RAN-2103000206020091

RAN-2103000206020091

T.Y.B.Sc. (Sem. VI) Examination April - 2023

Electronics : Paper VI - Linear Integrated Systems

Time: 2 Hours] **[Total Marks: 50**

સૂચના : / Instructions

(૧) **નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.**
Fill up strictly the details of ☛ signs on your answer book

Name of the Examination:
☛ **T.Y.B.Sc. (Sem. VI)**

Name of the Subject :
☛ **Electronics : Paper VI - Linear Integrated Systems**

Subject Code No.: **2103000206020091**

Seat No.:

Student's Signature

(2) Figure on the right indicates full marks.
(3) All symbols and abbreviations have their usual meaning.
(4) Non-programmable calculators are allowed.
(5) Q.1 is compulsory.
(6) Assume data if necessary.

Q:1 **Answer in brief:** **08**

1. Define the frequency response of an op-amp
2. What is Chebyshev response?
3. Explain half wave rectifier circuit using op-amp.
4. What causes the gain of the op-amp to roll off after a certain frequency is reached?

Q:2 (A) Prove that the open loop voltage gain of the op- amp is a complex quantity and is a function of operating frequency. **07**

(B) An inverting amplifier using 741C must have a flat response up to 40 kHz. The gain of the amplifier is 20. What maximum peak to peak input signal can be applied without distorting the output? **07**

OR

Q:2 (A) Discuss in detail first order Butter worth low pass filter and its design principles. **08**

(B) Design Second order Butterworth high pass filter using op-amp for a cut off frequency of 2 kHz. **06**

Q:3 (A) Explain the working of successive-approximation ADC with neat diagram and an example. **07**

(B) Explain all pass filter and its applications **07**

OR

Q:3 (A) State Bark hausen criteria for oscillation. Discuss phase shift oscillator (IC 741) with necessary diagram, expressions and design principles. **08**

(B) Explain different comparator circuit using op-amp. **06**

Q:4 (A) Explain the working and design principles of free running multivibrator using IC741 **08**

(B) Design a square wave oscillator so that f_0 = 3 kHz. The op-amp is 741C with dc supply voltages = ± 12v. **06**

OR

Q:4 (A) Using the internal structure of IC 555, explain its action as an astable multivibrator. **07**

(B) Design an astable multi vibrator using IC555 having an output frequency of 2 kHz with a duty cycle of 60%. **07**

———