International Islamic University Chittagong
Department of Computer Science & Engineering

Mid-term Examination Autumn 2021	Program: B.Sc. Engg. (CSE)
Course Code: ECON-3501	Course Title: Principles of Economics
Time: 3 hours	Full Marks: 21+ 9 (Quiz & Viva)

[Answer all ***three*** questions from the followings; figures in the right margin indicate full marks.]

1(a).	Economics view the world through the lens of scarcity. Do you agree with this statement? Elaborate your viewpoint.	**CO3**	**An**	**2**
1(b).	Discus the subject matter of economics.	**CO1**	**U**	**2**
1(c).	Describe the significance of economics.	**CO1**	**C**	**3**
2(a).	Define production and production function.	**CO1**	**U**	**1**
2(b).	Explain the decreasing and negative return to scale.	**CO2**	**C**	**2**
2(c).	What is an isoquant curve? How can we reach at the Producers' equilibrium?	**CO3**	**C**	**4**
3(a).	Given that $p_s=2q+20$ and $p_d=-q+200$ where p=price and q= quantity demanded. Determine the demand and supply equation and find the equilibrium price and quantity then show in a graph.	**CO2**	**An**	**5**
3(b).	What are the differences between micro and macroeconomics?	**CO1**	**U**	**2**
4.	Quiz/Viba	**CO2**	**C**	**9**

International Islamic University Chittagong
6th Semester Mid-Term Examination in Computer Science and Engineering
Title: Artificial Intelligence
Marks: 21 Time: Three Hours

1. (a) Define intelligence. Below are the two definitions of AI. Which one you will consider appropriate and why? "i) Systems that act humanly and ii) Systems that act rationally". [0.5+1]

(b) "Can machines think?" – briefly elaborate the answer of this question by taking account of the "imitation game" as presented in Alan Turing's paper entitled " Computing Machinery and Intelligence". [1.5]

(c) Find out about the Mars Rover. [4]

(i) What are the percepts for this agent?
(ii) Characterize it's operating environment.
(iii) What are the actions the agent can take?
(iv) How can one evaluate the performance of the agent?
(v) What sort of agent architecture do you think is most suitable for this agent?

2. (a) Give the initial state, goal test, operators, and path cost function for each of the following. [1]

i) Using only four colors, you have to color a planar map in such a way that no two adjacent regions have the same color.
ii) A 3-foot-tall monkey is in a room where some bananas are suspended from the 8-foot ceiling. He would like to get the bananas. The room contains two stackable, movable, climbable 3-foot-high crates.

(c) Suppose you have the following search space:

State	Next	Cost
A	B	4
A	C	1
B	D	3
B	E	8
C	C	0
C	D	2
C	F	6
D	C	2
D	E	4
E	G	2
F	G	8

State	h
A	8
B	8
C	6
D	5
E	1
F	4
G	0

i) Draw the state space of this problem.[0.5]

ii) Assume that the initial state is A and the goal state is G. Show how each of the

following search strategies would create a search tree to find a path from the initial state to the goal state.

Uniform cost
Greedy search
A* search [3]

c) What is an iterative improvement algorithm? Do you consider hill-climbing is one of the classes of such algorithms? If yes, justify your answer [2.5]

3. (a) What is CSP? Do you consider the following problem is an example of CSP? If so, identify the variables, domains and constraints associated with this problem. [1.5]

You have to color a planar map using only four colors, in such a way that no two adjacent regions have the same color.

(b) What is sound inference? Do you think Modus Ponens is very much a sound inference rule? If yes, prove. [1.5.]

(c) Consider the following sentences. [4]

i) Mammals drink milk.
ii) Man is mortal.
iii) Man is a mammal.
iv) Karim is a man.
v) Prove Karim drink(s) milk.
vi) Prove Karim is mortal.

A) Represent the sentences in clausal form.
B) Prove (v) and (vi) using modus ponens.
C) Prove (v) and (vi) using resolution.

International Islamic University Chittagong
Center for General Education (CGED)
Midterm Assessment Test- Autumn-2021
Course Title: Life and Teachings of Prophet (SAAS)
Course Code: URED-3604 (LLB-URED-3201)
Time 3 Hours **Full Marks: 20+10=30**

[Answer the questions as instructed below from Part-1 and Part-2]

Part:1 [Answer any two (2) of the following from Part-1] 10X2=20

Q.1.

Define *Sirah* literally and terminologically. What are the sources of *Sirah* of Prophet (SAAS)? Discuss the benefit of studying the *Sirah* of Prophet (SAAS) for the Muslims in the light of the Qur'an and *Sunnah*.

Q.2.

Analyze the opposition of the Quraysh to the message of the Prophet Muhammad (SAAS) with some details.

Q.3.

Discuss the event of *Mi'raj* and its importance in the life of Prophet Muhammad (SAAS).

Part:2 [VIVA VOCE] =10

Wishing you best of luck

International Islamic University Chittagong
Department of Computer Science and Engineering
B. Sc. in CSE Midterm Examination, Autumn-2021
Course Code: CSE-3631 Course Title: Operating System
Section: 6AM + 6CM
Total marks: 21 Time: 2 hours 30 minutes for exam + 30 minutes for submission

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[Answer all the questions. Figures in the right hand margin indicate full marks.]

			CO	DL
1.				
a)	Do you think that *Operating System* acts as a *resource manager*----- how?	1	CO1	C1
b)	Suppose I would like to watch a *cricket tournament* directly. What type of system it would be and why?	2	CO1	C2
c)	We don't want to get our CPU idle. Can we divide our system into many logical parts in this context----describe?	2	CO1	C2
d)	Operating system is a very large software but your RAM is very small in size. We are at the age of multiprogramming system. Different types of applications we have to run at a time. How operating system can give the accommodation of these applications at a time to the RAM?	2	CO2	C3
2.				
a)	Which state is the most important step you think for a *job* to be executing? Describe it.	1	CO1	C2
b)	Which *communication technique* between jobs is more significant you think and how?	3	CO3	C2
c)	What is better between *deterministic modelling* and *queueing modelling* for jobs and how?	2	CO3	C2
d)	Why *turnaround time* and *waiting time* are essential parameters in CPU job scheduling.	1	CO3	C2
3.				
a)	Find the *average waiting time* and *average turnaround time* for the following jobs by *Round Robin* job scheduling algorithm:	3.5	CO4	C3

SL. of Jobs	Arrival time	Service time
P1	1	12
P2	9	7
P3	11	1
P4	12	1
P5	19	8

(Here quantum size is 3)

b)	Find the *average waiting time* and *average turnaround time* for the following jobs by *First Come First Served* scheduling algorithm:	3.5	CO4	C3

SL. of Jobs	Arrival time	Service time
P1	1	12
P2	6	7
P3	10	6
P4	12	1
P5	17	5

END

International Islamic University Chittagong

Department of Computer Science and Engineering
B. Sc. in CSE Midterm Examination, Autumn-2021
Course Code: CSE-3637 Course Title: Software Engineering
Section: 6AM+6CM
Total marks: 21 Time: 2 hours 30 minutes for exam + 30 minutes for submission

1(a)	Many software problems arise due to myths that are formed during the initial stages of software development. Also, some issues are reality, but some people consider them as myth. Find myth and reality from below 3 statements and justify your comment. o More people means faster software development o Software can be bug-free, if we develop the software following software Engineering principles o Waterfall method still works o Software quality can be assessed only after the program is executed.	**2**
(b)	Read the case carefully. Mention the violation clauses. Justify your comments. Mr. Jashim is trying to write a sizeable statistical program needed by a Software firm. He is a statistical database programmer in a software firm. In this firm, programmers are encouraged to write about their work and publish their algorithms in various conferences and journals. After months of tedious programming, Mr. Jashim has found himself stuck on several parts of the program. His manager wants the job completed within the next few days, not recognizing the complexity of the problem. He does not understand how to solve the issues. He remembers a coworker giving his source listings from his current work and an early version of a commercial software package developed at another firm. He has observed two code areas of these programs which could be directly included in his program. He utilizes segments of code from both his coworker and the commercial software but does not tell anyone or mention it in the documentation. Finally, Mr. Jashim completes the project and turns it in a day ahead of time.	**5**
2	For developing software (Listed below problems), discuss the activities of different phases following the SDLC model: (Select a model according to last digit of your ID, such as if your student ID is M00802, you must choose SDLC Model – 2.) 1/3/5: Spiral Model 2/4/8: Scrum Agile Model 0/7: extreme programming (Xp) 6/9: Rational Unified Process (RUP) Model Problems: 1/3/5: Fingerprint voting system 2/4/8: e-Learning platform (Google Classroom) 0/7: Sudoku game 6/9: Android Messenger App	**7**
3(a)	How to Choose the best SDLC Model?	**2**
(b)	Bangladesh government has developed software to connect with Imams of the Masjids. To deploy this software which technique is most suitable? Justify your comment.	**2**
(c)	“Software does not wear out, it changes”-Do you agree with this statement? If yes, show reasons for your answer.	**3**

International Islamic University Chittagong

Department of Computer Science and Engineering

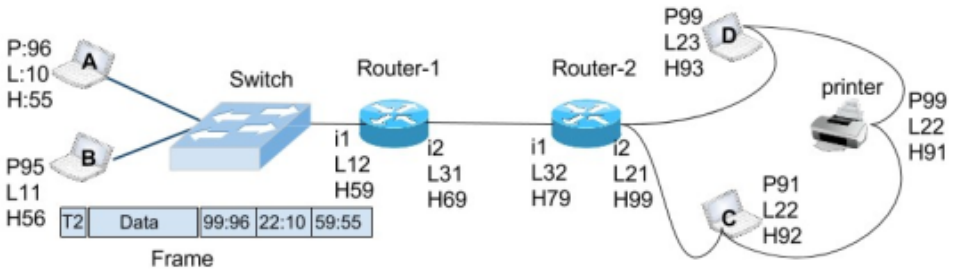
B. Sc. in CSE Midterm Assignment, Autumn 2021

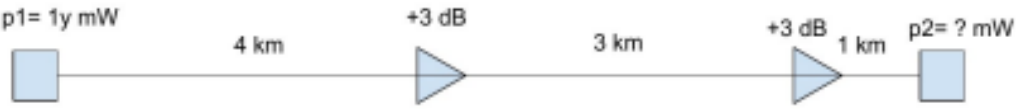
Course Code: CSE 3525 Course Title: Data Communication

Total marks: ***30(Written 21 + Viva 9)***

Time: ***2*** *hours* ***30*** *minutes for* ***exam*** *+* ***30*** *minutes for* ***submission***

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

		P	CO	DL
1.				
a)	Suppose a **computer-B** sends some data to the Printer for printing over the network. Here Data represents your nickname. In the following network diagram P is the process address, L is the logical address and H is the physical address of the corresponding nodes. For example a frame prototype of computer-A is shown in the diagram where the first number is the destination address and second number is the source address of the corresponding headers. In your case **Computer-B** is the source node and **printer** is the destination node.  Use your nickname instead of Data in the Frame of the above diagram and answer the following questions. i. How many LANs are there? ii. Show the frame construction for each of the LANs. iii. Computer-D and Printer have processes running at the same addresses 99. How will this be resolved? iv. How does Router-2 know Printer's physical address? v. Will there occur any error to deliver a message to the final destination?	**7**	**1**	**2**
2.				
a)	What is the transmission time and the propagation time of ***6xy Mbyte*** of message over a fiber optic link? Assume that the bandwidth of the link is ***2 gbps***, distance between the sender and receiver is ***10000 km*** and speed of light signal in optical fiber cable is $\boldsymbol{2.4x10^8}$ ***m/s***. What is the delay-bandwidth product of this link? Here ***xy*** is the last ***2*** digits of your ID.	**2.5**	**2**	**3**
b)	Cable TV networks have large coverage in our urban area. The bandwidth of the TV channel is ***6xy MHz***. Suppose you want to access the Internet with the same cable. ***SNR in dB*** of this link is ***15.2 dB*** for ***100m***. Find the maximum achievable data rate and number of levels of this link. Here ***xy*** is the last 2 digits of your ID.	**2.5**	**2**	**3**
c)	If loss of a cable is labeled ***-1.2dB/km*** then what will be the power at ***p2*** of the	**2**	**2**	**3**

	following link. Here ***y*** is the last digit of your ID for ***p1=1y mW*** in the following figure.  			
3.				
a)	Convert the **last two digits** of your ID into BCD code and then produce a bit stream as follows. Suppose your ID is C181297 and BCD of 9 is 1001 and BCD of 7 is 0111 then the bit stream would be 100100000111. Construct digital signal with the following line coding schemes: **i. NRZ-I** **ii. Manchester** **iii. Differential Manchester** **iv. AMI** **v. AMI with HDB3** Discuss that which of the above line coding schemes produces better signals in terms of simplicity, DC components, Baseline wandering and synchronization.	**7**	**2**	**4**

Note:

There are six levels in cognitive domain (here C means *cognitive*)
C1 = Remember (R)
C2 = Understand (U)
C3 = Apply (A)
C4 = Analysis (N)
C5 = Evaluate (E)
C6 = Create (C)

For each question, specify which CO it covers in the CO column. In the DL column, specify the domain and level. You may write C1 (Cognitive domain, level 1) or R (Remember) etc. In written exams, questions are almost always in the cognitive domain.

CO = Course Outcome
DL = Domain and Level of Bloom's taxonomy