MBA-02

Roll no. 2 0 2 0 6 7 1 0 0 9

B. Tech.
(SEM V) ODD SEMESTER
MINOR EXAMINATION: 2022-2023
Subject Name: ENGINEERING AND MANAGERIAL ECONOMICS

Capital

Time: 2 Hrs. **Max. Marks: 30**

Note: Attempt all questions.

1. **Attempt any Three parts of the following. Q. 1(a) is compulsory.**

(a) Economics is a social science concerned with the production, distribution, and consumption of goods and services. Explain briefly. (4)
(b) Differentiate between microeconomics and macroeconomics. (3)
(c) Briefly discuss the law of demand. Also, discuss its exception. (3)
(d) Discuss demand schedule and demand curve. (3)

2. **Attempt any Three parts of the following. Q. 2 (a) is compulsory.**

(a) Define managerial economics. Also, discuss the scopes of managerial economics. (4)
(b) Explain the decision-making process? (3)
(c) Discuss macroeconomic theories and policies. (3)
(d) Discuss the role of managerial economics from an engineering perspective. (3)

3. **Attempt any Three parts of the following. Q. 3(a) is compulsory.**

(a) Knowing of elasticity of demand is very essential for managerial decision-making. Explain (4)
(b) Explain any ten determinants of demand. (3)
(c) What do you understand by demand forecasting? Discuss the opinion polling methods of demand forecasting. (3)
(d) Define Supply. What are the determinants of supply? (3)

BIT-32

Roll No. 2 0 2 0 0 7 1 0 4 9

B TECH
(SEM VI) EVEN SEMESTER
MINOR TEST 2022 - 2023

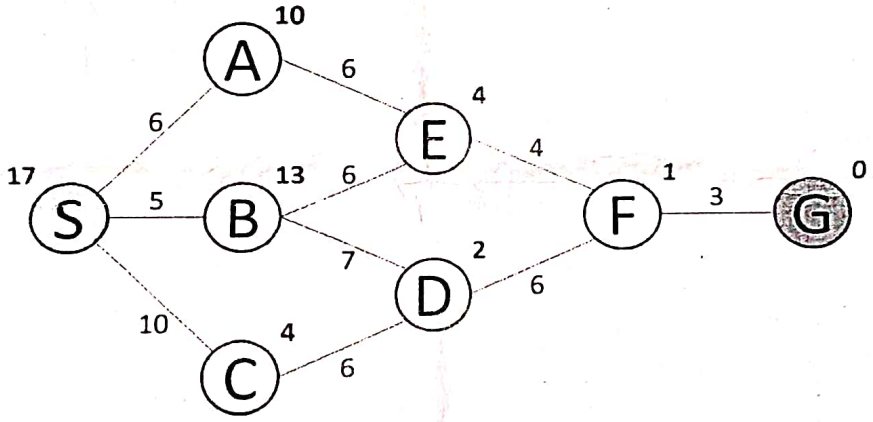
Artificial Intelligence

Time: 2 Hrs. Max. Marks: 20

Note: Answer all questions.

Q.1 Attempt any Three parts of the following. Q. 1(a) is compulsory.

(a). Explain and write the steps of A* Algorithm. Consider the following graph- 4



The numbers written on edges represent the distance between the nodes.
The numbers written on nodes represent the heuristic value.
Find the most cost-effective path to reach from start state S to final state G using A* Algorithm. You are further required to write explicitly the Queue after each step.

(b). Distinguish Informed and Uninformed Search in Artificial Intelligence. 2

(c). Write down names of the different types of intelligent agents in Artificial Intelligence. You are further required to describe any one with suitable diagram or example. 2

(d) Compare and contrast Best First search with Breadth First Search. 3

Q.2 Attempt any Two parts of the following. Q. 2(a) is compulsory.

(a). Arthur is looking for a group of friends for his start-up, which develops and provides some web-based p2p downloading solutions to college students (this is before the lawsuits). Arthur has determined that he needs 2 C# Programmers, 2 Flash Designers, 1 Photoshop Guru, 1 Database Admin, and 1 Systems Engineer. Assume that if a person knows two languages/software, he or she can take on two roles in the company. So, Arthurs narrowed down his selections to the following people: 4

Name	Abilities
Peter	C# and Flash
John	Photoshop and Flash
Jim	Flash and Systems
Jane	C# and Database
Mary	Photoshop and Flash
Bruce	Systems and C#
Chuck	Photoshop and Flash

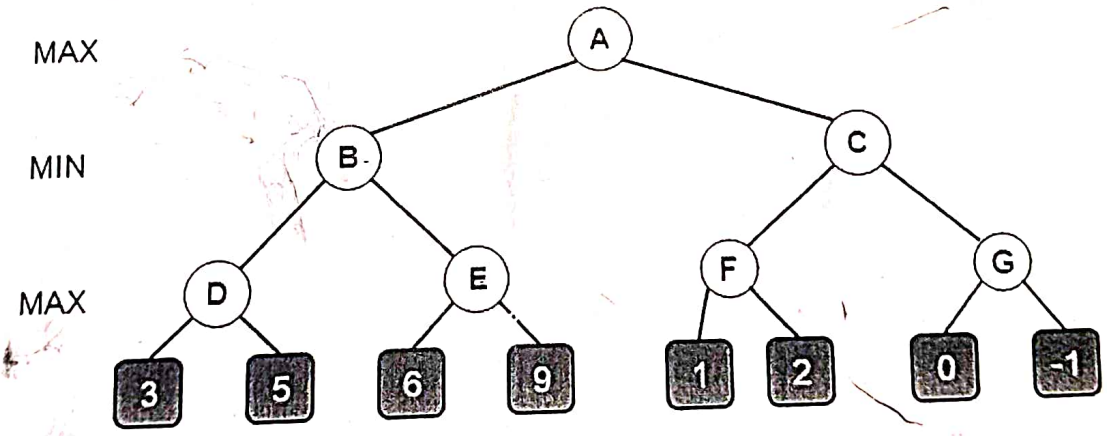
Suppose Arthur knows C#, and only has funds to hire three more people. Model this scenario as a CSP - (using variables, value domains, and constraints).

(b). What is Plausible search generator? Explain with suitable example or diagram 2

(c). What are the problems in hill climbing algorithm, how it can be overcome. 2

Q.3 Attempt any Two parts of the following. Q. 3(a) is compulsory.

(a). Solve given min-max tree with the help of Alpha-Beta pruning 4



(b). What is backward chaining in Artificial Intelligence. Example with an example. 2

(c). What do you understand by Cognitive Science? Explain 2

Paper Code: BIT-33 Roll No:

B.Tech
(SEM VI) EVEN SEMESTER
MINOR TEST (EXAMINATION) 2022-2023

Machine Learning

Time: 2 Hours **Max. Marks: 20**

Note: Answer all questions

Q.1 Attempt any Three parts of the following.Q.1 (a) is compulsory.

(a) Explain various types of Machine learning with an example. 4

(b) Distinguish between Artificial Intelligence, Machine Learning and Deep Learning. 2

(c) What are bias and variance in Machine Learning? 2

(d) Explain the types of Linear Regression. 2

Q.2 Attempt any Two parts of the following.Q.2 (a) is compulsory.

(a) Consider the following set of points: {(-2 , -1) , (1 , 1) , (3 , 2)} 4
(i) Find the least square regression line for the given data points.
(ii) Plot the given points and the regression line in the same rectangular system of axes.

(b) Describe the Support Vector Machine with the help of diagram. 2

(c) Differentiate between classification and clustering in Machine Learning. 2

Q.3 Attempt any Two parts of the following.Q.3 (a) is compulsory.

(a) Draw and explain Multilayer Neural Network? How it is different from Perceptron. 4

(b) What is Overfitting and Underfitting in Machine Learning? Explain with an example. 2

(c) Explain different kinds of activation functions. 2

BIT-26

Roll No. 2 0 2 0 0 7 1 0 4 9

B TECH
ODD SEMESTER
MINOR TEST 2022 - 2023

OPERATING SYSTEM

Time: 2 Hrs. Max. Marks: 20

Note: Answer all questions.

Q.1 Attempt any Three parts of the following. Q. 1(a) is compulsory.

(a). Discuss each of the following unconventional page replacement schemes in the context of virtual storage multiprogramming system servicing both batch and interactive users: 4

(i) "Global LIFO"- The page brought into real storage most recently is replaced.

(ii) "Local LIFO"- The page brought in most recently by the process which requested the incoming page is replaced.

(iii) "Tired Page"- The most heavily referenced page in the system is replaced. (Consider both the global and local variants of this scheme.)

(iv) "Battered Page"- The most heavily modified page in the system is replaced. (Consider both the global and local variants of this scheme.)

(b). What are the various services of an operating system? Explain any one in brief. 2

(c). Given memory partitions of 100K, 500K, 200K, 300K, and 600K (in order), how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes of 212K, 417K, 112K, and 426K (in order)? Which algorithm makes the most efficient use of memory? 2

(d) What are the different schedulers? Explain the use these schedulers with help of queuing diagram 2

Q.2 Attempt any Two parts of the following. Q. 2(a) is compulsory.

(a). Assume you have the following jobs to execute with one processor 4

Process	Burst Time	Priority	Arrival Time
P1	75	3	0
P2	40	2	10
P3	25	1	20
P4	20	0	80

P5	45	2	85

The system uses Priority based Preemptive scheduling algorithm:

(i) Create a Gantt chart illustrating the execution of these processes.
(ii) What is the Turnaround Time for Process P3?
(iii) What is the average Turnaround Time?
(iv) What is the average Waiting Time?

(b). Explain the following terms with suitable example or diagram: 2

(i) Turnaround Time
(ii) Waiting Time
(iii) Response Time
(iv) Execution time

You are also required to give the use of the above time metrics.

(c). Explain Multilevel feedback queues processor management (or CPU scheduling) algorithm with suitable example/diagram. 2

Q.3 Attempt any TWO parts of the following. Q. 3(a) is compulsory.

(a). Consider the following reference string: 4

1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5, 4, 2

Find the number of page faults for Optimal page replacement algorithm for 3-page frames. (Assume initially all page frames are empty)

(b). Consider a variant of the RR scheduling algorithm where the entries in the ready queue are pointers to the PCBs. 2

(i). What would be the effect of putting two pointers to the same process in the ready queue?
(ii). What would be the major advantages and disadvantages of this scheme?
(iii). How would you modify the basic RR algorithm to achieve the same effect without the duplicate pointers?

(c). Explain virtual address translation scheme with combined mapping in a paged segmentation system with suitable diagram. 2

BCS-13

ROLL NO

BTECH
(SEM III)ODD SEMESTER
MINOR TEST (EXAMINATION) 2021-2022

INTERNET & JAVA PROGRAMMING

Time: 2Hrs. Max.Marks:20

Note: Answer all questions.

Q1. Attempt any three parts of the following.Q.1 (a) is Compulsory.

(a)How classes are inherited? Write a program to illustrate multilevel inheritance. 4

(b)Explain Sending and receiving files using email. 2

(c)Differentiate between method overloading and method overriding. Give example for each. 2

(d)Write a program in Java to create first 100 Fibonacci numbers. 2

Q2. Attempt any two parts of the following Q.2 (a) is compulsory.

(a)What are the various services offered by internet? 4

(b)What is Video and voice conferencing? Explain the various hardware and software used for voice and video conferencing. 2

(c)Discuss various primitive data types supported by Java 2

Q3. Attempt any two parts of the following Q.3 (a) is compulsory.

(a)What are Packages? How will you import a package in Java? Give Example. 4

(b) What is WWW.Explain in detail? 2

(c)Explain two ways of creating a thread in Java. Show it with an example Program. 2

BIT-32

Roll No. 2 0 1 9 0 6 1 0 4 4

B TECH
EVEN SEMESTER
MINOR TEST 2021 – 2022

Artificial Intelligence

Time: 2 Hrs. **Max. Marks: 20**

Note: Answer all questions.

Q.1 Attempt any Three parts of the following. Q. 1(a) is compulsory.

(a). Consider a graph search problem where for every action, the cost is at least Ɛ, with Ɛ > 0. Assume the used heuristic is consistent. Consider the following statement, you are required to state whether the given statement is True or False with appropriate justification. 4

i) Depth-First graph search is guaranteed to return an optimal solution.
ii) Breadth-First graph search is guaranteed to return an optimal solution.
iii) Uniform-cost graph search is guaranteed to return an optimal solution.
iv) Greedy graph search is guaranteed to return an optimal solution.
v) A* graph search is guaranteed to return an optimal solution.
vi) A* graph search is guaranteed to expand no more nodes than depth-First graph search.
vii) A* graph search is guaranteed to expand no more nodes than uniform-cost graph search
viii) Let $h_1(s)$ be an admissible A* heuristic. Let $h_2(s) = 2h_1(s)$. Then: A* tree search with h2 is guaranteed to return the shortest path.

(b). What do you understand by Artificial Intelligence? What are the types of AI based on capabilities and functionalities? 2

(c). Explain uninformed search strategy in AI. You are further required to give its advantages and disadvantages. 2

(d) Compare and contrast Best First search with Breadth First Search. 2

Q.2 Attempt any Two parts of the following. Q. 2(a) is compulsory.

(a). Arthur is looking for a group of friends for his start-up, which develops and provides some web-based p2p downloading solutions to college students (this is before the lawsuits). Arthur has determined that he needs 2 C# Programmers, 2 Flash Designers, 1 Photoshop Guru, 1 Database Admin, and 1 Systems Engineer. Assume that if a person knows two languages/softwares, he or she can take on two roles in the company. So, Arthurs narrowed down his selections to the following people: 4

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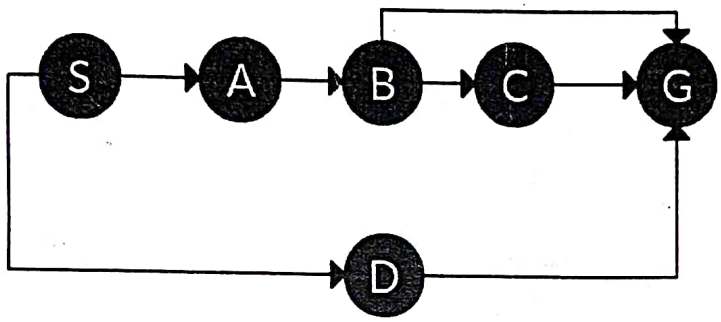
Bruce	Systems and C#
Chuck	Photoshop and Flash

Suppose Arthur knows C#, and only has funds to hire three more people. Model this scenario as a CSP - (using variables, value domains, and constraints).

(b). Consider the following graph: 2



Which solution would DFS find to move from node S to node G in the above graph?

(c). What is the intelligent agent in AI, and where are they used? Explain with suitable example. 2

Q.3 Attempt any TWO parts of the following. Q. 3(a) is compulsory.

(a). Let the universe of discourse for the variable n be N (all integers ≥ 0) and 4
p(n) = "n is prime"
e(n) = "n is even"
Write the following in ordinary English (do not say it in terms of n and m):

i) $\forall n \, \exists m((\neg e(n) \wedge n \neq m) \rightarrow e(n + m))$

ii) $\forall m \, \forall n((p(m) \wedge p(n) \wedge m \neq 2 \wedge n \neq 2) \rightarrow e(m + n))$

(b). Explain adversarial search with suitable example. 2

(c). Explain the minimax algorithm along with the different terms using suitable example. 2

BIT-15

Roll No. 2 0 2 0 0 7 1 0 0 9

B TECH
EVEN SEMESTER
MINOR TEST 2021 - 2022

Design and Analysis of Algorithms

Time: 2 Hrs. Max. Marks: 20

Note: Answer all questions.

Q.1 Attempt any Three parts of the following. Q. 1(a) is compulsory.

(a). (i) Consider the following fragment of code, find its asymptotic time bound: 4

```
for i ← 1 to m
    {
        for j ← 1 to i
            {
                set sum ← sum + A[i][j]
            }
    }
```

(ii) Consider the following recurrence

$$T(n) = 2T(n/2) + n^3$$

Find its asymptotic time bound using Master Method.

(b). Explain and write Heap-Sort algorithm. 2
Consider the following sequence of input
78, 32, 42, 62, 98, 12, 34, 83
Arrange the input sequence in ascending order using Heap-Sort algorithm.

(c). Show the red-black tree that result after inserting the keys 41, 38, 31, 12, 19, and 8 into and initially empty red-black tree 2

(d) What are the different asymptotic notations? Explain any one with suitable example. 2

Q.2 Attempt any Two parts of the following. Q. 2(a) is compulsory.

(a). Explain the concept of Divide and Conquer method of algorithm design. You are further required to write and analyse the designed algorithm. 4

(b). Design and analyse Counting Sort algorithm. Consider the following sequence of numbers: 2

4, 2, 5, 7, 7,3, 1, 2 ,6

Use designed algorithm to arrange the numbers in ascending order

(c). Design a Radix Sort algorithm to arrange the following sequence of numbers in ascending order: 2

Input: 478, 537, 9, 721, 3, 38, 123, 67

You are also required to analyse the designed algorithm.

Q.3 Attempt any TWO parts of the following. Q. 3(a) is compulsory.

(a). Write an algorithm for union of two Fibonacci- Heaps. Find out the time complexity of the designed algorithm. 4

(b). Write down all the properties of binomial trees and you are also required to give proof for each of the property. 2

(c). Explain B-Tree with suitable example. 2

Paper Code: BIT-33 Roll No: 2019061044

B.Tech
(SEM VI) EVEN SEMESTER
MINOR TEST (EXAMINATION) 2021-2022

Machine Learning

Time: 2 Hours **Max. Marks: 20**

Note: Answer all questions

Q.1 Attempt any Three parts of the following.Q.1 (a) is compulsory.

(a) Define Machine learning & explain various types of Machine Learning? 4

(b) Explain the term Cognitive Science with a suitable example. 2

(c) Explain Rule based Classification in Machine Learning 2

(d) Distinguish between Bias and Variance in Machine Learning 2

Q.2 Attempt any Two parts of the following.Q.2 (a) is compulsory.

(a) Explain the term Over fitting and under fitting in Machine Learning with suitable example 4

(b) What do you mean by Clustering in Machine Learning 2

(c) Explain Multilayer Neural network 2

Q.3 Attempt any Two parts of the following.Q.3 (a) is compulsory.

(a) Create the regression line for the following set of the point 4

{(-2,-1),(1,1),(3,2)}

(b) What do you understand by Perceptron in ANN 2

(c) Explain Linear Regression. Also explain simple and multiple linear Regression 2