DEPARTMENT OF COMPUTER SCIENCE
GUJARAT UNIVERSITY
M.C.A. – II
SUBJECT: ARTIFICIAL INTELLIGENCE

Max Marks:40 Time:90 Minutes

Q1. Answer the following (any five) : (2 marks each) [10]

1. What do you call Heuristic? Explain with the help of an example.
2. Explain what is PEAS description of an intelligent agent.
3. Write algorithm for Breadth First Search method.
4. Explain proactive property of an intelligent agent.
5. Brief about declarative knowledge.
6. What are the problems faced when we use Hill Climbing techniques?

Q2. Answer the following (any five) : (3 marks each) [15]

1. Difference between Propositional and Predicate logic.
2. Explain simple reflex agent with the help of an example.
3. Explain production systems.
4. Explain generate and test method.
5. Explain Simple Hill Climbing method.
6. Write down all the problem characteristics and their potential answers.

Q3. Answer the following (any three) : (5 marks each) [15]

1. Explain Steepest Ascent Hill Climbing method.
2. Explain in detail types of environments.
3. Explain goal-based and utility-based agents with the help of an example.
4. Write predicate logic for following :
   a. Shyam likes to watch all kinds of movies.
   b. Mohan eats carrots and is alive.
   c. Every heavenly body is a star or a planet or a comet.
   d. Everybody likes chocolates.
   e. One who knows cooking does not know drawing.

Explain any 2 problem characteristics for Tic tac toe & chess problem with reasons.

Department of Computer Science
Gujarat University
Course: MCA Semester II

Subject: Data Analytics **Total Marks: 30**

Q1. For the above data, find equation of model for linear regression. Also evaluate the efficiency of model by finding value of R2 and MSE. Predict the weight for height =80 **[5]**

Weight (lbs)	Height (Inches)
140	60
155	62
159	67
179	70
192	71
200	72
212	75

Q2. **[5]**

Sales	Frequency
1-10	2
11-20	3
21-30	5
31-40	7
41-50	7
51-60	12
61-70	9
71-80	10
81-90	8
91-100	2

For the given data:

1. Plot the histogram as well as dot plot.
2. find cumulative frequency distribution for **less than** as well as **greater than**. Plot ogive chart for the both.

Q3. For the given data, find mean, median, mode, standard deviation, coefficient of variation, 24^{th} percentile and IQR **[7]**

1, 2, 3, 4, 6, 9, 9, 8, 5, 1, 1, 9, 9, 0, 6, 9.

Q4. Explain the methods of feature selection **[5]**

Q5. Explain methods for handling missing values **[5]**

OR

Q5. Explain methods for handling outliers **[5]**

Q6.

x_i	6	11	15	21	27
y_i	6	9	6	17	12

[3]

a. Develop a scatter diagram for these data.
b. What does the scatter diagram indicate about a relationship between x and y?
c. Compute and interpret the sample covariance.
d. Compute and interpret the sample correlation coefficient.
e. Develop regression equation and find value of y for x= 30

Department of Computer Science

MCA Sem – 2

Operating Systems

Sessional 1 Examination - Theory

March 2024

Total Marks : 30

Date: 20th March,2024 Time : 1hr 30 min

Notes:
1. Write side figure indicates marks.
2. Write to the point answer.

Q1. **Answer the followings: (Any Four)** 16

1. What is context switch1? Draw process state diagram and explain each state.
2. What is Inter-Process Communication? Explain models of IPC.
3. Mention the Scheduling Criteria and Optimization Criteria for Scheduling algorithm? Brief about each.
4. What is the Critical-Section Problem? Which are the requirements for solution to critical-section problem? How following sudo-code can be useful for process synchronization? And for How many process it will work?

```
For Process Pi :                    For Process Pj :

while (true){                       while (true){

    flag[i] = true;                     flag[j] = true;
    turn = j;                           turn = i;
    while (flag[j] && turn == j);       while (flag[i] && turn == i);

     /* critical section */              /* critical section */

    flag[i] = false;                    flag[j] = false;

    /* remainder section */             /* remainder section */

}                                   }
```

5. Why we require process to be synchronized? Explain any one process synchronization problem.

Q2. What is semaphore? Briefly explain different type of semaphore(S). 04
If S=10 and P() operation performed 5 times and V() operation performed 5 time. What will be the value of S?

Q3. Process and its corresponding burst time and arrival time is given. Mention the Gantt Chart and Find the average turnaround time and average waiting time for FCFS, SJF(Preemptive and Non-preemptive), Round Robin(Quantum Time = 3ms) and Priority based (Non-preemptive) algorithm. Also mention which algorithm will be best. 06

Process	Arrival Time	Burst Time	Priority
P1	0	6	2
P2	2	3	1
P3	4	2	1
P4	5	5	3

Q4 Use a bankers/Safety algorithm and answer the question given below: 04
Consider the following data for the system for five processes(P0,….,P4) and three resources.

Process	Allocation			MAX			Available		
Resource	R1	R2	R3	R1	R2	R3	R1	R2	R3
P0	0	1	0	7	5	3	3	3	2
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

- Calculate the matrix need.
- What will be the safe sequence?
- Is the system being in safe state? Justify your answer.
- If Pi arrives with request(10,3,8) can it be granted immediately?

GUJARAT UNIVERSITY
MASTER OF COMPUTER APPLICATOINS (MCA)
Semester – II
Web Design

Time : 90 Minutes
Date: March 19,2024

Total Marks : 30

Q-1 **Attempt the following (any six)** **[18]**

1. Describe some common reasons HTML code might not validate correctly.
2. Name three differences between paper-based and screen-based design.
3. What are two types of URL? What type of URL links to another server? What affects the format of the URL for your Web site?
4. What four navigation questions should the user be able to answer?
5. List three characteristics of HTML that make it ideal for the World Wide Web.
6. Name three ways to create a unified look for your site.
7. List three technology constraints that can affect the way a user views your Web site's content.
8. List three ways to control information overload.
9. List the four variables to consider when testing your Web site.

Q-2 **Attempt the following (any six)** **[12]**

1. Why should you never specify an absolute path in partial URLs?
2. What is a deprecated element? Write one example of deprecated element in HTML.
3. What is a prime reason users may leave a Web site?
4. Explain active versus passive white space.
5. What is the difference between removing the border attribute and setting border="0"?
6. List two common types of Internet connection technologies.
7. What are the benefits of using the alt attribute?
8. What are the four parts of a complete URL?