International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. in CSE Final Term Examination, Autumn 2021

Course Code: CSE 3525

Course Title: Data Communication

*Total marks: **50***

*Time: **2.30 hours***

[Answer all the questions; in some questions, there are options; solve the one you have been instructed to solve]

Part - A

			CO
1.a)	Define constellation diagram and its role in analog transmission.Draw the constellation diagram for 8-QAM with 2 different peak amplitude values 3and 4, and four different phases.	**4**	**CO3**
b)	Which characteristics of an analog signal are changed to represent the digitalsignal in each of the following digital-to-analog conversion? a. ASK b. FSK c. PSK d. QAM	**3**	**CO3**
c)	Generate QPSK analog signal for the digital data: 11011000.	**3**	**CO3**
2.a)	State the name of three multiplexing techniques. Which multiplexing technique is most suitable for data communication in your opinion and why?	**2**	**CO3**
b)	Find out the differences between FHSS and DSSS. Explain the technique of DSSS for original signal 1101 and spreading code 10000101.	**4**	**CO3**
c)	Differentiate statistical TDM and Synchronous TDM using suitable diagrams.	**4**	**CO3**
or			
	Multiplexing and demultiplexing are paired techniques used together. Suppose a multiplexing system takes 4 input channels of 10 kbps using a time slot of 3 bits and produces the bit stream as found in "101010001011011001010101". Design an appropriate multiplexing system with diagrams and find the frame rate, frame duration, input bit duration, output bit rate, output bit duration.	**10**	**CO3**

Part - B

3.	Why should datalink layer accomplish error control and flow control? Explain with proper diagram what would happen if appropriate window size is not taken for both go-back-n ARQ and selective-repeat ARQ algorithms.	10	CO.
4.	Suppose the number of data bits is the 8 LSB bits of "10011101", then find the codeword for correcting single bit error using Hamming code. Again suppose the 3rd bit of the codeword has been flipped during transmission, then show how correction will take place at the receiver's end.	10	CO3
5.a)	What is Circuit switching? Explain the three phases in Circuit switching with suitable diagrams.	6	CO4
b)	Compare and contrast Datagram and Virtual-circuit packet switched networks?	4	CO4
Or			
	Write short notes of the followings(any five: 5 x2): FHSS DSSS Automatic Repeat Request(ARP) Cellular Telephone Go-Back-N Wired LAN Wireless LAN SONET	10	CO4

International Islamic University Chittagong
Morality Development Program
Faculty of Science & Engineering,
Semester Final Examination
Autumn-2021, **Semester-** 6th
Course Title: Islamization of Discipline , **Course Code:** MDP-3606
Time-2:00 hours **Marks-50**

[All Questions are of equal value. Answer five of the following questions]

1 a) What do you mean by Finger Print of human being. 2
b) How pain receptors work in the human body? 2
c) What are the Ethical issues in Computer Use? Write short notes on it from Islamic Perspective 6

2. The Messenger of Allah said Natural Disaster occurs due to fourteen crimes. What are those? 10

3 a) The Prophet (peace be upon him) cursed 10 drug addicts, who are they? 2
b) Discuss the do's and dont's to maintain good health in the light of Quran and Hadith 8

4 a) "Algebra" is named after which book? Who is the author of the book? 2.5
b) Who is called the doctor of all doctors? Who is the father of Chemistry 2.5
c) Name two Muslim scholars who had the contributions in Mathematics and Geography 2.5
d) Write down the name of two scientists who contributed in the field of Medicine 2.5

5. What are the impacts of sex abuse to creat social disaster in a society? Explain in the light of Quran and health Science. 10

6. Outline the miracle of holy Prophet Hazrat Muhammad Mustafa (sm.) (صلىاللهعليهوآلهوسلم)? 10

7 a) Mention the effect of timely prayers on human health 5
b) What is autophagy? How autophagy works in the human body. 5

Bismillaher Rahmanir Rahim

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. In CSE

Final Exam, Autumn 2021

Course Code: **CSE 3631** Course Title: Operating System

Time: 2 hours 30 minutes **Full Marks: 50**

(i) The figures in the right-hand margin indicate full marks

(ii) Course Outcomes and Bloom's Levels are mentioned in additional Columns

Course Outcomes (COs) of the Questions	
CO1	Learn the principles of operating systems
CO2	Understand relationship between subsystems of a modern operating system
CO3	Develop multi-process and multi-threaded applications
CO4	Evaluate the efficiency aspect of using system resources (processor, memory and disk)

Bloom's Levels of the Questions						
Letter Symbols	R	U	App	An	E	C
Meaning	Remember	Understand	Apply	Analyze	Evaluate	Create

				CO	DL
		Part A			
		[Answer the questions from the followings]			
1.	a)	What is the necessary condition of *deadlock*? Briefly explain. Or How *deadlock* is recovered? Briefly explain.	4	CO1	U
1.	b)	Consider a system with five *processes* P0 through P4 and three resource types A, B, C. Resource type A has 10 instances, resource B has 5 instances and resource C has 7 instances. Suppose that at time T0, the following snapshot of the system has been taken:	6	CO4	E

Job/Process	Allocation	Max	Available
P0	010	753	332
P1	200	322	
P2	302	902	
P3	211	222	
P4	022	433	

Suppose the process P3 is requesting (0,1,1). Will the request be satisfied? If yes, then write the sequence.

2.	a)	What are the *internal* and *external fragmentation*? Why *compaction* technique is used?	3	CO2	U
2.	b)	Distinguish between *logical address* and *physical address*.	2	CO2	U
2.	c)	Do you think the size of *page* and *frame* are equal or in equal---why ?	2	CO4	E
2.	d)	Relate *page* and *segment* significantly.	3	CO1	U

Part B

[Answer the questions from the followings]

3.	a)	What is *page fault*? Consider the following page references string: 7 , 0, 1, 2 , 3, 0, 4, 2, 3, 0, 3, 2, 1 ,2, 0, 1, 7,0, 1, 2, 3,0 1 How many page fault would occur for the following replacement algorithms, assuming three frame? i)LRU replacement ii)FIFO replacement iii)Optimal replacement	7.5	CO2	App
3.	b)	Describe the cause and effect of *Trashing*. Or Describe *Belady's* Anomaly.	2.5	CO1	R
4.	a)	Which is better file allocation method between *indexed* and *contiguous* and how?	4	CO2	U
4.	b)	What is the basic difference between *tree* and *graph* directory structure?	1	CO1	U
4.	c)	Briefly describe *single level* and *two level* directory structures. or What do you know about firewall to protect system?	3	CO1	R
4.	d)	What is the main benefit of file system mounting?	2	CO2	App
5.	a)	What is the goal of protection? Describe domain of protection and domain structure. Or How the security is given in different way?	4	CO2	U
5.	b)	Write the basic differences between virus and worm?	4	CO1	U
5.	c)	How access rights can be revoked?	2	CO4	E

END

International Islamic University Chittagong (IIUC)
Center for General Education (CGED)
Final Examination, Autumn-2021
Course Code: URED- 3604 (URED- 3201 for LLB)
Course Title: Life and Teachings of Prophet (*SAAS*)

Time: 2:30 hrs. **Full Marks: 50**

Answer any **five** of the followings.
(All questions are of equal value)

1. *Hijrah* is the turning point in the life of prophet Muhammad (*SAAS*). Evaluate the statement mentioning the causes of his migration from *Makkah* to *Madinah* along with its lessons and impacts on building a new nation.

2. What are the main clauses of the "Charter of *Madinah*"? How do you assess the importance of this charter for the newly founded state and society of *Madinah*?

3. Discuss the background of the battle of *Ahzab* and assess its significance in the history of Islam.

4. Evaluate the last sermon of the prophet Muhammad (*SAAS*) during his farewell *Hajj*.

5. Analyze the main clauses of *Hudaibiyyah* agreement. Why is this agreement called the "clear victory" (*Fathum Mubeen*) in the holy *Qur*'an?

6. Assess how the prophet Muhammad (*SAAS*) conquered the holy *Makkah* without any bloodshed.

7. Write short notes on any two of the following:
   a. Covenants of *Al-'Aqabah*
   b. *Banu Nadhir*
   c. Battle of *Badr*.

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International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. in CSE

Semester Ending (Final) Exam, Autumn 2021

Course Code: **CSE 3637** Course Title: **Software Engineering**

Time: 2 hours 30 minutes Full Marks: 50

(The figures in the right-hand margin indicate full marks)

Part A

[Answer the questions from the followings]

1.	a)	What is use-case? Consider a scenario of library management system where a library consists of library admin, users (teachers and students), and stakeholders such as suppliers. Draw a use-case based on this concept.	CO3	5
1	b)	Why validation of requirements is needed? Which check should be done during requirements validation?	CO3	5
		or		
1.	a)	What does a software design specify? Draw a general model of software design process.	CO3	5
1	b)	What do you know about viewpoints in requirement engineering? Describe different types of viewpoint.	CO3	5
2.	a)	Suppose you have developed a Bank ATM system for a newly started a Bank. Stakeholders of this ATM includes bank customers, representative of other banks. bank managers, counter staff, database administrators, security managers, marketing department, hardware and software maintenance engineers, banking regulators. Classify these stakeholders into primary, secondary and ternary for this system. Justify your answer.	CO1	5
2	b)	What is coupling and cohesion? According to the classification, which cohesion is the best? Why? Which are the worst? Give example for your answer.	CO1	5

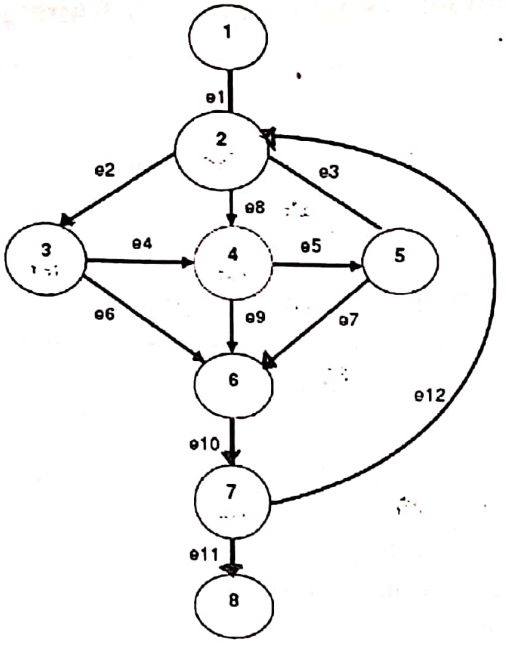
Part B

[Answer the questions from the followings]

3	a)	What is software maintenance? Explain the software maintenance types of the following scenario: i) Introducing new operating system ii) A new non-functional requirement emerged iii) User discover an error while running the software	CO3	5
3	b)	What is software documentation? Briefly describe the factors affecting software maintenance.	CO3	5
4.	a)	What is beta testing? Suppose, Mr. X has given input to a program and the program gives wrong output. Which general testing approaches Mr. X should apply in order to overcome the problem? Explain.	CO4	5
4.	b)	Determine the Cyclomatic Complexity of the following graph using graph matrix.	CO4	5

33

387



5.	a)	State some reasons to make your software project Crash and Burn.	CO2	5
5	b)	Mention some strategies to make a software project better.	CO2	5
		or		
5.	a)	Describe the necessary steps in the COCOMO model.	CO2	5
5	b)	The fan in and fan out of module X is 3 and 4 respectively. The complexity of the system is 2000. The number of lines in module X is 200, i.e LOC of module X is LOC(X) =200.Calculate the structural complexity of module X using card and glass's system complexity. Using combined Henry Kafura's approach and Card glass's approach calculate the data complexity of module X.	CO2	5

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. in CSE Final Examination, Autumn 2021

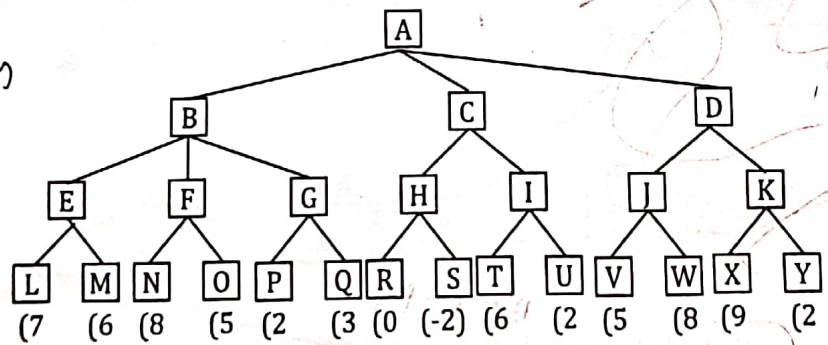
Course Code: CSE 3635 Course Title: Artificial Intelligence

Total marks: 50

Time: 2 hours 30 minutes

Answer the following questions. The figures in the right hand margin indicate full marks.

Part A

1.	a)	Why First Order Predicate Logic is considered as the generalization of Propositional Logic?	CO1	2
1.	b)	State the pros & the cons of Forward chaining and Backward chaining.	CO1	4
		Or		
1.	b)	Consider the following axioms: P .....(1) (P^Q) -->R .....(2) (S v T) -->Q .....(3) T .....(4) (i) Convert the formulas into clause form (i) Prove that whether R is true or not by using propositional resolution.	CO1	4
1	c)	Consider the following facts: (1) Marcus was a man. (2) Marcus was a Pompeian. (3) Marcus was born in 40 A.D. (4) All men are mortal. (5) All Pompeian died when the volcano erupted in 79 A.D. (6) No mortal lives longer than 150 years. (7) It is now 2014. (8) Alive means not dead. (9) If someone dies, then he is dead at all later times. -Translate these facts into well-formed formulas (wffs) in predicate logic. -Answer the question "Is Marcus alive now?" using backward reasoning. -Convert the formula into clause form. -Prove that "Marcus is not alive now" using resolution.	CO2	4
2.	a)	Is the minimax procedure a depth-first or breadth-first search procedure?	CO1	1
2.	b)	Describe the minimax search procedure.	CO2	4
2.	c)	 (i) Suppose the first player is the maximizing player. What move should be chosen? (ii) In the game tree, what nodes would not need to be examined using the alpha-beta pruning procedure?	CO4	5
		Or		

2. c) Trace the constraint satisfaction procedure solving the following crypt-arithmetic problem: CO4 3

```
    S E N D
+   M O R E
-------------
  M O N E Y
```

Initial State:
No two letters have the same value.
The sums of the digits must be as shown in the problem.

Part B

3.	a)	Identify planning in the AI.	CO2	2
3.	b)	Demonstrate Goal Stack Planning.	CO2	3
		Or		
3.	b)	Write down the preconditions of the following operators: (i) UNSTACK (A,B), (ii) STACK(A,B), (iii) PICKUP(A) and (iv) PUTDOWN(A).	CO2	3
3.	c)	Develop an effective and complete plan using STRIPS approach (or any other approaches of your choice) to convert given initial state into goal state.	CO2	5
4.	a)	What is Baye's theorem?	CO1	1
4.	b)	Taking account of the example below, explain the concept of uncertainty. The doorbell rang at 12'0 clock in the midnight. Was someone there at the door? Did Karim wakeup?	CO2	2
4.	c)	A doctor knows that the disease meningitis causes the patient to have a stiff neck, say, 40% of time. The doctor also knows some unconditional facts: the prior probability that a patient has meningitis is 1/50000, and the prior probability that any patient has a stiff neck is 1/25. Find the probability of patients with a stiff neck to have meningitis.	CO2	2.5
4.	d)	A Bayesian network (Figure 1), showing both the topology and the conditional probability tables (CPTs). In the CPTs, the letters B, E, A, J and M stand for Burglary, Earthquake, Alarm John Calls, and MaryCalls, respectively. The Independent conditional probability help us to write in a simplified way the joint distribution P (B, E, A, J, M).	CO3	4.5

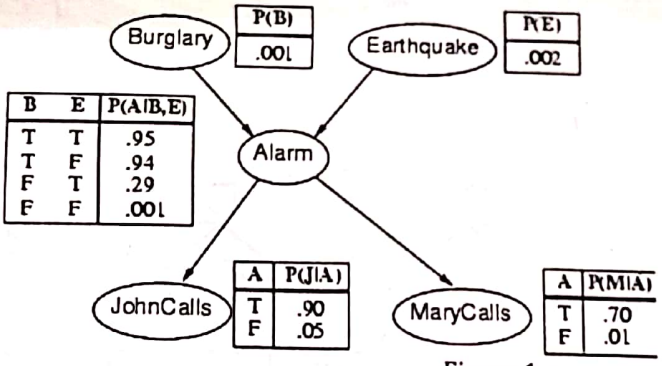


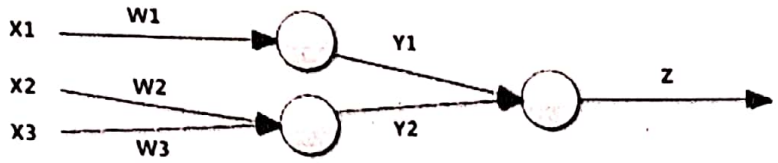
Figure 1

i) Express the joint distribution P (F, E, A, Y, S) in terms of the conditional probabilities (and independencies) expressed in the Bayesian Network above.
ii) Probability of the event that the alarm has sounded but neither a Burglary nor an earthquake has occurred and both Mary and John call.
iii) Probability of the event that the alarm has sounded and Burglary has occurred, an earthquake has not occurred and both Mary and John call.

5. a) Compare artificial and biological networks. What aspects of biological networks are not CO2 2

mimicked by artificial ones? What aspects are similar?

4.	b)	Write down the steps through which NLP is conducted.	CO1	3
5.	c)	Review this neural network and compute Z.	CO4	5



Where X1 = 15, X2 = 8, X3 = 14, W1 = 0.6, W2 = 0.3, W3 = 0.1, weight for Y1 = 0.6, weight for Y2 = 0.45

a) Compute the value of Z without a transfer function

b) Compare the value of Z with a threshold function. If the value is 5 or less, call it 0; otherwise call it 1.

Compute the value of Z with the sigmoid transfer function used at all neurons.

Or,

5	a)	Give your realization on inductive learning method with necessary example.	CO2	2
5	b)	Analyze the syntax and semantics of Bayesain Belief Network.	CO1	4
5	c)	Interpret how domain knowledge is represented in Expert System. Contrast two essential capabilities of an Expert System.	CO4	4

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. in CSE

Final Exam, Autumn 2021

Course Code: **ECON-3601** Course Title: **Principles of Economics**

Time: 2 hours 30 minutes Full Marks: 50

(i) The figures in the right-hand margin indicate full marks

(ii) Course Outcomes and Bloom's Levels are mentioned in additional Columns

Course Outcomes (COs) of the Questions	
CO1	Explain the fundamental concepts of Economics.
CO2	Analyse the key indicators of economic growth.
CO3	Compare the economic theories and concepts.

Bloom's Levels of the Questions						
Letter Symbols	R	U	App	An	E	C
Meaning	Remember	Understand	Apply	Analyze	Evaluate	Create

		Part A [Answer the questions from the followings]			
1.	a)	Define market and market structure. How perfect competition market differ with monopolistic competition market?	CO3	E	5
		Or,			
1	b)	The table below shows the market demand schedule and the cost structure. Quantity / Price per / Fixed cost (FC) / Variable cost (VC) 20 / $6 / $200 / 50 35 / $6 / $200 / 100 55 / $6 / $200 / 150 75 / $6 / $200 / 200 105 / $6 / $200 / 300 132 / $6 / $200 / 400 160 / $6 / $200 / 500 190 / $6 / $200 / 650 220 / $6 / $200 / 800 250 / $6 / $200 / 1000 Measure Total cost (TC), Average total cost (ATC) and Marginal cost (MC) for each row.	CO1	E	5
1.	b)	If the Given the total cost function TC = 800 + 25Q- 6Q^2+Q^3 Where TC is total cost and Q is level of output. Calculate Total cost, ATC, AVC and MC when the firm produces 250 units of output.	CO1	E	5
2.	a)	Use the following information to answer the question. There are three firms in an economy: X, Y, and Z. Firm X buys $200 worth of goods from Y, and $300 worth of goods from firm Z, and produces 250 units of output at $4 per unit. Firm Y buys $150 worth of goods from firm X, and $250 worth of goods from firm Z, and produces 300 units of output at $6 per unit. Firm Z	CO2	An	5

		buys $75 worth of goods from firm X, and $50 worth of goods from firm Y, and produces 500 units at $2 per unit. Given this information, what is the economy's GDP? Hint: remember that part of each firm's production is used by one of the other firms as a production input (an intermediate product).			
2.	b)	Argue about the merits and uses of GDP. Criticize GDP as a measures of growth.	**CO2**	**An**	**5**
		Or,			
2	b)	What are the causes of inflation? Describe.	**CO2**	**An**	**5**
		Part B [Answer the questions from the followings]			
3.	a)	Define monetary policy and fiscal policy. Which one is more effective for growing economy?	CO2	E	6
3.	b)	Briefly explains the objectives of Trade Policy in Bangladesh. How Trade Policy works positively?	CO2	E	4
4.	a)	Why does government impose tariff on international trade? What is the difference between specific tariff and ad-valorem tariff? Discuss the impact of tariff on the consumers of importing and exporting countries.	CO3	E	5
4.	b)	What are the different form of subsidies? Describe the effect of subsidies.	CO2	E	5
5.	a)	Evaluate the relationship between Technological progress and economic growth in Bangladesh.	**CO3**	**An**	4
5.	b)	What is the difference between growth and development?	**CO3**	**An**	6
		Or,			
5.		Write short notes on:			
		Oil crisis due to Ukraine War, Economic crisis in Srilanka, Economic importance of Padma Bridge of Bangladesh, Benefit of charity.	**CO3**	**An**	10