

University of Asia Pacific
Department of Computer Science & Engineering
Mid-Semester Examination Fall-2018

Program: B. Sc Engineering (Third Year/ Second Semester)

Course Title: Operating System
Time: 1.00 Hours.

Course No: CSE 303

Credit: 3.00
Full Mark: 60

There are **Four** Questions. Answer any **Three**. All questions are of equal value/Figures in the right margin indicate marks.

1. a) What are the main components of a modern *computing system*? Draw a suitable diagram. 4
+3
- b) Explain the *main purposes of an operating system* to maintain a computing system? 7
- c) Draw the *hierarchical view of a total system*. What is *Kernel*? 3+3
2. a) What do you mean by a *Job* and a *Process*? 2
- b) What is *PCB*? What are the *elements belong to PCB*? List out them. 6
- c) Consider the following set of processes, with the length of the CPU Burst time given in milliseconds: 12

Process	Arrival Time	Burst Time
P1	0	10
P2	4	8
P3	6	6
P4	6	3

- i. Draw the charts illustrating the sequence of execution of these processes using *SJF* and *FCFS*
- ii. What is the *average turnaround time* for each of the scheduling algorithm?

3. a) What are the differences between *multiprocessor* and a *multithread system*? Why process cause *overhead*? 4
+3

- b) Draw a diagram of the possible process states. Include the event(s) which cause a transition from state to another. 6
- c) What is a *thread*? Which *components* belong to thread? Give a real time example of a multithread computing system. 7
4. a) What are the differences between *Logical* and *physical address*? Explain with example with the help of 8086 processor. 6
- b) Consider the following Jobs and the memory Free blocks. Show the memory allocation according to First-Fit and Best Fit mechanisms. 8

Job	Memory Free Block KB	Size of Jobs KB
J1	750	700
J2	660	400
J3	500	300
J4	400	150

- c) What is *virtual memory*? If RAM size is 64 KB and page size is 2KB then how many pages possible to locate in RAM? Also find out that if a program of size 256 KB then how many frames it will demand. It can be mentioned that the page size is equal to the frame size. 6

University of Asia Pacific

Department of Computer Science & Engineering

Mid-Semester Examination Fall -2019

Program: B. Sc Engineering (4th Year/ 2nd Semester)

Course Title: Artificial Intelligence & Expert Systems. Course No. CSE 407 Credit: 3.00

Time: 1.00 Hour.

Full Marks: 60

There are **Four** Questions. Answer any **Three including question Q-1**. All questions are of equal value. Figures in the right margin indicate marks.

1. a) Elon mask is planning to develop a self-driving car. Give a PEAS description of the intelligent agent for his automated car. 10
- b) Represent the following knowledge in **PROLOG (Using inference)**: 10
Hasan and Shopon, two class-mates, were studying at CSE Dept. UAP. Shopon was careless at his courses and was not regular at his class. That's why hasan dislike Shopon.

Or

- a) What is intelligent agent? How AI is different from machine learning and deep learning? 10
- b) Express the following sentences using **predicate logic**: 10
i. None of my friends are perfect.
ii. No one likes hartal.
iii. All employees earning Tk. 40000 or more per year, pay taxes.
iv. Every graph is not connected.
v. Tigers and lions attack if they are hungry or threatened.

2. a) Express the following using **propositional logic**: 10
i. You can access the internet from campus, if you are a computer science major or you are not a freshman.
ii. You cannot ride the roller coaster, if you are less than 4 feet tall.
iii. If the earth moves round the sun or the sun moves round the earth, then Copernicus might be a mathematician but wasn't an astronomer.
- b) Determine whether the following sentence is: 10
(a) Satisfiable (b) contradictory, or (c) valid
i. $(P \rightarrow (Q \vee R))$
ii. $(P \wedge Q) \rightarrow (R \vee \sim Q)$

3.

a) Represent the following knowledge in a *semantic network*:

15

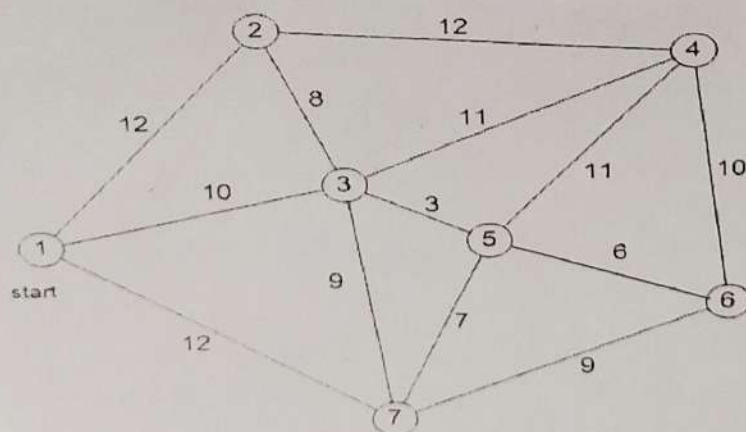
Dogs are Mammals	Birds have Wings
Mammals are Animals	Bats have Wings
Birds are Animals	Bats are Mammals
Fish are Animals	Dogs chase Cats
Cats are Mammals	Cats eat Fish
Cats have Fur	
Dogs have Fur	

b) Represent the following knowledge into *propositional logic*:

5

If it rains heavily, then it causes flood. Flood brings miserable circumstances in our everyday life, if the government fails to take the necessary steps. Luckily, we didn't have any awful situation this year. Foreign delegates express their statements that either the government took necessary steps or it didn't rain heavily.

4. **Traveling Salesman Problem (TSP):** A salesman has to travel between N cities to sell his commodities and return to the first city. The order is not important, but he wants to travel all the cities with minimum distant and least cost. Given a list of cities and the distances between each pair of cities, what is the shortest possible route that visits each city and returns to the origin city? (An example graph of 7 cities is provided below.)



a) Formulate the problem.

10

b) "It is not always possible to construct the *whole search tree* for TSP."—Justify your answer with your own logic.

10

University of Asia Pacific
Department of Computer Science & Engineering
Mid-Semester Examination Spring 2019
Program: B. Sc. Engineering (4th Year/2nd Semester)

Course Title: Artificial Intelligence & Expert System

Course No. CSE-407

Credit: 3.00

Time: 1.00 Hour

Full Marks: 60

There are **Four** Questions. Answer any **Three**. All questions are of equal value/Figures in the right margin indicate marks.

- Q.1 a) What are early and present visions of artificial intelligence. (6)
b) Explain Turing mechanism to test a machine is intelligence or not? (6)
c) Correlate among belief, hypothesis and knowledge. (8)
- Q.2 a) Explain knowledge acquisition, representation, manipulation and resolution. (10)
b) Design and describe a simple rule-based expert system. (10)
- Q.3 a) With the help of two agents explain how conflict resolution can be performed. (10)
b) Represent the following knowledge using graph OR frame. (10)
Samina Chowdhury, the daughter of Mahmudun Nabi and Rashida Chowdhury, is a renowned singer. She was born in Dinajpur on 1968. She prefers to sing classical and modern songs.
- Q.4 a) Classify intelligent agents. (6)
b) Write short notes on:
No Hands Across America (7)
c) Represent using Prolog.
Mr. John is a programmer. He achieved his PhD from Simon University. (7)
We, the students, learned lots from him.

Best of Luck

University of Asia Pacific

Department of Computer Science & Engineering

Mid-Semester Examination Fall -2019

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Full Marks: 60

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	Fish are Animals
	Birds are Animals
	Mammals are Animals
	Dogs are Animals
Cats eat Fish	Dogs chase Cats
	Bats are Mammals
	Bats have Wings
	Birds have Wings

a) Represent the following knowledge in a semantic network:

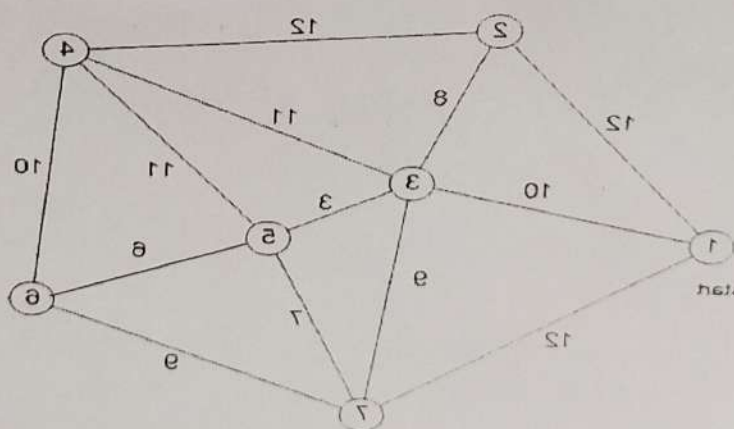
12

b) Represent the following knowledge into propositional logic:

2

Foreign delegates express their statements that either the government took necessary steps or it didn't rain heavily. If it rains heavily, then it causes flood. Flood brings miserable circumstances in our everyday life, if the government fails to take the necessary steps. Luckily, we didn't have any awful situation this year.

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