



R20 Regulation *Subject code: 3P4DC*
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech IV Semester Supplementary Examinations, July 2024

PULSE AND DIGITAL CIRCUITS
(ECE)

Maximum Marks: 70

Date:23.07.2024 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	Bloom Tx
1	What is rise time? write the expression for it?	1	L2
2	Explain condition of RC circuit to work as differentiator.	1	L1
3	State and prove clamping circuit theorem.	2	L2
4	What do you mean by a regenerative comparator? Give an example.	2	L2
5	Define a diode forward recovery time and reverse recovery time.	3	L1
6	What is fall time of transistor switch.	3	L2
7	Define Multivibrator . How many types of Multivibrators are there.	4	L2
8	Define UTP and LTP of a Schmitt trigger.	4	L1
9	Define noise margin, propagation delay	5	L2
10	Give some applications of logic gates.	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)			
11	What is an attenuator? How can an uncompensated attenuator be modified as a compensated attenuator. Give the comparison between perfect compensation, under compensation and over compensation. (10M)	1	L3
OR			
12	Draw the output of the low pass RC circuit for different time constant to a) Pulse input b) Step input. (10M)	1	L3
13	a) With the help of neat circuit diagram and waveforms explain the working of positive & negative clamping circuit. (6M) b) State and prove clamping circuit theorem. (4M)	2	L3
OR			
14	a) Explain the working of positive biased clipper with neat circuit diagram and waveforms. (7M) b) State and prove clamping circuit theorem. (3M)	2	L2

15	a) For a common emitter amplifier, $V_{cc} = 15V$, $R_c = 1.5k\Omega$ and $I_B = 0.3 \text{ mA}$. Determine the value of $h_{fe}(\text{min})$ for saturation to occur, if R_c is changed to 500Ω will the transistor be saturated.? (5M) b) Explain the operation of transistor switching characteristics. (5M)	3	L4
OR			
16	With the help of a neat circuit diagram, explain the working of a transistor Current time base generator. (10M)	3	L3
17	a) What is hysteresis and explain the different methods for avoiding hysteresis in Schmitt trigger in detail. (5M) b) Draw the circuit diagram of Emitter-coupled monostable multivibrator and explain its operation in detail. (5M)	4	L4
OR			
18	a) Derive an expression for the frequency of oscillations of an Astable Multivibrator. With neat circuit diagram. (7M) b) Draw the circuit of a self-biased transistor binary. (3M)	4	L3
19	Describe the working of a 6-Diode sampling gate with necessary diagram & equations. (10M)	5	L3
OR			
20	Draw the circuit diagram of a positive 3 i/p NAND gate in TTL logic and explain its working. (10M)	5	L3