S-761

Total Pages : 5 **Roll No. ----------**

MIT(CS)-404

Computer Organization and Architecture

M.Sc. Cyber Security (MSCCS)

4th Semester, Examination 2022(Dec.)

Time: 2 Hours Max. Marks: 70

Note : This paper is of Seventy (70) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

Section – A

(Long Answer – type questions)

Note: Section 'A' contains Five (05) long-answer-type questions of Nineteen (19) marks each. Learners are required to answer any two (02) questions only.

[2 x 19 = 38]

P.T.O.

Q.1. Discuss the following in detail along with the examples and diagrams of each: (Marks are mentioned against each question)

a. Explain the Basic Computer Model and its different units. (4 Marks)

b. Perform the following conversions:

i. $(47)_8 = (?)_2$ (3 Marks)

ii. $(111000)_2 = (?)_{10}$ (3 Marks)

iii. $(CA)_{16} = (?)_8$ (3 Marks)

iv. $(5.25)_{10} = (?)_8$ (3 Marks)

c. Discuss the Representation of Signed Integer (3 Marks)

Q.2. Discuss the following: (Marks are mentioned against each question)

a. Discuss 3 input and 2 output Full Adder in detail with the working, circuit diagram, block diagram etc. (10 Marks)

b. Discuss Binary Substractor in detail with the working, circuit diagram, block diagram etc. (9 Marks)

Q.3. Discuss the following in detail: (Marks are mentioned against each question)

a. Discuss LRU Replacement Policy for Cache Memory with complete example demonstrating the same. (9.5 Marks)

b. Discuss FIFO Replacement Policy for Cache Memory with complete example demonstrating the same. (9.5 Marks)

Q.4. Discuss the following in detail along with the examples of each: (4.75 Marks each, 4.75 x 4 = 19)

a. Swapping

b. Fixed Size Partitioning

c. Variable Size Partitioning

d. What are the simple ways to remove the problem of memory wastage?

Q.5. Discuss the following in detail along with the examples of each: (4.75 Marks each, 4.75 x 4 = 19)

a. Main Memory

b. Secondary Memory

c. CPU

d. Input and Output Devices

P.T.O.

Section – B

(Short-answer-type questions)

Note: Section 'B' contains Eight (08) short-answer-type questions of Eight (08) marks each. Learners are required to answer any Four (04) questions only.

[4 x 8 = 32]

Q.1. Differentiate between an analog and a digital signal.

Q.2. Discuss various generations of computer architecture with the technologies used in each generation.

Q.3. Discuss 2 inputs And Gate and Or Gate with Truth tables of each.

Q.4. Discuss the following in detail: (Marks are mentioned against each question)

a. CPU Register (1 Mark)
b. Cache Memory with example (2 Marks)
c. Removable Media with example (2 Marks)
d. PROM (1 Mark)
e. EPROM (1 Mark)
f. EEPROM (1 Mark)

Q.5. Discuss various defined states of a process with block diagram.

Q.6. Discuss Paging with diagram and example.

Q.7. Discuss Translation Lookaside Buffer (TLB) with block diagram and example.

Q.8. List and explain the important design issues for instruction set design.

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