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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Third Semester B.Tech Degree (S,FE) Examination December 2022 (2015 scheme)

Course Code: CS207

Course Name: Electronic Devices & Circuits

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries3 marks.

			Marks
1		Draw and explain output characteristics of FET	(3)
2		Implement this Equation using electronic components , Y = $\|2X\|$	(3)
3		Write a short notes on Biased clamper with suitable waveform	(3)
4		Draw and explain current limiting protection in IC723	(3)

PART B

Answer any two full questions, each carries9 marks.

5	a)	Explain in details about voltage multipliers	(6)
	b)	Compare BJT and FET	(3)
6		Explain in detail how IC 723 act as low and high voltage regulators	(9)
7	a)	Draw the structure of E-MOSFET and explain with operation and characteristics	(7)
	b)	Prove the relation connecting μ , g_m and r_d	(2)

PART C

Answer all questions, each carries3 marks.

8	State and explain Barkhausen Criterion	(3)
9	Explain about the effect of negative feedback on Bandwidth	(3)
10	Write short notes on operating point and Load lines	(3)
11	A 1 Pf capacitor is available ,choose the inductor values in a Hartley oscillator so that f=1MHz and feedback fraction is 0.2	(3)

PART D

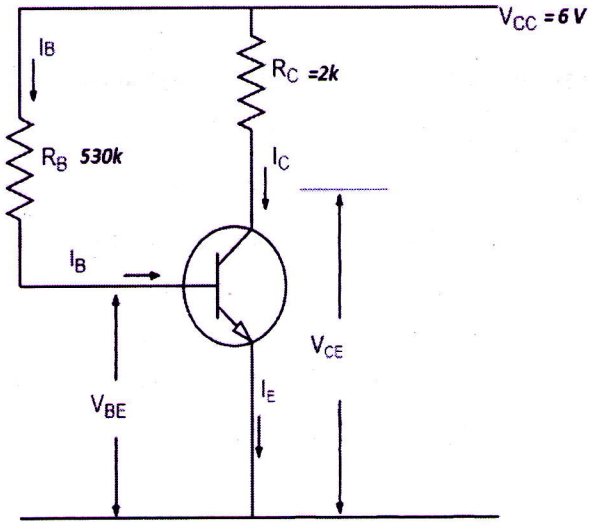
Answer any two full questions, each carries9 marks.

12	Draw and explain the working principle of RC coupled amplifier ,and sketch its frequency response	(9)

13 a) Draw and explain the working principle of Monostable multivibrator ,and sketch its output waveform (7)

b) In the Astable multivibrator ,R1=R2=10K and C1=C2=0.01 μF .Determine the time period and frequency of the square wave. (2)

14 Figure shows that a silicon transistor with β=100 is biased by base resistor method, draw the dc load line and determine the operating point. ? what is the stability factor ? (9)



PART E

Answer any four full questions, each carries10 marks.

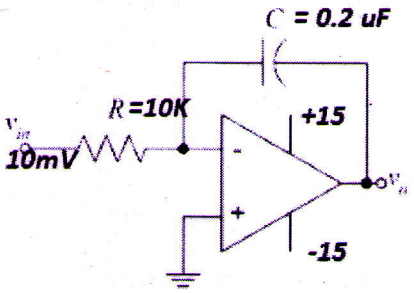
15 a) Draw and explain the working of Non –Inverting type summing amplifier using Op-amp with relevant equations (7)

b) Discuss the two application of summing amplifier (3)

16 a) Derive the expression for the voltage gain of inverting amplifier (5)

b) Discuss the operation of an OP-amp Integrator (5)

17 a) For the integrator circuit shown in figure , how long does it take for the output to reach saturation? (6)



b) Write short notes on slewrate, CMRR, input offset voltage ,offset current (4)

18 Using 555 IC explain the operation of astable multivibrator, with suitable waveform and sketch its internal diagram? (10)

19 Explain the working principle of successive approximation type ADC (10)

20 a) Design a first order high pass filter using opamp with cutoff frequency 2KHz and pass band gain 2. (5)

b) Compare active and passive filter (5)

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