

Subject

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 Code:-

Subject:-

Fundamentals of Computers and IT										
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Roll No:-

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TECNIA INSTITUTE OF ADVANCED STUDIES
MCA
Class Test (2025-26)

Sem: Ist

Set-2

Date:

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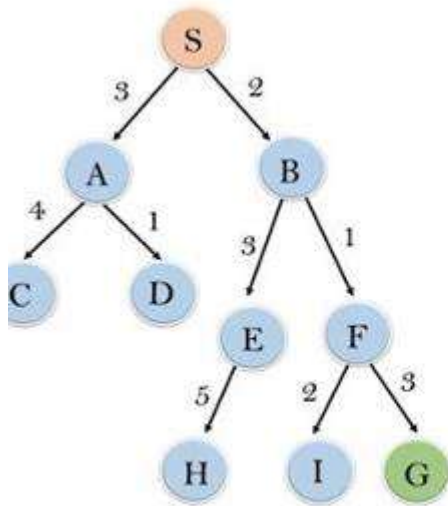
Time: -1:00 Hours

Max. Marks: 30

General Instructions:

- All Questions are compulsory. Answers should be brief and to the point.
- It comprises three sections, A, B, and C. You are to attempt all the sections.
- **Section A** – Question No -1 is Very Short Answers type carrying 2 marks each. You are required to answer ALL.
- **Section B**- Question No-3 is Short Answers type question carrying 5 marks each. You are required to attempt any TWO out of THREE questions given.
- **Section C**- Question No -4 is Long Answer type question carrying 10 marks each. You need to attempt anyone.
- Students are instructed to cross the blank sheets before handing over the answer sheet to the invigilator.
- No sheet should be left blank. Any written material after a blank sheet will not be evaluated /checked.

		CO	BT	M
SECTION –A				(10)
1.	Attempt All of the following.			(5*2=10)
a.	How can the relationship between AI, ML, DL, and Generative AI be best represented? Draw Van Diagram with suitable example.	CO1	L1,L2	
b.	i. What are Graph traversal algorithms in AI? ii. Distinguish between BFS & DFS of Informed search Algorithm.	CO1	L1,L3	
c.	What is the difference between supervised and unsupervised learning? How Binary Classifier influence supervised and unsupervised learning?	CO1	L1,L3	
d.	i. Explain the concept of overfitting and underfitting in machine learning? ii. What are some common evaluation metrics used in machine learning?	CO3	L1,L2,L3	
e.	Discuss the working principles of the AO* Algorithm and explain how the principles could be adapted for Type-1 error detection.	CO3	L1,L2	
SECTION –B				
2.	Answer any <u>Two</u> of the following.			(2*5=10)
a.	Find greedy best-first search from the data set	CO1	L2,L3	



node	H (n)
A	12
B	4
C	7
D	3
E	8
F	2
H	4
I	9
S	13
G	0

- b. What are Advantages and Limitations of Stochastic Hill Climbing Search?
 c. Explain Performance Metrics for Classification with Example. Draw Bias-Variance Tradeoff for machine learning.

CO1 L1,L2
 L1,L2

SECTION – C

3. Answer any One of the following.

(1*10=10)

- a. Find Best line fit from this timeseries dataset and plot the line.

L1,L2,L3

x_i	8	3	2	10	11	3	6	5	6	8
y_i	4	12	1	12	9	4	9	6	1	14

- b. i. If there are 200 individuals regularly exercise, among whom 20 develop heart disease, 150 individuals do not regularly exercise, among whom 30 develop heart disease. Calculate the odds ratio (OR) for developing lung cancer between smokers and nonsmokers?
 ii. Calculating Residuals of LSM of Regression Technique following to the dataset:

L1,
 L2,L3

X	Y
8	41
12	42
12	39
13	37
14	35
16	39
17	45
22	46
24	39
26	49
29	55
30	57

