R17 Regulation *Subject code:* 1P4DB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Year II Semester Supplementary Examinations, July 2021

PULSE AND DIGITAL CIRCUITS

(ECE)

Maximum Marks: 70 Date:19.07.2021 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)**

1 Obtain the response of high pass RC circuit for a ramp input.
2 Define % tilt of RC circuit.
3 Write down the applications of clipping Circuit?
4 Draw Negative biased Negative clipper circuit.
5 Draw the piecewise linear diode characteristics.
6 When transistor acts as a switch?
7 Define multivibrator.
8 What is purpose of collector catching diodes?
9 What is difference between sampling gate and logic gate?
10 Define fan-out.

Part-B

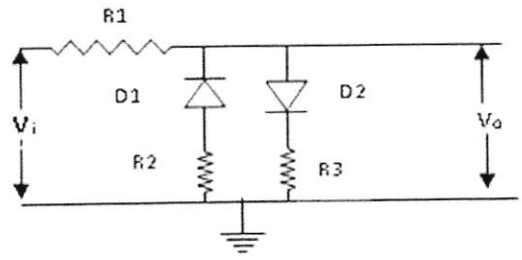
Answer All the following questions. **(10MX 5=50Marks)**

11 Draw the output of the low pass RC circuit for different time constant to: a) Pulse input b) Step input. [10M]

OR

12 Derive the expression for percentage tilt for a square wave output of RC high pass circuit. [10M]

13 a) Explain the operation of diode comparator. Briefly mention various applications of comparators. [5M]
b) Diodes are ideal diodes write transfer equation and draw the transfer characteristics. if V_i=40sinwt indicate all voltage levels. (R_1=R_2=R_3=1kΩ) [5M]



OR

14 a) List out the few differences between clipper and clamper with examples. [5M]
b) Define Clamping Circuit Theorem and explain its operation when the capacitor value is very large. [5M]

15 a) Demonstrate with neat diagrams the behavior of the diode as switch and define various switching times. [5M]
b) Draw the switch circuit using transistor and find the collector to emitter voltage when input is 0V and +5V(V_{CC}) [5M]

OR

16 Draw the circuit diagram of the relaxation oscillator using UJT and derive the expression for frequency of oscillations. [10M]

17 a) Draw the circuit diagram of Emitter-coupled monostable multivibrator and explain its operation in detail. [5M]
b) What is hysteresis and explain the different methods for avoiding hysteresis in Schmitt trigger in detail. [5M]

OR

18 Draw and explain the working principle of astable multivibrator circuit and also explain the merits and limitations of it. And also derive the expression for its pulse width. [10M]

19 Discuss in detail the sine wave frequency division with a sweep circuit. [10M]

OR

20 Draw and explain 2-input NAND gate with functional table. [10M]