C 0800MRT203122101 Pages: 2

Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Third Semester B.Tech Degree Regular and Supplementary Examination December 2022 (2019 Scheme)

Course Code: MRT203

Course Name: ANALOG AND DIGITAL ELECTRONICS

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions. Each question carries 3 marks Marks

1	What are the conditions for sustained oscillations?	(3)
2	Explain the effect of negative feedback in amplifiers	(3)
3	State characteristics of comparators	(3)
4	Derive the output voltage equation of basic Integrator circuits	(3)
5	Compare Active Filter and Passive Filter	(3)
6	Draw and discuss block diagram of PLL	(3)
7	Why NAND and NOR are called universal gates?	(3)
8	Explain code converters. Write one example of each	(3)
9	What is race around condition? How it is rectified	(3)
10	Compare Asynchronous and Synchronous Counters	(3)

PART B

Answer any one full question from each module. Each question carries 14 marks

Module 1

11.	a) Classify power amplifiers. Write note on Class A power amplifier	(7)
	b) Explain working of N Channel JFET	(7)
12	a) Explain the working of Hartley oscillator.	(7)
	b) Classify the types of negative feedback & explain each in brief.	(7)

Module 2

13	a) Write the characteristics of Operational Amplifier	(4)
	b) Discuss differentiator circuit using Op-amp	(10)
14	a) Draw the circuit of an Integrator using Op-Amp and explain wave waveforms	(7)
	b) Design an Inverting amplifier of gain 10	(7)

Module 3

15	a) Explain with circuit diagram, the operation of VCO	(7)
	b) Explain the working of Monostable multivibrator using IC 555	(7)
16	a) Define: 1) Pass band 2) Cut off frequency	(4)
	b) Explain about all types of active Active filter circuits	(10)

Module 4

17	a) Implement the function F(a,b,c,)=$\sum$ m (0,1,3,5,7) using 8:1 MUX	(8)
	b) Design De multiplexer circuit using logic gates	(6)
18	a) Design a Full Adder circuit using NAND gate	(10)
	b) State and prove De Morgan's Theorems	(4)

Module 5

19	Design a 3 bit synchronous down counter using JK FF	(14)
20	Design a Mod -5 synchronous counter using T FF	(14)

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