International Islamic University Chittagong
Center for General Education (CGED)
Semester End Examination-Autumn-2022

Course Code : URED-3604(URED-3102 for LLB)

Course Title : Life and Teachings of the Prophet (*SAAS*)

Time: 2:30Hours **Full Marks: 50**

Answer the following question
(All questions are of equal value)

SL	Questions	Marks	CLO	Bloom's taxonomy domain
1	"*Hijrah* is the turning point in the history of Islam". Explain the statement discussing the causes, importance and lessons of *Hijrah*	10	3	Create
2	What are the main clauses of the charter of Madinah? How did it help to form the society of Madinah based on equality and co-existence? Discuss.	10	2	Understand
3	Discuss the background of battle of *Badr* assessing the reasons why the Muslims got victory. Or Discuss the battle of *Ahzab* describing the strategies taken by the Prophet Muhammad (*SAAS*) for achieving the grand success in it.	10	2	Understand
4	"Conquest of Makkah is a conquest without bloodshed". Asses the statement discussing the background and importance.	10	3	Evaluate
5	Evaluate the Farewell Address of Prophet Muhammad (*SAAS*) as an acknowledged document of human rights.	10	3	Evaluate

International Islamic University Chittagong
Morality Development Program (MDP)
Semester End Examination, Autumn- 2022
Faculty of Science and Engineering, Semester- 6th
Course Title: Islamization of Discipline **Course Code:** MDP-3606

Time: 2:50 Hours **Total Marks-50**

Answer any *Five* questions; Figures in the right hand margin indicate full marks

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	a)	"*Every object has been created in pairs*"- Mention the translation of 2 verses of the Qur'an in this regard	2
	b)	How bees collect honey?	2
	c)	The name of a surah in the Qur'an is "Surah An-Naml". In Surah An-Naml, there is a story about Prophet Solaiman (peace be upon him) and an ant, what is it?	2
	d)	Mention a verse in the Qur'an concerning the water cycle	1
	e)	The fruit is the last stage of the tree's life cycle. Explain in a scientific and Islamic way how the flower of the tree turns into fruit	3
3	a)	Ibn Abbas radiAllahuanhu reported that the Prophet (peace be upon him) said: "Prioritize five tasks before doing five tasks"- what are these?	3
	b)	What did the Messenger of Allah (PBUH) indicate about Miswak?	2
	c)	According to the hadith, there are five subjects in Fitrat to keep clean, what are these?	3
	d)	What is the advice of the Prophet (sm) to control anger?	2
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	a)	Where is the Lot Sea located? What was the crime of Lot's tribe?	2
	b)	What are the negative impacts of having sex outside marriage, homosexuality, pornography and short dress on society?	6
	c)	Mention two examples of natural disasters described in the glorious Qur'an	2
6	a)	The Prophet was asked, "Which is the best worship?" What did he answer?	2
	b)	What is the role of timely prayer to make a person sincere, punctual in every sphere of life?	5
	c)	What is autophagy? How autophagy works in the human body.	3
7	a)	Discuss the Miraj of Allah's Messenger (PBUH) in the light of science	5
	b)	Outline the miracle of holy Prophet Hazrat Muhammad Mustafa (Sm)	2
	c)	"The Quran is itself a miracle"-elucidate the statement	3

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. in CSE Final Examination, ~~Spring 2023~~ Autumn 2022

Course Code: CSE3525 Course Title: Data Communication

*Total marks: **50***

*Time: **2** hours **30** minutes*

The figures in the right-hand margin indicate full marks

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

Part-A

		M	CO
1.a)	A corporation possesses a satellite channel with a bandwidth of 10 MHz. The corporation intends to establish 40 distinct and independent channels, each capable of transmitting a minimum of 10 Mbps. Design a suitable modulation technique for this communication requirement.	5	3
1.b)	Four sources, each with a bit rate of 800 kbps, need to be combined using Time Division Multiplexing (TDM) with a byte interval and synchronizing bits. Answer the following questions regarding the multiplexing process: i. What is the size of a frame in bits? ii. What is the frame rate? iii. What is the duration of a frame? iv. What is the data rate?	5	3
2.a)	Wireless systems usually use analog transmission for transmitting the digital data. In this case environment, distance, bitrate etc. are important issues to be considered. Using data "*11100011*" draw the waveform for 4FSK, 4PSK techniques. Write your comments on each of these modulation techniques.	5	3
2.b)	Draw the constellation diagram for 8 QAM, 4 phases, two amplitudes and show the time domain plot for the given digital information for the signal 001110100010000101.	5	3
	Or		
2.a)	Illustrate QPSK and when the data bits are: 11 10 01 00.	5	3
2.b)	If baud rate is 1000 baud per second and each signal element carries 4 bits what is the bit rate? How many signal elements are required?	5	3

Part-B

3.a)	A sender needs to send the four data items Ox3456, OxABCC, Ox02BC, and OxEEEE. Answer the following: i. Find the checksum at the receiver site if the second data item is changed to OxABCE. ii. Find the checksum at the receiver site if the second data item is changed to OxABCE and the third data item is changed to Ox02BA.	5	4
3.b)	Design a parity check code where dataword are 3 bits and codeword are 4bits. Use odd parity? How do you detect errors with this encoding? What are the limitations of this C(4, 3) scheme?	5	3
4.a)	What is virtual circuit switching? Discuss the delay of virtual circuit network with illustrations.	5	1
4.b)	Describe Hidden station and Exposed station problem with necessary figure	5	1
5.a)	Which type of orbit does a GEO satellite have? Explain your answer. Find the period of the Moon, according to Kepler's law?	5	1
5.b)	What do you mean by SONET? Find the data rate of an STS-3 signal used in SONET.	5	1
	Or		
5	Write short notes of the followings (any five,5 x2): i.Satellite Communication, ii. Mobile Communication, iii. PPP, iv. Wireless LAN v. SONET	10	1

International Islamic University Chittagong

Department of Computer Science and Engineering

Final Exam, Autumn 2022/Spring 2023

Course Code: **ECON-3601** **Program:** B. Sc. Engg Course Title: **Principles of Economics**

Time: 2 hours 30 minutes Full Marks: 50

Part A

[Answer the questions from the followings]

1.	a)	Define market and market structure. Analyze the characteristics of various market structures.	**CO1**	An	5
1.	b)	An equipment manufacturing company wants to analyze their yearly budget. They pay Tk.5000 in rent each month and an average of Tk. 750 for electricity. Each piece of equipment costs Tk. 1000 to manufacture. The cost function for one month of production is TC(x) = 5750+1000x. (i) What will be the total cost to produce 50 pieces of equipment? (ii) Find the total cost to produce 75 pieces of equipment per month, for one year.	**CO2**	E	5
2.	a)	What do you mean by nominal GDP and real GDP? Explain the benefit of measuring real GDP.	**CO2**	An	5
2.	b)	Suppose, GDP = $5700 Net Factor payment from abroad = $18 Capital consumption allowance = $625 Indirect taxes = $475 Social security contribution = $530 Govt. and business transfers to person = $770 Dividends = $135 Personal Tax & Non-Tax payment = $620 Calculate the GNP, NNP, National Income, Personal Income, and Personal Disposable Income using the information provided above.	**CO2**	E	5

Or,

2.	a)	Argue about the merits and uses of GDP measure? Criticize GDP as a measures of growth.	**CO2**	An	5
2.	b)	"Actual meaning of inflation is increase in money supply faster than the growths in real national income"- analyze this statement with the reasons behind the inflation. "Some sorts of inflation is positive for economy"- describe.	**CO2**	An	5

Part B

[Answer the questions from the followings]

3.	a)	Discuss monetary policy and fiscal policy. How fiscal policy plays an important role in a developing country like Bangladesh?	CO2	An	5
3.	b)	"Unemployment problem is primarily cyclical rather than structural?"- explain and distinguish between cyclical and structural unemployment. Discuss how these two types of unemployment can be reduced?	CO2	E	5
4.	a)	Evaluate the relationship between Technological progress and economic growth in Bangladesh.	CO3	E	5
4.	b)	Are Per-capita GDP and citizen welfare analogous? Why or why not?	CO2	An	5
5.		**Write short notes on:** Value Added Approach of Measuring GDP, Development Planning, Economic Benefit of Karnofuli Tunnel and Vicious Circle of Poverty.	**CO3**	**E**	10
		Or			
5.		Importance of Zakat, 8th 5year plan of Bangladesh, Unemployment due to Covid-19 and Oil crisis due to Ukraine War.	**CO3**	**E**	10

International Islamic University Chittagong

Department of Computer Science and Engineering
B.Sc. in CSE Semester Final Examination, Autumn 2022
Course Code: CSE-3637 Course Title: Software Engineering

Time: 2 hours 30 minutes Full Marks: 50

			CO	M
		Part -A		
		[Answer the questions from the followings]		
1	a)	What is the use case? Explain with a diagram. **Or**	1	5
	a)	What are the different approaches of software design? Explain Top-Down & Bottom-Up approaches.	1	5
	b)	A Software Company in Bangladesh needs some help with product delivery, space management, and major security break-outs. Explore in what category of requirement definition they have fallen under. Explain and define them. **Or**	3	5
	b)	What does a software design specify? Draw a general model for the software design process.	3	5
2	a)	Are software design and software analysis the same concept? Justify your answer.	3	2
	b)	Write short notes on: i) Software design vs Program design ii) Software reengineering iii) Object oriented software design	3	3
	c)	Differentiate between coupling and cohesion? Which type of coupling and cohesion is suited? Why?	1	5
		Part -B		
3	a)	Define software testing. Point out the roles & responsibilities of a software tester.	2	4
	b)	After developing an application, Nameera asked some friends to test the app for her. Her friends tested the app, found some bugs, and reported them to Nameera. Which software testing technique represents the above scenario? Justify your answer.	2	3
	c)	What specific scenarios or features would you focus on testing using black box techniques?	2	3
		Or		
3	a)	What is the bottom-up approach to software testing methodology? State the advantages and disadvantages of this method.	2	5
	b)	Why is the validation of requirements needed? Which check should be done during requirements validation?	2	5
4	a)	What is software maintenance? Briefly describe corrective, adaptive, and preventive maintenance with examples.	3	4
	b)	What are the maintenance cost factors that lead to high maintenance costs? Explain with an example.	2	4
	c)	What is software reengineering? When is reengineering applicable?	3	2
5	a)	What are the drawbacks of CMM? Discuss the key process areas (KPA's) of CMMI.	2	5
	b)	Discuss the COCOMO Model and its variations (e.g., Basic, Intermediate, and Advanced). Investigate the historical context surrounding its development and analyze the factors that influence the selection of a particular variation in software projects. Additionally, critically examine the challenges faced when implementing the COCOMO Model in large-scale enterprise systems.	3	5

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. in CSE

Final Examination, Autumn 2022

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

Time: 2 Hours 30 Minutes Total Marks: 50

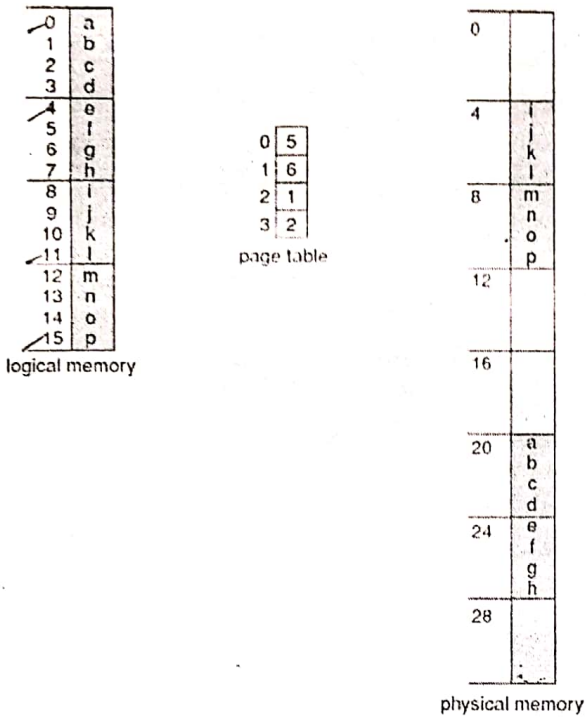
[Answer *all* the following questions. Figures in the right hand margin indicate full marks. Use a Separate answer script for Group-A and Group-B.]

		CLO	
	Group A		
1. a)	Consider the following resource-allocation policy. Requests for and releases of resources are allowed at any time. If a request for resources cannot be satisfied because the resources are not available, then we check any threads that are blocked waiting for resources. If a blocked thread has the desired resources, then these resources are taken away from it and are given to the requesting thread. The vector of resources for which the blocked thread is waiting is increased to include the resources that were taken away. For example, a system has three resource types, and the vector Available is initialized to (4, 2, 2). If thread T0 asks for (2,2,1), it gets them. If T1 asks for (1,0,1), it gets them. Then, if T0 asks for (0,0,1), it is blocked (resource not available). If T2 now asks for (2,0,0), it gets the available one (1,0,0), as well as one that was allocated to T0 (since T0 is blocked). T0's Allocation vector goes down to (1,2,1), and its Need vector goes up to (1,0,1). 1. Can deadlock occur? If you answer "yes," give an example. If you answer "no," specify which necessary condition cannot occur. 2. Can indefinite blocking occur? Explain your answer.	CLO2	05
	Or,		
	Describe different recovery techniques from deadlock.	CLO2	5
b)	Consider the following snapshot of a system:	CLO2	05

	Allocation	*Max*	*Available*
	A B C D	*A B C D*	*A B C D*
T_0	3 1 4 1	6 4 7 3	2 2 2 4
T_1	2 1 0 2	4 2 3 2	
T_2	2 4 1 3	2 5 3 3	
T_3	4 1 1 0	6 3 3 2	
T_4	2 2 2 1	5 6 7 5	

Decide whether the system is in a safe state or unsafe state by using Banker's algorithm.

	Or,		
	Define segmentation. Explain the user and logical view of segmentation.	CLO2	5

	Consider the paging example of the following figure for a 32-byte memory with 4-byte pages.  Now map logical addresses 0, 4,11 and 15 to physical addresses.	CLO3	05
b)	Explain the paging hardware with TLB.	CLO3	03
c)	Consider a paging system with the page table stored in memory. 1. If a memory reference takes 50 nanoseconds, how long does a paged memory reference take? 2. If we add TLBs, and if 75 percent of all page-table references are found in the TLBs, what is the effective memory reference time? (Assume that finding a page-table entry in the TLBs takes 2 nanoseconds, if the entry is present.)	CLO3	02
	Group B		
3. a)	Analyze thrashing effect in the paging system.	CLO3	04
	Or,		
	What is file allocation method? Describe Linked Allocation and Indexed Allocation method.	CLO3	04
b)	I. How many page faults occur for the LRU page replacement algorithm for the following reference string with four page frames? 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5, 4, 2. II. What is the minimum number of page faults for an optimal page replacement strategy for the reference string in part I with four page frames?	CLO3	06
	Or,		
	Consider the page reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 3 with 4 page frames. Find number of page faults occur for the following algorithms: 1. FIFO Algorithm 2. Optimal Algorithm 3. LRU Algorithm	CLO3	06
4. a)	In spite of limited physical memory, we can execute a program whose logical memory size is greater than physical memory of the system. How is it possible?	CLO3	02

	Consider a file currently consisting of 100 blocks. Assume that the file-control block (and the index block, in the case of indexed allocation) is already in memory. Calculate how many disk I/O operations are required for contiguous, linked, and indexed (single-level) allocation strategies, if, for one block, the following conditions hold. In the contiguous-allocation case, assume that there is no room to grow at the beginning but there is room to grow at the end. Also assume that the block information to be added is stored in memory. 1. The block is removed from the beginning. 2. The block is removed from the middle. 3. The block is removed from the end	CLO3	05
c)	Under what circumstances do page faults occur? Describe the actions taken by the operating system when a page fault occurs.	CLO3	03
5. a)	Callie wants to send the message M = 13 to Alice. Using Alice's public ((n, e) = (33, 3)) and private keys ((n, d) = (33, 7)). calculate the cipher text C, and the value for R when Alice recovers the message	CLO3	03
b)	How does Trojan Horse destroy a computer system?	CLO3	03
c)	What is the goal of protection? What do you know about firewall to protect system?	CLO3	04

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. in CSE Final Examination, Autumn 2022

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.]

Group A

1. a) The following knowledge base R1, R2, R3, R4, R5 has given below. CO2 4

R1: $\neg P_{1,1}$
R2: $B_{1,1} \leftrightarrow (P_{2,1} \vee P_{1,2})$
R3: $B_{2,1} \leftrightarrow (P_{1,1} \vee P_{2,2} \vee P_{3,1})$
R4: $\neg B_{1,1}$
R5: $B_{2,1}$
Show that $\neg P_{1,2}$ is true

Or,

A statement is given CO2 4
"As per the law, it is a crime for an American to sell weapons to hostile nations. Country A, an enemy of America, has some missiles, and all the missiles were sold to it by Robert, who is an American citizen."
Using Forward chaining method prove that "Robert is criminal."

b) Briefly explain why FOL is considered as the generalization of PL. CO1 2

Or,

How a Bayes' net encodes a joint distribution? CO1 2

c) What is Conjunctive Normal Form (CNF)? Convert the following of sentence to CNF form: CO3 4

$B_{1,1} \leftrightarrow (P_{2,1} \vee P_{1,2})$

Or,

The probability of some facts are given below CO3 4

S	T	W	P
summer	hot	sun	0.30
summer	hot	rain	0.05
summer	cold	sun	0.10
summer	cold	Rain	0.05
winter	hot	sun	0.10
winter	hot	rain	0.05
winter	cold	sun	0.15
winter	cold	rain	0.20

Calculate the following queries using inference by enumeration.

i. P(W)
ii. P(W | winter)
iii. P(W | winter, hot)

2. a) What is knowledge-base? Draw the architecture of a knowledge-based agent. CO1 3
b) Determine whether the following sentences is (i) Satisfiable (ii) Contradictory (iii) Valid CO2 3

$(P \vee Q) \wedge (P \vee \sim Q)$

c) Represent the following sentences in First-Order-Logic: CO2 4

i. Every gardener likes the sun
ii. You can fool some of the people all of the time
iii. All purple mushrooms are poisonous
iv. Clinton is not tall.

Group B

3.

a) What is Baye's theorem? CO1 2

b) 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

c) 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 6

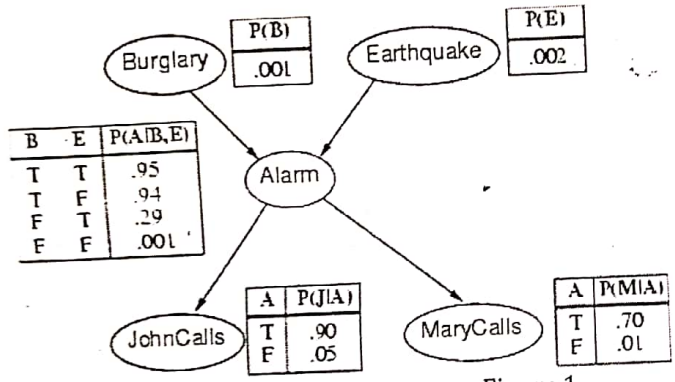


Figure 1

i) Express the joint distribution P (B, E, A, J, M) 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.

4. a) Compare artificial and biological networks. CO1 2

b) Consider a single neuron with two inputs X1 and X2, and output Y, learning the inclusive AND operation. The truth table is given below. CO3 8

Case	X1	X2	Z
1	0	0	0
2	0	1	0
3	1	0	0
4	1	1	1

Develop an ANN model using Delta rule. Where,
Threshold, T=0.5
Learning rate, alpha=0.2
Initial weights W1=0.1 and W2=0.5

Or,

a) What is Dempster-Shafer theory? CO1 2

b) Suppose the intrinsic quality of a product depends on it's accuracy and reputation. These attributes can be assessed according to the evaluation grades poor, average or good. For each attribute the weights and the degree of belief of each evaluation grades are given below: CO3 8

Evaluation Grade H_1=poor, H_2= average, H_3= good	Weight	Belief		
	Wi	$ß_{1,i}$	$ß_{2,i}$	$ß_{3,i}$
Accuracy	0.35	0.4	0.5	0
Reputation	0.65	0.1	0.75	0.15

Calculate the remaining belief and probability mass of the following attributes using DS theory.

Evaluation Grade H_1=poor, H_2= average, H_3= good	Belief	Probability mass					
	$ß_H$	$m_{1,i}$	$m_{2,i}$	$m_{3,i}$	$m_{H,i}$	$\bar{m}_{H,i}$	$\tilde{m}_{H,i}$
Accuracy							
Reputation							

5 a) What is NLP? Write about the steps through which NLP is conducted. CO2 3

b) Write down the parse tree for the sentence "Kawsar wrote the program" using the following simple grammar for a fragment of English in Figure 1. CO3 4

S → NP VP
NP → the NP1
NP → PRO
NP → PN
NP → NP1
NP1 → ADJS N
ADJS → ε|ADJS ADJS
VP → V
VP → V NP
N → file | program
PN → Kawsar
PRO → I
ADJ → short | Long | fast
V → printed | Created | wrote

Figure 1. A simple grammar for a fragment of English

c) What is learning? What are the supervised learning, unsupervised learning and reinforcement learning? CO2 3