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

Total Marks-30 **Time: 1:30 Hours**

Answer any *three* questions. Figures in the right hand margin indicate full marks

1.	a)	What is Black-Hole? Mention one Quranic verse in favor of Black-Hole	2
	b)	What is the *Hubble's constant?* What are the functions of 'Hubble Space Telescope'	2
	c)	Mention one Quranic Verse regarding Singularity and Big-Bang	2
	d)	What is Dark matter?	2
	e)	What are the dominant elements of the universe?	2
2.		Express your idea about the expansion of the universe in the light of Quran and Science. What is the future of the universe?	10
3.	a)	What is the meaning of first two verses of 'Surah al Alaq'? Describethe steps of fetus development inside the womb in the light of Quran and Science	6
	b)	Analyze the Qur'an, Hadith, and Scientific Presentations on ***"Children Will Be Sons or Daughters"***	4
4.	a)	"*The seven layers of the Earth.*"- Write a Quranic verse in favor of this sentence.	2
	b)	What is the challenge of the Quran? Mention any Quranic Verse in favor of this	2
	c)	"*Scientists have discovered water barriers which divide between salty and sweet water in downstream areas.*" Mention any Quranic Verse in favor of this	2
	d)	Is the light of the Moon reflected light? How? Mention any Quranic Verse in favor of this.	2
	e)	Mention a verse in the Qur'an concerning the water cycle	2

International Islamic University Chittagong

Center for General Education

Midterm- Autumn-2022
Course Title: Life and Teachings of Prophet (*SAAS*)
Course Code: URED-3604

Full Marks: 30 **Time 1.5 Hours**

[Answer the following and all questions are of equal value]

1. Studying of *Sirah* is an inevitable part of Muslim life- explain it mentioning the meaning of *Sirah*, its importance and sources.	C	10	CO1&2
2. Analyze the various oppressive activities of *Quraiysh* to stop the Prophet Muhammad (*SAAS*) from preaching Islam.	A	10	CO1&2
3. Give an account of the life of Prophet Muhammad (*SAAS*) up to his prophethood along with some lessons derived from it.	R	10	CO1&2
Or Write short notes: A) Migration to *Abisinia* B) Journey to *Taif*	R	10	CO1&2

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. in CSE

Mid term Exam, Autumn 2022

Course Code: CSE 3525 Course Title: **Data Communication**

Time: 1 hour and 30 minutes Full Marks: 20

(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	**Understand** Data Communications Concepts and its components
CO2	**Analyze** the different types of Transmission media and their functions within a Network
CO3	**Apply** the knowledge of encoding, decoding, and how error correction and error detection in data communication
CO4	**Understand** switching principles and basics of wireless communication.

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

1	a)	If a message required 2ms to reach the destination from source and actual data transfer rate was 5 mbps, find out the size of the message.	**CO2**	**An**	3
	b)	Categorize the four basic topologies in terms of line configuration.	**CO1**	**U**	3
	c)	Why and in which layer port addressing is required in TCP/IP model? List down some functions of transport layer.	**CO1**	**U**	4
2	a)	A periodic composite signal has a bandwidth of 200 kHz, with a middle frequency of 140 KHz. The two extreme frequencies have highest amplitude. Draw the frequency domain of the signal. How many frequencies are there in a non periodic composite signal of bandwidth 5KHz.	**CO4**	**App**	5
2.	b)	If capacity of a channel is 24 mbps and 2 MHz, find the SNR and SNR in DB.	**CO3**	**An**	5
		OR			
2	b)	A signal initially travelled from point X to point Y. At point Y, the signal had $1/3^{rd}$ of it's initial power. Then the signal went through an amplifier and gained 5 times the power at Y. Find out the overall gain or loss immediately after the amplification.	**CO3**	**An**	5
3.	a)	(i) Draw a digital signal when the bit is 4 bps and each signal element carries 1 bit. (ii) Draw another digital signal when the bit rate is 8 bps and each signal element carries 2 bits (iii)Explain Line Coding for any digital data	**CO2**	**An**	5
3.	b)	Carry out PCM for an sinusoidal analog signal that has highest amplitude of +16V and lowest amplitude of -16 V and assume you are using 4 bits to represent each sample.	**CO3**	**An**	5
		OR			
3	b)	We want to digitize human voice, the human voice carries frequencies from 0 to 4000Hz. Find the sampling rate and bit rate if we use 4 bits per sample. Also find the ratio of Minimum bandwidth of digital signal to bandwidth of the analog signal.	**CO3**	**An**	5

International Islamic University Chittagong
Department of Computer Science and Engineering
B. Sc. in CSE
Mid Exam, Autumn 2022

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

Time: 1 hours 30 minutes **Full Marks:** 30

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

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

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[Answer the questions from the followings]

1.	a)	Operating System is a resource allocator" – justify your answer. **Or** Operating system is interrupt driven - justify your answer.	CO 1	E	03
	b)	Instructions related to accessing I/O devices are typically privileged instructions, that is, they can be executed in kernel mode but not in user mode. Give a reason why these instructions are privileged.	CO 1	An	02
	c)	Describe the actions taken by a kernel to context-switch between processes.	CO 1	U	03
	d)	How many process will be created by the following system program? Draw the process tree.	CO 1	An	02

```
#include <stdio.h>
#include <unistd.h>
int main()
{
int i;
for (i = 0; i < 5; i++)
    fork();
return 0;}
```

2.	a)	The following processes are being scheduled using a preemptive, round robin scheduling algorithm.	CO 2	App	07

Process	Priority	Burst	Arrival
P1	40	20	0
P2	30	25	25
P3	30	25	30
P4	35	15	60
P5	5	10	100
P6	10	10	105

Each process is assigned a numerical priority, with a higher number indicating a higher relative priority. In addition to the processes listed below, the system also has an idle task (which consumes no CPU resources and is identified as P_{idle}). This task has priority 0 and is scheduled whenever the system has no other

available processes to run. The length of a time quantum is 10 units. If a process is preempted by a higher-priority process, the preempted process is placed at the end of the queue.

1. Show the scheduling order of the processes using a Gantt chart.
2. What is the turnaround time for each process?
3. What is the waiting time for each process?
4. What is the CPU utilization rate?

b) Using an example, illustrate the producer-consumer paradigm in shared memory inter process communication (IPC). Assume fixed buffer size. CO 2 An 03

3. a) Many CPU-scheduling algorithms are parameterized. For example, the RR algorithm requires a parameter to indicate the time slice. Multilevel feedback queues require parameters to define the number of queues, the scheduling algorithms for each queue, the criteria used to move processes between queues, and so on. These algorithms are thus really sets of algorithms (for example, the set of RR algorithms for all time slices, and so on). One set of algorithms may include another (for example, the FCFS algorithm is the RR algorithm with an infinite time quantum). What (if any) relation holds between the following pairs of algorithm sets? CO 2 E 03

1. Priority and SJF
2. Priority and FCFS
3. RR and SJF

b) In the following example, there are five processes named as P1, P2, P3, P4, and P5. Their arrival time and burst time are given below in the table. CO 2 App 04

Process	Arrival Time	Burst Time	
P1	1	7	3
P2	3	3	2
P3	6	2	1
P4	7	10	5
P5	9	8	4

Find the average waiting time, average turnaround time and response time using shortest job first scheduling.

Or

Consider two processes, P_1 and P_2, where $p_1 = 50$, $t_1 = 25$, $p_2 = 75$, and $t_2 = 30$. Can these two processes be scheduled using rate-monotonic scheduling for real time system ? Illustrate your answer using a Gantt chart.

c) Briefly explain any of the following process scheduling algorithm evaluation methods. CO 3 App 03

1. Deterministic modeling
2. Queuing Modeling

//// the end/////

International Islamic University Chittagong

Department of Computer Science and Engineering

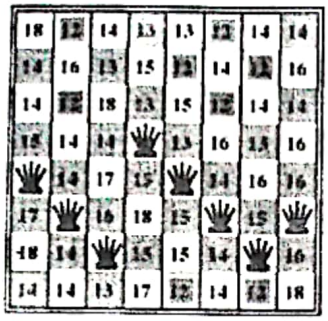
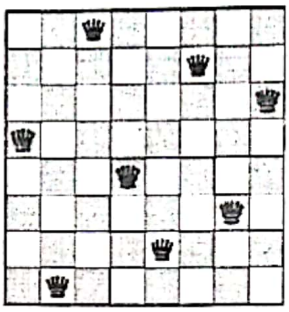
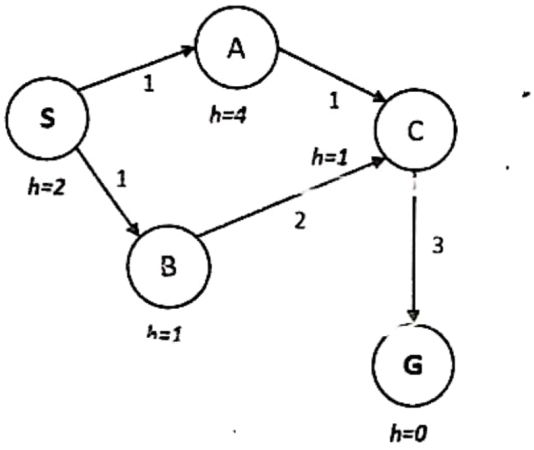
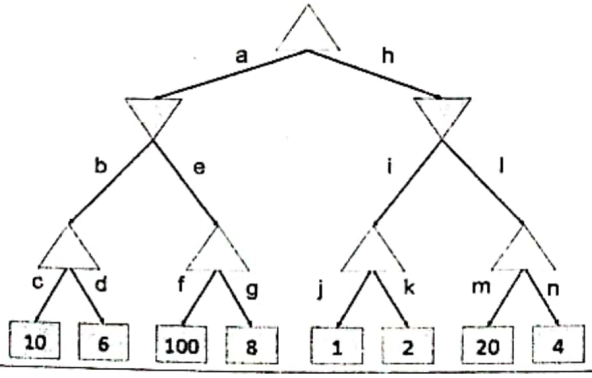
B Sc. in CSE Midterm Examination, Autumn-2022

Course Code: CSE-3635 Course Title: Artificial Intelligence

Total marks: *30* Time: 1.5 hours

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

			CO
1 a)	Suppose you are designing a robot for a warehouse. The objective of the robot is to accurately pick different parts and place them in the correct bin. Now answer the following: i. Write down the PEAS specification for the robot. ii. Characterize the robot's environment as fully observable vs. partially observable, deterministic vs. stochastic, episodic vs. sequential, discrete vs. continuous.	2	CO1
	OR		
	Give a scientific definition of intelligence. Show how it differs from the dictionary definition of intelligence. What methods have been used to define artificial intelligence? Which one, in your opinion, is appropriate? Why?	2	CO1
b)	Write down the difficulties of Hill climbing search. Consider the following block world problem:  Fig: A Hill Climbing Problem Show that the hill climbing procedure is failed with local heuristic function but works perfectly with Global heuristic function.	8	CO2
	OR		

	Consider the 8-queen problem where you have a board with 8 column and 8 rows. Your objective is to arrange the queens so that no two queens share the same row, column, or diagonal. Consider the following start state and goal state.   Suppose you are trying to solve this problem using greedy hill climbing search. According to this strategy find the followings: i. Write a suitable heuristic function. ii. What is the heuristic value of this start space? iii. How many total successors of the start space? iv. How to achieve 100% success for these types of problem?	8	
2 a)	Consider the state-space graph in the following figure. S is the start node and G is the goal node. Find out the solution path and cost returned by the A* graph search algorithm. 	5	CO2
b)	Determine whether the solution of 2(a) is optimal or not. If not optimal then make it optimal.	5	CO2
3 a)	Consider the following game tree △ Max ▽ Min □ Terminal node Show which nodes will be pruned if you use minimax search algorithm with alpha-beta pruning. Clearly show the values of each node. 	6	CO3

Consider the Australian map below. You want to color areas so that none of their neighbors have the same color. The four colors you may choose from are Red, Blue, and Green. Start from western Australia. When you are in an area, you may go to nearby regions or color the current region. Formulate the problem.  	4	CO3

International Islamic University Chittagong
Department of Computer Science and Engineering
B.Sc in CSE Mid Term Examination, Spring 2022
Course Code: CSE-3637 **Course Title:** Software Engineering
Time: 1 hour 30 minutes **Total Marks:** 30

- Answer all **Three** of the following questions.
- The figures in the right-hand margin indicate full marks.

1 a)	What is Software? What is generic and custom-made software? Give example	CO1	3
or,	What is Software Engineering? Differentiate between software engineering and computer science	CO1	
b)	"Hardware wears out, but software changes" do you agree with this statement? Justify your answer.	CO1	3
c)	Describe the characteristics of good software.	CO1	4
or,	Many software problems arise due to myths that are formed during the initial stages of software development. Also, some issues are a reality, but some people consider them myths. Find myth and reality from the below 3 statements, and justify your comment. • A software that is tested strictly is Bug-free • In software development, a high degree of documentation is needed • Testers need not be involved early		
2 a)	What are the key phases and activities involved in the software development process, and how do they contribute to producing high-quality software products?	CO2	3
b)	If you were a project manager using the waterfall model, how would you handle a situation where a client requests a significant change to the project scope during the testing phase? What steps would you take to ensure that the change is implemented smoothly and without causing delays or compromising the project's overall quality?	CO2	4
c)	Describe the strategies of software system conversion in Software Development Life Cycle.	CO2	3
3 a)	What is the V-model in software engineering, and how does it differ from the Waterfall model?	CO1	3
or,	Differentiate between Engineering and Software Engineering	CO1	
b)	A software development team wants to follow SCRUM. Help them by describing the following terminology • Scrum Events • Artifacts	CO2	4 + 3

International Islamic University Chittagong

Department of Computer Science and Engineering

B. Sc. Engineering in CSE

Midterm Examination, Autumn '22/Spring '23

Course Code: **ECON-3501** Course Title: **Principles of Economics**

Time: 1 hour 30 minutes Full Marks: 30

(i) Answer all the questions. The figures in the right-hand margin indicate full marks.

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

Course Outcomes (COs) of the Questions	
CO1	Explain the knowledge of the fundamental concepts and theories of micro and macro-economics.
CO2	Analyze the key indicators of economic growth.
CO3	Compare the economic theories and concepts to analyze behavior of individuals, firms and nations to act as a responsible citizen.

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

1)	a)	What is the 'Scarcity Definition of Economics' given by Lionel Robins? Elaborate.	CO3	An	5
1)	b)	'Problem of choice' is one of the microeconomic issues. Discuss how economics attempt to solve the problem of What, How and For Whom.	CO1	U	5
2)	a)	What do you mean by Supply in economics? Discuss about the determinants of Market Supply.	CO1	R	5
2)	b)	Suppose that the market for milk can be represented by the following equations: Demand: $P= 12 - 0.5Q_D$ and Supply: $P= 0.1Q_s$ where P is the price per gallon, and Q represents quantity of milk, represented in millions of gallons of milk consumed per day. Calculate the equilibrium price and quantity of milk and show the equilibrium through a graphical presentation.	CO2	Ap	5
3)	a)	What do you mean by 'production' in Economics? Describe the effect of technological progress in production.	CO2	U	5
3)	b)	What is the relationship between Total, Marginal and Average productivity of Labor? In which stage of labor input we can achieve the highest efficiency. Discuss with an example.	CO3	An	5
		OR			
3)	a)	If the price of MacDonald's Cheeseburgers increases, we would expect the demand for Coca-Cola to decrease. Why we would expect so? In what way/s MacDonald's Cheeseburger and Coca-Cola are related? Discuss.	CO2	U	5
3)	b)	'Different combination of inputs can produce the same quantity of output'- we call it indifference curve. Describe its properties with an example.	CO3	An	5