2303N281

Candidate's Seat No :_____

M.Sc. Sem.-1 Examination

403

Electronics

March 2022

Time : 2-00 Hours] **[Max. Marks : 50**

Instructions: All questions in **Section – I** carry equal marks.
Attempt any **Three** questions in **Section – I.**
Questions in **Section – II** is **COMPULSORY.**

Section – I

Q-I
A. What are the voltage limiters? Why it is necessary? Describe inverting comparator with negative voltage limiting using suitable diagram. 7
B. Explain working of the ON/OFF temperature controller designed using LM339 with necessary circuit diagram. 7

Q-II
A. Draw the circuit diagram of a level detector for photo diode using IC LM311 and discuss its working briefly. 7
B. Explain working of the LM380 power amplifier with suitable circuit and pin diagram. Write its applications. 7

Q-III
A. Discuss IC8038 function generator with neat and clean diagram. Write its important features. 7
B. Draw pin diagram of IC9400. Using this IC explain frequency to voltage converter and state its design and calibration method. 7

Q-IV
A. How triangular wave generator and sawtooth wave generator are differentiated with each other? Draw the circuit diagram of sawtooth wave generator using OPAMP and explain its working. 7
B. Discuss the working of the Wein bridge oscillator using OPAMP with necessary circuit diagram. Obtain the expression for its frequency of oscillations. Using IC741, design a Wein bridge oscillator of frequency 5 KHz. 7

Q-V
A. Design and draw the circuit diagram of a second order low pass Butterworth filter using IC 741 for a higher cut off frequency of 1 KHz and gain of 1.59. 7
B. Design and draw the circuit diagram of a 60 Hz active Notch filter using Twin-T network. 7

Q-VI
A. Design and draw the circuit diagram of a wide band pass filter with f_L=200Hz and f_H = 1 KHz with band pass gain of 4 (use IC 741) 7
B. What is Universal filter IC FLT-U2?Using FLT-U2, design a second order inverting Butterworth band pass filter with centre frequency of 5 KHz and Q=10. 7

PTO

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Q-VII	A.	What are graphic equalizers? Give its circuit and draw its response. Where are these used?	7
	B.	List main features of Norton's OPAMP ? Draw and discuss the circuit of AC coupled inverting amplifier using Norton OPAMP.	7
Q-VIII	A.	What is meant by active tone controls? Draw circuit diagram and explain working of any active tone control circuit.	7
	B.	What are the requirements of Video amplifier? Discuss wide banding technique in Video amplifiers using compounding of devices.	7

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Section – II

Q-IX MCQs 8

1. A Schmitt trigger is
   A. a comparator with only one trigger point.
   B. a comparator with three trigger points.
   C. a comparator with hysteresis.
   D. a comparator with no trigger points.

2. How to limit the output voltage swing only to positive direction in voltage limiter circuit?
   A. Combination of two Zener diodes
   B. Combination of Zener and rectifier diodes
   C. Combination of two rectifier diodes
   D. Combination of two rectifier diodes and two Zener diodes

3. To a Schmitt trigger in inverting configuration an input sine wave of 2Vp is applied. What will be the output waveform, if the upper and lower threshold voltages are 0.5V?
   A. Pulse waveform
   B. Sawtooth waveform
   C. Square waveform
   D. Triangular waveform

4. Which one waveform is denoted as 'sweep' ?
   A. Sawtooth waveform
   B. Sinusoidal waveform
   C. Square waveform
   D. Square waveform

5. Which one is the characteristics of a Butterworth filter
   A. Flat pass band & flat stop band
   B. Rippled pass band & flat stop band
   C Flat pass band & rippled stop band
   D. Rippled pass band & rippled stop band

6. For Uncommitted OPAMP section of FLT-U2 , mark the WRONG statement.
   A. It can be used both as gain stage and a Buffer amplifier
   B. It can be used to raise order of low pass and high pass filter functions
   C. It can not be used to realize NOTCH filter and ALL PASS filter.
   D. It can be used to raise order of band pass filter function.

7. Which one is the WORNG statement for FET input stage OPAMP
   A. Very high input impedance
   B. Very High slew rate
   C. High bias current
   D. High CMRR

8. LF155/156/157 series are which type of ICs
   A. Nortons OPAMP IC
   B. Video Amplifier IC
   C. FET input OPAMP IC
   D. Switched Capacitor Filter IC