R18 Regulation *Subject code:* 2P3DE

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech III Semester Supplementary Examinations, February 2024

PULSE AND DIGITAL CIRCUITS

(ECE)

Maximum Marks: 70 Date:26.02.2024 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

	All the following questions carry equal marks (10X2M=20 Marks)	**CO**	**BTL**
1	Draw the low pass RC circuit and explain its working.	1	L2
2	Define % tilt of RC circuit	1	L1
3	What are the clipping circuits? Give some examples?	2	L1
4	Sketch and define double ended clipper?	2	L2
5	How does diode acts as a switch?	3	L2
6	Define displacement error and transmission error.	3	L1
7	Distinguish between different types of triggering.	4	L2
8	What are commutating capacitors. Why these are used in binary?	4	L1
9	Define Fan-in and Fan-out.	5	L1
10	Differentiate Unidirectional and Bi directional Sampling Gates	5	L2

Part-B

	Answer All the following questions. **(5X10M=50Marks)**	M	**CO**	**BTL**
11	Prove the expression for rise time of integrating circuit is proportional to time constant and inversely proportional to upper 3 dB frequency.	10M	1	L3
	OR			
12	What is an attenuator? Explain different methods of Compensation. What is the effect of the output resistance of the generator on an attenuator output.	10M	1	L2
13	a)State and prove clamping circuit theorem b) With the help of neat circuit diagram and waveforms Explain the working of negative clamping circuit.	5M 5M	2	L3 L2
	OR			
14	a)Explain the working of transistor clipper with a neat sketch. b) Explain the applications of Voltage Comparators.	5M 5M	2	L3 L2
15	Explain the working of a transistor Miller time base generator with neat circuit diagram and waveforms	10M	3	L3
	OR			

16	Explain transistor switching time. For a CE amplifier V_{cc} = 15 V, R_c = 1.5 KΩ and I_B = 0.3 mA. Determine the value of $h_{fe\,(min)}$ for saturation to occur, if R_c is changed to 500Ω will the transistor be saturated?	10M	3	L4
17	Explain how the commutating capacitors will increase the speed of a fixed bias binary.	10M	4	L3
	OR			
18	Derive an expression for the frequency of oscillations of an Astable multivibrator. Draw and explain the base and collector waveforms.	10M	4	L3
19	With the help of neat circuit diagram and truth table explain (i) RTL AND gate (ii) TTL AND gate	10M	5	L3
	OR			
20	Describe the working of 4 diode sampling gates and Mention the applications of sampling gates	10M	5	L3