Paper Code: BIT-33 Roll No: | | | | | | | | | |

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

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Roll No

B Tech (IT), 6th Sem
Minor Test 2021-22
WIRELESS SENSOR NETWORK & IOT

Time: 2hrs *Marks: 20*

Note: Attempt all questions.

Q1. Attempt any 3 parts of the following. Q1(a) is compulsory

(a) Discuss the basic architecture of a sensor node with help of a suitable diagram. What are the elementary components of a sensor? Explain each component and its characteristics in short. 4

(b) Differentiate between the accelerometer and the gyroscope. Where are they used? Give some examples of such applications. 2

(c) What is virtualization? How does it help an Internet of Things (IoT)? Discuss the virtual sensor networks using a suitable diagram. 2

(d) *"Sensors are the basic building blocks of an IoT."* Justify this statement with help of a neat diagram. 2

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

(a) Which operating systems are used in the sensor networks? Describe the main features of these operating systems? Also discuss about the programming language and the simulation support to these operating systems. 4

(b) What are the basic characteristics of a wireless sensor network? Differentiate between data dissemination and data aggregation. 2

(c) In how many ways do we deploy the sensors for designing the sensor networks? Write down the difference between these deployment methods. 2

Q3. Attempt any 2 parts of the following. Q3(a) is compulsory

(a) What are the various applications of Internet of Things? Describe at least four IoT applications in short. Also discuss how these IoT applications are affecting the life of an individual in today's era. 4

(b) What do you know about Internet of Things? What are the issues and challenges with IoT? Discuss in short. 2

(c) Draw the layered architecture of the Internet of Things? Explain the details of each layer in brief. 2

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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 ε, with $\varepsilon > 0$. 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

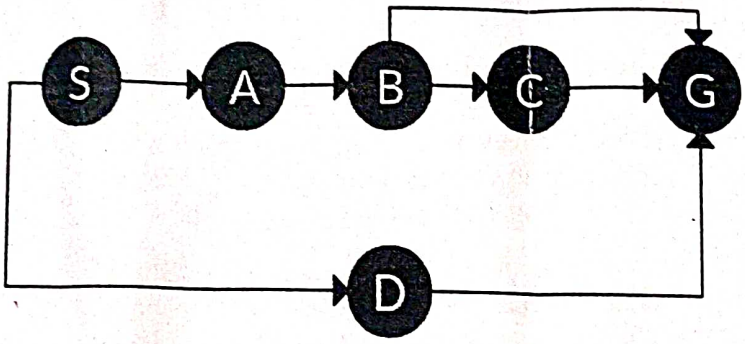
Q.2 Attempt any Two parts of the following. Q. 2(a) is compulsory.

(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

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). 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

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

DATA MINING AND WAREHOUSE

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

Note: Answer all questions

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

(a) Briefly defined about data mining with major task in data pre-processing with advantages ? 4

(b) Explain the issues of data mining and also write their functionality ? 3

(c) What is data description explain briefly? 3

(d) Short Notes: 3

i) Kind of patterns in Data mining

ii) kind of data in Data mining

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

(a) What is data warehouse and explain all data model in data warehouse ? 4

(b) What is OLAP of data cube and explain data cube operation with diagram? 3

(c) Write all property od ROLAP and MOLAP with diagram ? 3

(d) Briefly explain data warehouse implementation with advantages and Diagram ? 3

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

(a) What is mean motive of data mining and explain briefly with example ? 4

(b) Write all classification of data mining and defined all primitive task ? 3

(c) Write all characters data warehouse and explain top-down design and Bottom-up design ? 3

(d) Write short notes 3

i) Multidimensional Database

ii) Cube Operation