B.Tech. SEM -IV Electronics / Bio Medical 2014 Course (CBCS) :
SUMMER - 2019
SUBJECT: ANALOG INTEGRATED CIRCUITS
(Common for Biomedical & Electronics)

Day: Thursday
Date: 23/05/2019

Time: 10.00 AM TO 01.00 PM
Max. Marks. 60

S-2019-2612

N.B. :

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks
3) draw the labeled diagrams **WHEREVER** necessary

Q.1 **a)** Draw the op-amp symbol and describe the various op-amp terminals. **(07)**
b) Write a note on packages of op-amp. **(03)**

OR

Write a note on frequency response of an op-amp. **(10)**

Q.2 **a)** Draw an op-amp circuit whose output is $V_1-V_2+V_3-V_4$. **(07)**
b) What are the designing steps of a practical integrator using op-amp. **(03)**

OR

Derive expression for gain of an instrumentation amplifier employing 3 op-amps. **(10)**

Q.3 **a)** Describe with diagram and waveforms, the principle of operation of an inverting comparator. **(06)**
b) Draw circuit diagram for temperature compensated antilog amplifier. **(04)**

OR

Define the following terms related to sample and hold circuit. **(10)**
i) Acquisition time ii) Aperture time iii) Droop iv) Feed through v) Hold mode settling time

Q.4 a) Design a high pass filer at a cut off frequency of $1KH_z$ with a pass band gain of 2. **(06)**
b) Using frequency scaling technique, convert $1KH_z$ cut off frequency of a high pass filter to a cut off frequency of $1.6KH_Z$. **(04)**

OR

Draw and describe the working of square and triangular waveform generator using op-amp along with waveforms. **(10)**

Q.5 Design an astable multivibrator using IC555 to have output frequency of 2.5 KH_z with variable duty cycle from 20% to 80%. Assume $V_{CC}=12v$. **(10)**

OR

a) Define following terms related to an IC565 **(06)**
i) Lock range ii) Capture range iii) Pull-in-time
b) Draw the block diagram of an IC565 PLL. **(04)**

Q.6 Discuss the successive approximation analog to digital converter technique with the help of block diagram. **(10)**

OR

Discuss the working of binary weighted resistor DAC with its circuit diagram. **(10)**

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