

# Patuakhali Science and Technology University

Department of Computer Science and Information Technology

B.Sc. Engg.(CSE) Level-3 Semester 1 Final Examination of Session 2020-21, January-June-2023

Course Code: CIT 311 Course Title: Microprocessor and Assembly Language

Credit Hour: 3.0 Full Marks: 70 Duration: 3 Hours.

[Figures in the right margin indicate full marks. Split answering of any question is not recommended. Write the full question number e.g. I(B) (i) before the answer paragraph]  
[Answer any 5 of the following questions]

- 1 (a) Who developed the Analytical Engine? Draw the block diagram of a microprocessor-based computer system and show the 8086 architecture. 03
- (b) Describe the function and purpose of each program-visible register in the 8086 microprocessors. Detail the flag register and the purpose of each flag bit. 04
- (c) Describe how memory is accessed using real mode memory-addressing techniques. 03
- (d) What is the flat mode memory system? Detail the operation of the memory-paging mechanism. 04
- 2 (a) What assembly language directive indicates the start of the CODE segment? Explain the operation of each data-addressing mode. 03
- (b) Illustrate the operation of the MOV AX,[BX] instruction when BX = 1000H and DS = 0100H. Note that this instruction is shown after the contents of memory are transferred to AX. 04
- (c) What is wrong with a MOV [BX],[DI] instruction? Suppose that DS = 1000H, SS = 2000H, BP = 1000H, and DI = 0100H. Determine the memory address accessed by each of the following instructions, assuming real mode operation:  
i. MOV AL,[BP+DI]  
ii. MOV CX,[DI] 03
- (d) Describe the sequence of events that place data onto the stack or remove data from the Stack. Illustrate the PUSH and POP instructions: (a) PUSH BX places the contents of BX onto the stack; (b) POP CX removes data from the stack and places them into CX. both instructions are shown after execution. 04
- 3 (a) What is the difference between an intersegment and intrasegment jump? If a near jump uses a signed 16-bit displacement, how can it jump to any memory location within the current code segment? 03
- (b) Define opcode. Draw the formats of the 8086 Core2 instructions. 04  
(i) The 16-bit form and (ii) the 32-bit form.
- (c) Write down the purpose of direction flag. Convert MOV DL, [DI] instruction to its machine language form. 03
- (d) What is wrong with a MOV CS, AX instruction? Show the shift and rotate instructions in details. 04
- 4 (a) What is the purpose of ADC (addition-with-carry) instruction? Illustrate and describe, how the carry flag (C) links the two 16-bit additions into one 32-bit addition? 03
- (b) What is wrong with the INC [BX] instruction? What is the difference between the NOT and the NEG instruction? What happens if AH = 02H and DL = 43H when the INT 21H instruction is executed? 04
- (c) Use both conditional and unconditional jump instructions to control the flow of a program. 03  
Illustrate a near jump that adds the displacement (0002H) to the contents of IP.
- (d) What is interrupt service procedure (ISP)? Use the call and return instructions to include procedures in the program structure. 04

5. (a) What is n bit processor? Distinguish between 8085 and 8086. 1+2

(b) i) "Computer works on 0 and 1"- Explain this statement. 2+2

ii) Describe IN and OUTS instruction with respect to 8086.

(c) Define peripheral. How can we determine any device as peripheral or not? Are DMA and coprocessors peripheral? 3

(d) Suppose you would like to transfer data from your disk drive to a flash drive by using DMA controller. Explain whole procedure in details to complete the activities. 1.5+2.5

ii) Explain handshaking. Describe MOV CS:[AX], DI instructions with respect to 8086.

6. (a) Distinguish between microprocessor and microcontroller. Give the features of 8051. 2+1

(b) Shortly describe 82C55 PPI. How can it be programmed? 2+2 5

(c) Why is 8087 coprocessor used? How does the coprocessor interface with the main processor? 1.5+1.5

(d) i) "Different CPU model or brand have different operational capability" Explain this statement. 3+1

ii) Give the benefits of condition codes.

# Patuakhali Science and Technology University

B.Sc. Engg. (CSE) Level-3, Semester-2 Final Examination-2023 (January-June)

Course Code: CIT-313 Course Title : Computer Organization and Architecture

Credit Hour : 3.0 Session: 2020-2021 Full Marks:70 Duration: 3 Hours

*[Figure in the right margin indicates full marks. Split answering of any question is not recommended.]*  
*Answer any 5 of the following questions.*

- a) Define Computer Organization and Computer Architecture. What is the difference between them? 2  
 b) What are the key concepts of Von Neumann architecture? Define hardware and software programming. 5  
 c) Define Interrupts. What are the approaches for handling multiple interrupts? Illustrate and explain. 5  
 d) What are the steps of the instruction cycle for the instruction "SUB B, A," which stores the difference of memory locations B and A into location A? 2

- a) Define computer instructions and describe their types. 3  
 b) Where Zero-address instructions are applicable and how? Explain. 2  
 c) What are logical, arithmetic, and cyclic (rotate) shifts? Apply a 4-bit logical right shift, logical left shift, arithmetic right shift, arithmetic left shift, right rotate, and left rotate to the bits 10100110. 5  
 d) What is a procedure, and why is it necessary? Illustrate and explain the procedure mechanism. 4

- a) What is an I/O module, and why is it necessary? 3  
 b) What are the differences among Programmed I/O, Interrupt-driven I/O and direct memory access (DMA)? Describe with flowcharts. 5  
 c) How does a DMA module transfer control to the processor after its task? Does it interrupt the processor? 2  
 d) Define cycle stealing in DMA. 2  
 e) Give the features of CISC and Corei7 in the perspective of computer architecture and organization. 4

- a) A hypothetical machine has 6 instructions 5

1110=Load AC from memory	1011=Sub memory from AC
0001=Store AC to memory	0110=Store AC to I/O
0101=Add to AC from memory	1101=Load AC from I/O

In this case, the 12-bit address identifies a particular I/O device. Show the program execution steps (using 16 bit instruction format where prefix 4 bits for opcode) for the following program.

- i. Load AC from device 99.  
ii. Add contents of memory location 555

Store AC to memory location 666.

- b) Explain RAID 2. Mention the characteristics of semiconductor memories (4 types). 2+2  
 c) Enlist different addressing mode. 2+3  
 d) Assume numbers are represented in 6-bit two's complemented representation. Show calculation of the following.

- a) -A+B (Hex)  
b) -33-17 (Decimal)

$$\begin{array}{r} 110001 \\ 110010 \end{array}$$

- 5 a) Consider a machine with a byte addressable main memory of  $2^{16}$  bytes and block size of 8 bytes. Assume that a direct mapped cache consisting of 32 lines is used with this machine. 5

- i. How is a 16-bit memory address divided into tag, line number, and byte number?  
ii. Into what line would bytes with each of the following addresses be stored?

0001 0001 0001 1011  
1101 0000 0001 1101

- iii. Suppose the byte with address 0001 1010 0001 1010 is stored in the cache. What are the addresses of the other bytes stored along with it?

- iv. How many total bytes of memory can be stored in the cache?

- b) Calculate the multiplication operation using Booth's algorithm for Q = -17 (multiplicand) and M = 16 (multiplier). 4

- i. Define access time and cycle time.

- ii. Distinguish among sequential, direct and random memory access.

$$\begin{array}{r} 0 0 0 \\ 0 1 1 \\ \times 1 0 0 \\ \hline 0 0 0 \\ 0 1 1 \\ 1 0 0 \\ \hline 1 3 1 - 5 \end{array}$$

- 6 a) i. Explain the responsibility of memory management unit in computer system. 2+3  
ii. Assume a pipeline with 4 stages: fetch instruction (FI), decode instruction and calculate address (DA), fetch operand (FO), and execute (EX). Draw a timing diagram for instruction pipeline operation for a sequence of 9 instructions, in which the fifth instruction is a branch that is taken and in which there is no data dependencies.
- b) Describe the structure of SRAM. Give the features of SRAM and DRAM. 2+2
- c) Define virtual address and physical address space. Explain page miss mechanism in virtual memory system. 2+3

# Patuakhali Science and Technology University

B.Sc. Engg. (CSE) 5<sup>th</sup> Semester (Level-3, Semester-I) Final Examination January-June 2023

Course code: CIT-315

Course Title: Artificial Intelligence

Session: 2020-21

Credit hour: 3.00

Full marks: 70

Duration: 3 hours

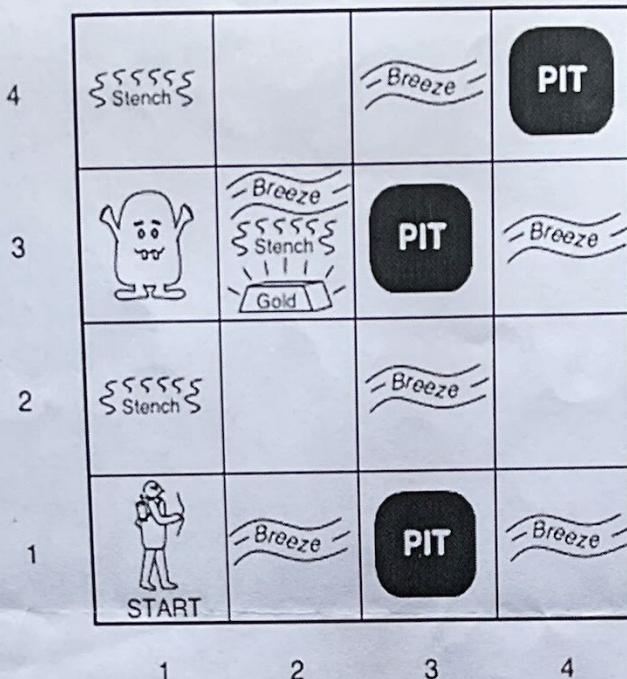
[Figures in the right margin indicate full marks. Split answering of any question is not recommended]

Answer any 5 of the following questions.

1. (a) What is a problem-solving agent? Write the steps of problem solving. Given an example of a typical instance with an 8-puzzle problem, including the start state and goal state. 3  
(b) How does an algorithm's performance evaluate? List the four ways for evaluating the performance of the algorithm. Explain the iterative deepening depth-first search, IDS, algorithm with its performance evaluation. Compare the IDS and BFS algorithms for generating the total number of nodes if  $b = 10$  and  $d = 5$ . 6  
(c) What is the heuristic function of informed search strategy? How to minimize the total estimated solution cost using the best-first search, A\* search, algorithm. Show the heuristic must be consistent for optimal solution in A\* search algorithm. 5
2. (a) Why do we use local search strategy to address optimization problem? What are the key advantages of local search algorithms? Demonstrate a one-dimensional state-space landscape in which elevation corresponds to the objective function. 5  
(b) What are the reasons, problems, of the hill-climbing algorithm for getting stuck? How to escape these problems using many variants of hill-climbing algorithm? 2+2=4  
(c) Write the limitation of the local beam search. Illustrate the genetic algorithm for digit strings representation of 8-queen states. 1+4=5
3. (a) Define constraint satisfaction problem, CSP. Formulate a map coloring problem of states and territories of Australia, which can be viewed as a CSP problem. The goal is to assign colors to each region so that no neighboring regions have the same color. The map-coloring problem represented as a constraint graph.  
Formulate a tree-structured CSP. How to solve the tree-structured CSP using the approach based on tree decomposition. 3+3=6  
(b) What is Bayes' rule? Compute the patient's probability of having the liver disease if they are an alcoholic. "Being an alcoholic" is the test (kind of like a litmus test) for liver disease. Past data tells you that 10% of patients entering your clinic have liver disease and 5% of the clinic's patients are alcoholics. You might also know that among those patients diagnosed with liver disease, 7% are alcoholics. 3  
(c) Define conditional independence. Derive a naïve Bayes model, Bayesian classifier, based on the dentistry example. 2+3=5
4. (a) Define the following terminologies in your own words: Supervised learning, K-fold cross validation, and Empirical loss. 3  
(b) How to compute entropy and information gain from attributes in a dataset for building decision tree as a classifier? Illustrate the learning curve for the decision tree algorithm on the restaurant dataset. 3+3=6  
What is a univariate linear regression? How to minimize the loss using gradient descent for fitting linear regression?  
(c) Briefly mention the major applications of artificial neural network. Demonstrate a simple mathematical model for a neuron. State the back-propagation algorithm for learning in a multilayer network. 5
5. (a) What is AI? Define in your own words: (a) intelligence, (b) artificial intelligence, (c) agent, (d) rationality, (e) logical reasoning. 3  
(b) i. There are well-known classes of problems that are intractably difficult for computers, and other classes that are provably undecidable. Does this mean that AI is impossible? 4

- ii. "Surely computers cannot be intelligent—they can do only what their programmers tell them." Is the latter statement true, and does it imply the former?

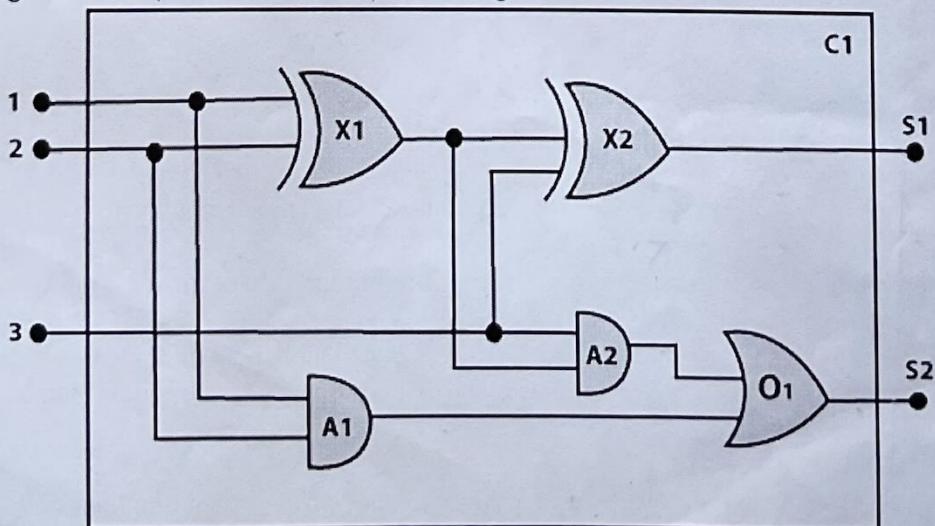
(c) What is propositional logic? Drives a propositional logic from Wumpus world is a cave consisting of rooms connected by passageways. Prove that Wumpus is in (1,3) position.



(d) Describe the following inference rules for propositional logic. 2

- i. Modus Ponens
- ii. Hypothetical Syllogism

6. (a) Define autonomy. Write an essay on the relationship between evolution and one or more of autonomy, intelligence, and learning. 2
- (b) How do the components of agent programs work? Write pseudocode agent programs for the goal-based and utility-based agents. 2
- (c) Define quantifier. Describe about universal and existential quantifiers with example. 2
- (d) Translate the following sentences into first order logic. 3
- i. Some boys play cricket.
  - ii. Not all students like both Mathematics and Science.
  - iii. Only one student failed in Mathematics.
  - iv. Every man respects his parent.
  - v. All birds fly.
  - vi. Someone is liked by everyone
- (e) What is knowledge-engineering? Develop a knowledge base which will allow us to reason about digital circuit (One-bit full adder) which is given below. 5



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Final Examination of B. Sc. Engineering in CSE Level: 3 Semester: I Session: 2020-2021

Course Code  
CCE-311

Course Title  
Numerical Methods

January-June-2023

Credit: 03  
Time: 03 Hr  
Marks: 70

**Answer any 05 out of 06 Questions (Split answers are highly discouraged)**

- 1. A** In a market survey three commodities A, B and C were considered. In finding out the index number some fixed weights were assigned to the three varieties in each of the commodities. The table below provides the information regarding the consumption of three commodities according to the three varieties and also the total weight received by the commodity. Use Cramer's Rule to find the weights assigned to the three varieties. 7

Commodity Variety	Variety			Total Weight
	I	II	III	
A	1	2	3	11
B	2	4	5	21
C	3	5	6	27

- B** A total of 50000 Taka was invested in two accounts. One account earned  $4 \frac{3}{4} \%$  annual interest and the other earned  $6 \frac{1}{2} \%$  annual interest. If the total interest for one year was 8500.50 taka. The task is to determine how much money was invested in each account using the Gauss-elimination method. 7

- A** Given  $dy/dx = 1+x^2y$  and  $y(0)=1$ . Calculate  $y(0.1)$ ,  $y(0.2)$  using Picard's method. 7  
**B** Given  $dy/dx = \frac{1}{2}(x+y)$ ,  $y(0)=1.5$ ,  $y(0.5)=1.636$ ,  $y(1.0)=2.595$ ,  $y(1.5)=3.968$ . Find  $y(2)$  by Milne's method. 7

- A** Use bisection method to solve the following problem up to approximate percent relative error  $\epsilon_a \leq 0.422$ . 7

$$f(c) = \frac{667.38}{c} (1 - e^{-0.146343c}) - 40$$

- B** Use the Gauss-Jordan technique to solve the system. 7
- $$\begin{aligned} 0.3x_1 - 0.1x_2 - 0.2x_3 &= 7.85 \\ 0.1x_1 + 7x_2 - 0.3x_3 &= -19.3 \\ 0.3x_1 - 0.2x_2 + 10x_3 &= 71.4 \end{aligned}$$

- A** Implement the point-slope strategy to numerically integrate  $dy/dx = -2X^3 + 12X^2 - 20X + 8.5$  from  $X=0$  to  $X=4.0$  with a step size 1.0. The initial condition at  $X=0$  is  $Y=1$ . 7

- B** Demonstrate the concepts of convergence and divergence through an appropriate example using the iteration method. 7

- A** Use the secant method to estimate the root of  $f(x) = e^{-x} - x$ . Start with initial estimates of  $x_{-1} = 0$  and  $x_0 = 1.0$ . The true root is 0.56714329. Iterate until  $\epsilon_t = 0.0048\%$ . 7  
**B** Fit a second-order polynomial to the data of the following table. Also find out standard error  $S_{yx}$ . 7

$x_i$	$y_i$
1	7.7
2	13.6
3	27.2

- A** Apply Cholesky decomposition to the following symmetric matrix. 7

$$[A] = \begin{pmatrix} 6 & 15 & 55 \\ 15 & 55 & 225 \\ 55 & 225 & 979 \end{pmatrix}$$

$$L_{ki} = \frac{a_{ki}}{\sqrt{a_{ii} - \sum_{j=1}^{i-1} L_{ij}^2}}$$

$$U_{ki} = a_{ki} - \sum_{j=1}^{i-1} L_{kj} U_{ji}$$

$$L_{kk} = \sqrt{a_{kk} - \sum_{j=1}^{k-1} L_{kj}^2}$$

- B** Use the Newton-Raphson method to estimate the root of  $f(x) = e^{-x} - x$ , employing an initial guess of  $x_0 = 0$ . Iterate until  $\epsilon_t$  less than  $10^{-8} \%$ . 7

$$2u = u^2 + \frac{u}{7} \quad u^n = q_u + v^{n-1}$$

$$q_u = u^n + u$$

$$\begin{matrix} 2 & -1 & 2 \\ 1 & 4 & 1 \end{matrix}$$

Dept. of Computer and Communication Engineering

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**Final Examination of B. Sc. Engineering in CSE Level: 3 Semester: I Session: 2020-2021**

**Course Code**      **Course Title**      January-June 2023

CCE 313      Computer Network

**Credit:** 03

**Time:** 03 Hr

**Marks:** 70

Answer any 05 out of 06 Questions (Split answers are highly discouraged)

- ✓ [A.] What distinguishes a host from an end system? Provide examples of various end systems. Would a web server be considered an end system? How are end systems related to hosts, and what distinguishes clients from servers within this context? 3
- [B.] HFC, DSL, and FTTH are all used for residential access. For each of these access technologies, provide a range of transmission rates and comment on whether the transmission rate is shared or dedicated. 2
- [C.] Suppose users share a 2 Mbps link. Also suppose each user transmits continuously at 1 Mbps when transmitting, but each user transmits only 20 percent of the time. 4
- a. When circuit switching is used, how many users can be supported?
- b. For the remainder of this problem, suppose packet switching is used. Why will there be essentially no queuing delay before the link if two or fewer users transmit at the same time? Why will there be a queuing delay if three users transmit at the same time?
- c. Find the probability that a given user is transmitting.
- d. Suppose now there are three users. Find the probability that at any given time, all three users are transmitting simultaneously. Find the fraction of time during which the queue grows.
- [D.] In this scenario, we are considering the transmission of real-time voice from Host A to Host B over a packet-switched network using VoIP. Host A converts the analog voice signal into a digital bit stream at a rate of 64 kbps. Host A then collects the bits into packets, each containing 56 bytes. There is a single link between Hosts A and B with a transmission rate of 10 Mbps and a propagation delay of 10 milliseconds. As soon as Host A forms a packet, it immediately sends it to Host B. Upon receiving the entire packet, Host B converts the packet's bits back into an analog signal. What is the total time that elapses from the moment a bit is created (from the original analog signal at Host A) until it is decoded (as part of the analog signal at Host B)? 3
- [E.] What are an application-layer message, a transport-layer segment, a network-layer datagram, and a link-layer frame? 2

- 2 ✓ [A.] A router receives a packet with the destination address 201.24.67.32. Show how the router finds the network address of the packet. 2
- [B.] What is CIDR, and how can you extract block information from a given IP address? 3
- [C.] Assume a company has three offices: Central, East, and West. The Central office is connected to the East and West offices via private, point-to-point WAN lines. The company is granted a block of 64 addresses with the beginning address 70.12.100.128/26. The management has decided to allocate 32 addresses for the Central office and divides the rest of addresses between the two other offices. Finally the the block with its ip address 7936
- [D.] An ISP is granted a block of addresses starting with 150.80.0.0/16. The ISP wants to distribute these blocks to 2600 customers as follows: remaining address + blocks 5
- a. The first group has 200 medium-size businesses; each needs approximately 128 addresses. 31
- b. The second group has 400 small businesses; each needs approximately 16 addresses. 30 x 255
- c. The third group has 2000 households; each needs 4 addresses. 10 255 64

- ✓ [A.] In classless addressing, we know the first and the last address in the block. Can we find the prefix length? If the answer is yes, show the process and give an example. 3
- [B.] We noted that network layer functionality can be broadly divided into data plane functionality and control plane functionality. What are the main functions of the data plane? Of the control plane? 3
- [C.] Compare and contrast the properties of a centralized and a distributed routing algorithm. Give an example of a routing protocol that takes a centralized and a decentralized approach. 3
- [D.] Consider the following network. With the indicated link costs, use Dijkstra's shortest-path algorithm to compute the shortest path from x to all network nodes. Show how the algorithm works by computing a table and draw also the shortest path graph. 5

- 4 [A.] TCP opens a connection using an initial sequence number (ISN) of 14,534. The other party opens the connection with an ISN of 21,732. 5
- i. Show the three TCP segments during the connection establishment.

ii. Show the contents of the segments during the data transmission if the initiator sends a segment containing the message "Hello dear customer" and the other party answers with a segment containing "Hi there seller."

iii. Show the contents of the segments during the connection termination.

[B.] Show the entries for the header and pseudoheader of a UDP user datagram that carries a message from a Daytime client (153.18.8.105) to a Daytime server (171.2.14.10). Consider the data message "TESTING". Choose the correct well-known port number and 1087 as ephemeral port number. Calculate the checksum value. Show the UDP packet ready to be sent.

[C.] In a send window,  $S_f = 401$  and  $S_n = 701$ . If window size is 1,000 bytes, show the send window before and after the station receives an ACK segment with  $\text{ackNo} = 601$  and  $\text{rwnd} = 700$ . Ignore congestion control. Does this situation mean shrinking the window?

[D.] Illustrate the "half-close" case in TCP.

5 [A.] A DNS client is looking for the name of the computer with IP address 132.1.17.8. Show the query message. Also show the response message sent by the server to this query. Encapsulate the query and response message in a UDP user datagram.

[B.] Consider distributing a file of  $F = 20$  Gbits to  $N$  peers. The server has an upload rate of  $us = 30$  Mbps, and each peer has a download rate of  $di = 2$  Mbps and an upload rate of  $u$ . For  $N = 10, 100$ , and  $1,000$  and  $u = 300$  Kbps, 700 Kbps, and 2 Mbps, prepare a chart giving the minimum distribution time for each of the combinations of  $N$  and  $u$  for both client-server distribution and P2P distribution.

[C.] How does SMTP mark the end of a message body? How about HTTP? Can HTTP use the same method as SMTP to mark the end of a message body? Explain.

[D.] What is the function of MIME? A sender sends a JPEG message. Show the MIME header.

6 [A.] Obtain the HTTP/1.1 specification (RFC 2616). Answer the following questions:

i. Explain the mechanism used for signaling between the client and server to indicate that a persistent connection is being closed. Can the client, the server, or both signal the close of a connection?

ii. What encryption services are provided by HTTP?

iii. Can a client open three or more simultaneous connections with a given server?

iv. Either a server or a client may close a transport connection between them if either one detects the connection has been idle for some time. Is it possible that one side starts closing a connection while the other side is transmitting data via this connection? Explain.

[B.] Why do we need an RRQ or WRQ message in TFTP but not in FTP? Show the encapsulation of an RRQ message and a WRQ message in separate UDP user datagram. Assume the file name is "Report" and the mode is ASCII. What are the size of UDP datagrams?

[C.] Consider a DASH system for which there are  $N$  video versions (at  $N$  different rates and qualities) and  $N$  audio versions (at  $N$  different rates and qualities). Suppose we want to allow the player to choose at any time any of the  $N$  video versions and any of the  $N$  audio versions.

i. If we create files so that the audio is mixed in with the video, so server sends only one media stream at given time, how many files will the server need to store (each a different URL)?

ii. If the server instead sends the audio and video streams separately and has the client synchronize the streams, how many files will the server need to store?

[D.] What is the Apache Web server? How much does it cost? What functionality does it currently have?

**5<sup>th</sup> Semester (Level-3, Semester-I), Mid-Term Examination of B.Sc. Engg. (CSE)**  
 Course Code: CIT-311 Course Title: Microprocessor and Assembly Language  
 Credit Hour: 3.0 Full Marks: 15 Session: 2020-2021 Time: 01 Hour

- |   |  |    |
|---|--|----|
| 1 | Define opcode. Describe the fetch-execute cycle of a microprocessor with an example.   | 03 |
| 2 | Suppose, AX contains 5ABCh and BX contains 21FCh. Find the difference of AX and BX by using complementation and addition operation.                        | 03 |
| 3 | What are data registers? Write down the special features of 80286 $\mu$ P over 8086 $\mu$ P.   | 03 |
| 4 | What is memory segment? Translate the following high level code into equivalent assembly code. $A = B - 2 \times A$  | 03 |
| 5 | What is flag register? How does flag affect on MOV operation? Show, how the instruction ADD AL,BL affect on flags? where AL contains 80h, BL contains 80h. | 03 |

Mid Term Examination of B. Sc. Engg. (CSE) January-June 2023  
 Course Title: Computer Organization and Architecture Course Code : CIT-313  
 Marks: 15

Time: 40 Min

N.B. Answer the following questions. (Split answers are highly discouraged)

- |   |   |    |
|---|---|----|
| 1 | Define IAS computer. Illustrate and describe the general structure of the IAS computer.   | 04 |
| 2 | What is the purpose of registers? Explain words with respect to IAS computer.   | 02 |
| 3 | Define opcode.  | 01 |
| 4 | How does the cache memory improve the performance of computer system? Explain the complexity for using cache.   | 04 |
| 5 | Suppose main memory size is 1 GB, the cache memory size is $\beta$ MB and the block size is 8 bytes. Explain the relationship between the cache and main memory with appropriate diagram. | 03 |
| 6 | Why RAM so called?  | 01 |

**Patuakhali Science and Technology University**  
**Department of Computer Science and Information Technology**  
 5<sup>th</sup> Semester (Level-3, Semester-I), Midterm Examination of B.Sc. Engg.(CSE), July-Decem./2022  
 Session: 2012-21  
 Course Code: CIT-315 Course Title: Artificial Intelligence  
 Full Marks: 15 Duration: 1 hour

- |    |   |    |
|----|---|----|
| 1. | Write the steps in problem solving. Mention the four ways to evaluate an algorithm's performance. Compare the uninformed search strategies in terms of the evaluation criteria.               | 05 |
| 2. | What is a heuristic function? Let, you have a graph with heuristic values, show the heuristic must be consistent for optimal solution in A* search algorithm.                                 | 03 |
| 3. | Define agent. Describe how agents interact with environments through sensors and actuators. What are softbots? Write down the PEAS description of the task environment for an automated taxi. | 04 |
| 4. | Illustrate the schematic diagram of a simple reflex agent. Write down the algorithm, how acts according to a rule whose condition matches the current state, as defined by the percept.       | 03 |

**Patuakhali Science and Technology University**  
 5<sup>th</sup> Semester (Level-3, Semester-I), Mid Examination of B.Sc. Engg. (CSE), January-June: 2023  
 Course Code: CCE-313 Course Title: Computer Networks  
 Credit Hour: 3.0 Full Marks: 15

- |   |   |  |
|---|---|--|
| 1 | Find the <u>netid</u> and the <u>hostid</u> of the following IP addresses:<br>a. 114.34.2.8      b. 132.56.8.6      c. 208.34.54.12      d. 251.34.98.5   | 127<br>222 - 223<br>224 - 239<br>240 - 255 |
| 2 | An address in a block is given as 200.11.8.45. Find the number of addresses in the block, the first address, and the last address. Also draw the diagram.   | 3  |
| 3 | Draw a simple computer network diagram that includes the following components: a hub, a switch, and a router. Label each component and illustrate how they connect to various devices such as computers, servers, and other network devices. Explain the role of each component in the network. | 3  |
| 4 | List five nonproprietary Internet applications and the application-layer protocols that they use.   | 2  |
| 5 | Explain the mechanism used for signaling between the client and server to indicate that a persistent connection is being closed. Can the client, the server, or both signal the close of a connection?  | 2  |
| 6 | Describe how installing a proxy server can reduce the delay in receiving a requested object.  | 3  |

- 1 A Use the Gauss-Elimination technique to solve the system.

$$3x_1 - 0.1x_2 - 0.2x_3 = 7.85$$

$$0.1x_1 + 7x_2 - 0.3x_3 = -19.3$$

$$0.3x_1 - 0.2x_2 + 10x_3 = 71.4$$

- B Derive equation for linear regression and find out  $a_0$  and  $a_1$ .

# Patuakhali Science and Technology University

## Department of Computer Science and Information Technology

5<sup>th</sup> Semester (Level-3, Semester-I), Final Examination of B.Sc. Engg.(CSE), January-June/2023, Session: 2019-20

Course Code: CIT-312 Course Title: Microprocessor and Assembly Language Sessional

Full Marks: 70 Duration: 2.50 Hours

D:2002013

eg:09530

[Figures in the right margin indicate full marks]

*Answer all the following questions.*

1. Use 8086 Emulator to write Assembly Language code solve the marked question.
  - i. Write a program to add two numbers as well as form a Fibonacci series. 10
  - ii. Write a program to find the factorial of a number 10
2. iii. Write a program to find the sum of a series 10
3. iv. Write a program to find the maximum of three numbers 10
4. v. The following algorithm may be used to carry out multiplication of two positive numbers M and N by repeated addition:  
initialize product to 0  
REPEAT  
add M to product  
decrement N  
UNTIL N = 0 10

5. i. Write the converted machine code, corresponding hex code, and mention the inputting procedure into KIT (like AD --> DA-->...) for the given assembly language code segment.

MOV AX, 0504H  
MOV CX,05H  
SUB AX, CX

At KIT implementation: First write the value of all register before give your hex value to KIT.  
After giving all of your instruction, write all the values of registers and mention the result.

- ii. Write the converted machine code, corresponding hex code, and mention the inputting procedure into KIT (like AD --> DA-->...) for the given assembly language code segment.

MOV BX, 0B0AH  
MOV AX, 0AH  
ADD BX, AX

At KIT implementation: First write the value of all register before give your hex value to KIT.  
After giving all of your instruction, write all the values of registers and mention the result.

- iii. Write the converted machine code, corresponding hex code, and mention the inputting procedure into KIT (like AD --> DA-->...) for the given assembly language code segment.

MOV BX, 451H  
MOV AX,02H  
MUL BX

At KIT implementation: First write the value of all register before give your hex value to KIT.  
After giving all of your instruction, write all the values of registers and mention the result.

6. Microcontroller Based System Design Project 30
7. Viva-Voce 15

4+3+4+4=15

4, 4, 5, 4

**Patuakhali Science and Technology University**  
**Department of Computer Science and Information Technology**  
 Midterm Examination of B.Sc. Engg. (CSE)  
 Course Code: CIT-316, Course Title: Artificial Intelligence Sessional  
 Session: 2020-21, Full Marks: 15

**PART-A**

1.	Take two proposition than apply Modus Ponens and display truth table.	08
2.	Take two proposition than apply Modus Tollens and display truth table.	08
3.	Take two proposition than apply Hypothetical Syllogism and display truth table.	08
4.	Take two proposition than apply Disjunctive Syllogism and display truth table.	08
5.	Take two proposition than apply Addition and display truth table.	08
6.	Take two proposition than apply Simplification and display truth table.	08
7.	Take two proposition than apply Resolution and display truth table.	08

**PART-B**

8.	Solution of Problems from Dr. M.A. Masud Sir	07
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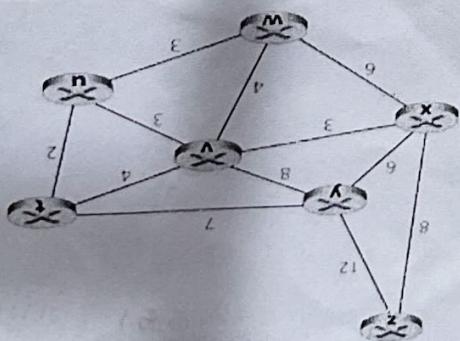
Dept. of Computer and Communication Engineering  
 Patuakhali Science and Technology University

MID Examination of B. Sc. Engineering in CSE Level: + Semester: I Session: 2020-2021  
 Course Code CCE 314 Course Title Computer Network Sessional January-June 2023

Credit: 1.50  
 Marks: 15

Time: 1 Hr

1.	Lab problem solve Packet Tracer SET 2	15
	Final Question Part	
	Develop a concurrent file server that spawns several threads, one for each client requesting a specific file. The client program sends the name of the file to be downloaded to the server. The server creates the thread by passing the name of the file as the argument for the thread constructor. From then on, the server thread is responsible for transferring the contents of the requested file. Use connection-oriented sockets (let the transfer size be at most 1000 bytes per flush operation). After a <u>flush operation</u> , the server thread sleeps for <u>200 milliseconds</u> .	15



Decide which path to choose

\* 3 4,5 → notes PUSH, POP, LDS diagram

Chinmay Sir revise

\* note এখন OT revise

\* evolution

\* features of Mcp.