



RAN-1216

T Y B. Sc (Electronics) Sem VI Examination

March / April - 2019

PAPER -VI (Linear Integrated Systems)

Time: 2 Hours]

[Total Marks: 50

સૂચના : / Instructions

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 (Electronics) Sem VI

Name of the Subject :

PAPER -VI (Linear Integrated Systems)

Subject Code No.: 1 2 1 6

Seat No.:

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Student's Signature

Instruction:

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

Q: 1 Answer in brief:

08

- 1 What is the difference between first and second order filter?
- 2 Explain zero crossing detector?
- 3 What is Butterworth response?
- 4 Explain a positive small -signal half- wave rectifier circuit using op-amp

QII (A) Explain the working of successive-approximation ADC with an example. 08

QII (B) Determine the stability of a voltage follower using 741C op-amp. 06

OR

QII (A) Explain RC oscillators using op-amp.

07

QII (B) A certain Wien bridge oscillator uses $R = 4K7$. The number written on the used capacitor is 102. What is the frequency of oscillation? What should be the gain of the amplifier? **07**

QIII (A) Explain the working and design principles of square wave generator using IC 741 **07**

QIII (B) Design a square wave oscillator so that $f_0 = 1\text{kHz}$. The op-amp is 741C with dc supply voltages $= \pm 12\text{V}$ **07**

OR

QIII (A) What are the disadvantages of D/A converter with binary weighted resistors? Explain another D/A converter, which will overcome this difficulty. **07**

QIII (B) Determine the size of each step if $R_F = 2.2\text{k}\Omega$ in a D/A converter (4-bit) with binary - weighted resistors. What is the output voltage when inputs b_0 through b_3 are at 5v? $R = 15\text{k}\Omega$ **07**

QIV (A) Discuss a second order high-pass Butterworth filter in terms of its frequency response and designing principles with a neat diagram. **07**

QIV (B) When an 8-volt peak -to-peak square wave of 3.0MHz 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 used op-amp? **07**

OR

QIV (A) Using the internal block diagram of timer IC (555) explain its action as an astable multivibrator and give its applications. How will you generate a square wave output from it? **07**

QIV (B) Design an astable multivibrator using IC555 having an output frequency of 1 kHz with a duty cycle of 60%. **07**
