRATED CIRCUITS

Day : **Thursday** | **S-2018-2692** | Time : **10.00 AM TO 01.00 PM**
Date : **24/05/2018** | Max. Marks: 80

N.B.:

1) **Q. No. 1** and **Q. No.5** are **COMPULSORY**. Out of remaining attempt **ANY TWO** questions from Section – **I** and Section – **II**.
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in **SEPARATE** answer books.
4) Draw neat and labeled diagram **WHEREVER** necessary.
5) Assume suitable data, if necessary.

SECTION - I

Q. 1 **a)** Write a short note on single supply operation of an op-amp. **(05)**
b) Compare Schmitt trigger and comparator. **(05)**
c) Draw the circuit diagram of an instrumentation amplifier using 3 op-amp. **(04)**

Q. 2 **a)** What is meant by input offset voltage? How it can be compensated? **(07)**
b) Discuss the working of Wilson current source with a neat circuit diagram. **(06)**

Q. 3 **a)** Discuss the working of sample and hold circuit. State its applications. **(07)**
b) Define the following terms related to comparator: **(06)**

i) Accuracy

ii) Response time

iii) Logic threshold

Q. 4 **a)** What are the disadvantages of an ideal differentiator? Draw a neat circuit diagram of practical differentiator and state equation for f_a and f_b. **(07)**
b) Write a short note on Peaking amplifier. **(06)**

SECTION - II

Q. 5 **a)** What are the advantages of active filters over passive filters? **(06)**
b) Draw pin diagram of function generator IC 8038. **(04)**
c) Discuss squarer circuit using multiplier IC. **(04)**

Q. 6 **a)** Design a 1^{st} order low pass butter worth filter at a cutoff frequency of 1kHz with a pass band gain of 2. **(07)**
b) Draw and explain circuit diagram of active notch filter. What is Twin-T notch filter? **(06)**

Q. 7 **a)** Design a triangular waveform generator for an output frequency of 1.1 kHz and peak to peak amplitude of triangular waveform is 4.94 V_{P-P} and op-amp saturation voltage is 14 v. **(07)**
b) Draw and explain with waveforms, the operation of missing pulse detector using IC 555. **(06)**

Q. 8 **a)** Describe with neat circuit diagram, operation of dual slope analog to digital converter. **(07)**
b) Describe any two applications of an IC LM 380. **(06)**

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