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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

THIRD SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2017

Course Code: CS207

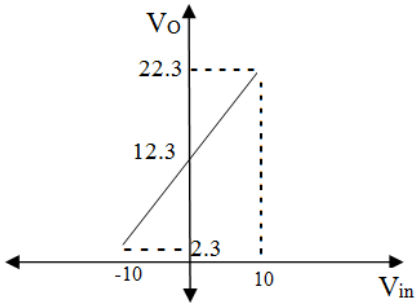
Course Name: ELECTRONIC DEVICES AND CIRCUITS (CS)

Max. Marks: 100 Duration: 3 Hours

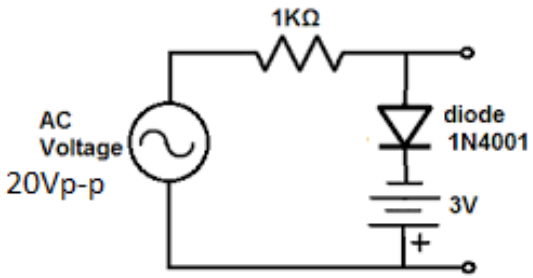
PART A

Answer all questions, each carries 3 marks.

		Marks
1	Design a clamper circuit to get the following transfer characteristics, assuming voltage drop across the diode s 0.7V.	(3)



2	Draw the output waveform of the following circuit, assuming voltage drop across the diode is 0.7V.	(3)



3	Compare linear regulator with switching regulator.	(3)
4	Compare FET with BJT	(3)

PART B

Answer any two full questions, each carries 9 marks.

5	a)	With neat sketches explain the principle and working of RC integrator circuit.	(5)
	b)	Explain the response of an RC integrator circuit for a for a square wave input.	(4)
6	a)	With neat sketches explain the working of n-channel JFET.	(5)
	b)	Draw the characteristics of n-channel JFET	(4)
7	a)	Draw and explain a circuit whose output voltage is three times as that of input voltage.	(5)
	b)	Discuss about simple zener shunt voltage regulator with the help of circuit diagram.	(4)

PART C

Answer all questions, each carries 3 marks.

8	Define stability factor. Write down the expression for stability factor S.	(3)
9	Compare positive feedback with negative feedback.	(3)

10 What is meant by sustained oscillation? What are thecriteria's for obtaining sustained oscillations? (3)

11 An astable multivibrator having R_1= 2KΩ,R_2=20KΩ and C_1=0.01μF, C_2=0.05μF. Determine the period and frequency of oscillation. (3)

PART D

Answer any two full questions, each carries 9 marks.

12 a) With the help of circuit diagram explain the working of RC coupled amplifier. (5)

b) Draw and explain the frequency response of RC coupled amplifier. (4)

13 a) With neat diagram explain the working of Hartley oscillator using BJT. (4)

b) Derive the expression for frequency of oscillation and loop gain of a Hartley oscillator using BJT. (5)

14 a) Explain the effect of negative feedback on amplifiers. (5)

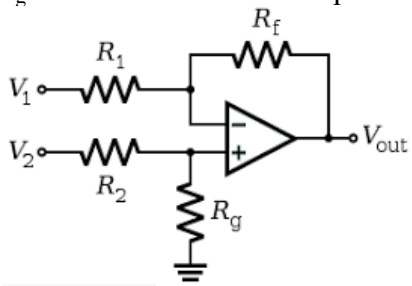
b) With neat diagram explain the working of monostable multivibrator using BJT (4)

PART E

Answer any four full questions, each carries 10 marks.

15 a) With neat diagram explain the working and hysteresis curve of a non inverting Schmitt trigger using op amp. (6)

b) The difference amplifier shown in the figure having R_1=R_2=5KΩ,R_F=10KΩ,R_g=1kΩ. Calculate the output voltage. (4)



16 a) Explain RC differentiator circuit using op amp. (4)

b) With the help of diagram explain a three input inverting summing amplifier. (4)

c) Realize a circuit to obtain Vo= -$2V_1$+$3V_2$+$4V_3$using operational amplifier.Use minimum value of resistance as 10KΩ. (2)

17 a) With neat diagram explain the working of wien bridge oscillator using op-amp. (5)

b) Derive the expression for frequency of oscillation of Wien bridge oscillator using op-amp. (5)

18 a) Explain the working principle of a successive approximation type ADC. (5)

b) A 4-bit R-2R ladder type DAC having R= 10 KΩ and V_R = 10V. Find its resolutionand output voltage for an input 1101. (5)

19 a) Drawthe circuit diagram and frequency response of a second order high pass butterworth filter using OP-AMP and explain its working. (5)

b) Design a first order butterworth LPF using OP-AMP for a high cut of frequency of 1KHz and passband gain is 2.Give the design steps and draw the frequency response. (Assume C=0.01μF) (5)

20 a) With neat diagram explain the working of IC555 timer. (5)

b) Design an astablemultivibrator using IC 555 timer for a frequency of 1KHz and a duty cycle of 70%.Assume c=0.1μF. (5)

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