

2103000206020091
EXAMINATION FEBRUARY-MARCH 2024
BACHELOR OF SCIENCE (SIXTH SEMESTER)
ELECTRONICS PAPER – VI – LEVEL 2
LINEAR INTEGRATED SYSTEMS

[Time: As Per Schedule]

[Max. Marks: 50]

Instructions:

1. Fill up strictly the following details on your answer book

- a. Name of the Examination :**BACHELOR OF SCIENCE (SIXTH SEMESTER)**
 - b. Name of the Subject :**ELECTRONICS PAPER – VI – LEVEL 2
LINEAR INTEGRATED SYSTEMS**
 - c. Subject Code No :**2103000206020091**
2. Sketch neat and labelled diagram wherever necessary.
 3. Figures to the right indicate full marks of the question.
 4. All questions are compulsory.
 5. Non-programmable calculators are allowed
 6. Q1 is compulsory.
 7. Assume data if necessary.

Seat No:

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Student's Signature

Q.1 Answer in brief:

8

1. Explain Bode plot and its applications
2. What are the advantages of active filter over passive filter?
3. Draw the high frequency model of op amp.
4. How are oscillators classified?

Q.2

A) Discuss in detail first order Butter worth low pass filter and its design principles. **8**

B) Design Second order Butterworth high pass filter using op-amp for a cut off frequency of 5 kHz **6**

OR

A) Using the open loop gain equation as a function of break frequency explain how will you draw the magnitude plot and phase angle plot for a given op-amp. **7**

B) When an 10-volt peak-to-peak square wave of 4MHz is the input to a voltage follower, the output is a triangular wave of peak-to-peak voltage 6v. What is the slew rate of the op-amp? **7**

- Q.3**
- A) Explain D/A converter with R and 2R resistors. What is its advantage? **7**
 - B) For a 4-bit D/A converter with R - 2R ladder network, determine the size of each step if $R_F = 2.7k\Omega$ and calculate the output voltage when the inputs are 1010. $R = 10k\Omega$. **7**

OR

- A) Discuss any RC oscillator (IC 741) with necessary diagram, expressions and design principles. **7**
 - B) What is a sample and hold circuit? Why is it needed? **7**
- Q.4**
- A) Using the internal block diagram of timer IC (555) explain its action as a monostable multivibrator and give its applications. **8**
 - B) Design a monostable multivibrator (using 555) as a divide -by -2 network. The frequency of the input trigger signal is 1.5 kHz. **6**

OR

- A) Explain a triangular wave generator using 741. How will you modify it to make a saw tooth wave generator? **7**
- B) Design a square wave oscillator so that $f_0 = 2kHz$. Use op-amp 741C with dc supply voltages = $\pm 14v$ **7**
