

PD-594  
(563) M.Sc. INFORMATION TECHNOLOGY (FIRST SEMESTER)  
Examination Dec.-2020  
Compulsory/Optional  
Paper-III

Name/Title of Paper- Computer System Architecture

Time: Three hours

Maximum Marks-80

Note: Answer from both the section as directed.

**SECTION-A**

1. Answer the following very short-answer type questions : 1X10
- (a) Define shift register.
  - (b) What is Excess 3 code?
  - (c) What is timing and control?
  - (d) What is shift micro operation?
  - (e) Define assembler.
  - (f) Describe parallel processing.
  - (g) Write input output interface.
  - (h) What is instruction cycle?
  - (i) Write transfer modes?
  - (j) Define ROM.

**SECTION-B**

2. Answer the following questions: 2X5
- (a) What do you mean by decoder and multiplexer?
  - (b) Define Register transfer language.
  - (c) Define Stack organization.
  - (d) What is Programmed Input output?
  - (e) What do you mean by direct mapping?

**SECTION-C**

Answer all questions: 12X5

Unit-I

3. (a) Simplify the following Boolean function using four variable K-map  
 $F(w, x, y, z) = \sum (3, 7, 11, 13, 14, 15)$
- (b) convert the following numbers to indicated base.
- I.  $(10101.010)_2$  to  $(\dots\dots\dots)_{10}$
  - II.  $(6834)_{10}$  to  $(\dots\dots\dots)_{16}$
  - III.  $(56.50)_{10}$  to  $(\dots\dots\dots)_8$
  - IV.  $(C1A2)_{16}$  to  $(\dots\dots\dots)_2$

OR

- (a) Show how a JK flip flop can be converted to:
  - i. T flip-flop
  - ii. D flip-flop
- (b) Explain the following.
  - i. 4 bit register
  - ii. Half and Full adder

**Unit-II**

4. Explain different Micro-operation with suitable example.

**OR**

- (a) Explain the concept of bus and memory transfer.
- (b) What is interrupt? Discuss input-output and interrupt.

**Unit-III**

5. (a) Describe general register organization.  
(b) What is the role of pipelining in CPU design?

**OR**

- (a) Describe and differentiate RISC and CISC.
- (b) Define and state different addressing modes.

**Unit-IV**

6. (a) define and describe DMA. Explain it with suitable example and diagram.  
(b) Write algorithm for division and multiplication.

**OR**

Write notes on.

- (i) Input output processor
- (ii) Asynchronous data transfer

**Unit-V**

7. (a) Differentiate dynamic and static RAM.  
(b) Explain the concept of cache memory organization.

**OR**

Write notes on.

- (iii) Virtual Memory
- (iv) Associative Memory
- (v) Draw memory hierarchy