R17 Regulation *Subject code: 1P4EA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech II Year II Semester Supplementary Examinations, September 2023

COMPUTER ORGANIZATION

(CSE)

Maximum Marks: 70 Date:13.09.2023 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.
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 Define an Effective Address.
2 What is the difference between hardwired control and micro-programmed control?
3 Write the 8086 instruction format.
4 Write about the purpose of Bus high enable pin in 8086?
5 Find out the machine code for following instructions.
A) ADC AX,BX B) MUL [SI+5] C) CALL 7000H
6 What is the role of stack in calling a subroutine and returning from the routine?
7 How floating point numbers are represented?
8 Show that adding B after the operation A + B + 1 restores the original value of A. What should be done with the end carry?
9 Define the cache.
10 What is the memory hierarchy?

Part-B

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

11 Explain micro program sequencer. [10]

OR

12 What is a pipeline register. What is the use of it? Explain in detail. [10]

13 Explain in detail the addressing modes of 8086 with examples. [10]

OR

14 a) Give a note on flag register in 8086.
b) Draw the minimum mode pin diagram for 8086. [5+5]

15 a) Using 8086 instructions write recursive program to find the factorial of a number.
b) Convert BCD number to equivalent base-F number using 8086 instruction set. [5+5]

OR

16 a) What is stack? Explain push and pop instructions using stack?
b) Write a program to change a sequence of sixteen 2-byte numbers from ascending to descending order. The numbers are stored in the data segment. Store the new series at addresses starting from 6000 H. Use LIFO property of stack. [5 + 5]

17 Prove that the multiplication of two n-digits numbers in base r gives a product no more than 2^n digits in length. Show that this statement implies that no overflow can occur in the multiplication operation. [10]

OR

18 Explain with an example Booth's Algorithm for multiplication of signed 2's complement numbers. [10]

19 a) Explain the Set-associative mapping in detail.
b) A block set-associative cache memory consists of 128 blocks divided into four block sets. The main memory consists of 16,384 blocks and 256 eight bit words. How many bits are required for addressing the main memory? How many bits need to represent the TAG, SET and WORD fields? [5 + 5]

OR

20 It is necessary to transfer 256 words from a magnetic disk to a memory section starting from 1230. The transfer is by means of DMA.
a) Give the initial values that the CPU must transfer to the DMA controller.
b) Give step by step account of the action taken during the input of the first two words. [10]