R18 Regulation *Subject code:2P4DD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech IV Semester Regular/Supplementary Examinations, July 2021

LINEAR AND DIGITAL IC APPLICATIONS

(ELECTRONICS AND COMMUNICATION ENGINEERING)

Maximum Marks: 70 Date:04.08.2021 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 Make a comparison between ideal Op-amp and Practical Op-amp?
2 Define the Op-amp parameters: (i) Input offset voltage (ii) Input bias current
3 List the applications of 555 timer in monostable mode of operation.
4 Differentiate between active and passive filters?
5 Classify different types of ADCs?
6 Determine the output voltage produced by a 4-bit DAC, whose output voltage range is 0 to 10 V when the input binary number is 0110?
7 Design CMOS circuit for 2-input NAND gate?
8 Define propagation delay?
9 Classify types of ROMs?
10 Define dynamic RAM.

Part-B

Answer All the following questions. (5X10M=50Marks)

11 A. Draw Block diagram of Typical Op–Amp with Various Stages and explain in detail?
B. What is a three-terminal regulator? Draw a fixed voltage regulator circuit and explain its operation. [5+5]

OR

12 A. Explain the operation of integrator circuit using Op-amp?
B. List the ac characteristics of an op amp? Explain the procedure for measuring slew rate? [5+5]

13 A. Draw the circuit of an Astable multivibrator using 555 timer and derive the expression for its frequency of oscillations?
B. Design and explain the operation of first order wide band pass filter with its characteristics? [5+5]

OR

14 A. Explain the generation of sawtooth waveform using Op-amp?
B. Explain about 566 voltage-controlled oscillator? [5+5]

15 A. Explain Successive approximation type ADC?
B. Explain the operation of D/A converter with binary weighted resistors? [5+5]

OR

16 A. Draw the circuit diagram of dual slope integration A to D converter and state its advantages. Explain its operation with waveforms?
B. Explain counter type ADC? [5+5]

17 A. Explain the terms i) DC noise margin ii) Fan-out with reference to CMOS gate?
B. Explain the differences between TTL, ECL & CMOS logic family? [5+5]

OR

18 A. Explain about IC 74x148 priority encoder?
B. Explain IC 74×157 multiplexer? [5+5]

19 A. Describe about 74x74 D flip-flop?
B. Design a conversion circuit to convert a D flip-flop to J-K flip-flop? [5+5]

OR

20 A. Explain about RAM architecture?
B. Explain the operation of MOD-10 Counter using IC 74x163? [5+5]