Sessional I

Question 1:

Consider the clock as an agent that sets its time based on its input of PST from the internet updated every week. Define its PEAS.

Solution:

Performance Measure: Number of observations of time on the clock over a week which give exactly the same time as PST

Environment: human observers of time, source on the internet from which the clock updates its time

Actuators: clock hands

Sensors: APIs that receive time data from a specific site on the internet

Question 2:

Consider the teacher agent delivering the lecture in the class. Define its environment in terms of observability, determinism, episodic, static, and discreteness.

Solution:

The teacher agent's main job is to deliver a lecture on a particular topic in the class. For the teacher agent, the environment is partially observable as he/she can not see every student in the class, can't see behind or on the sides, and hence has to keep a percept sequence to make it fully observable. The agent can't predict the result of every action performed by it. For instance, it can't be predicted if a particular question asked from a particular student would be replied to correctly. The environment is sequential as for instance what the agent says next is dependent on what it has said before. The environment is dynamic as it is changing while the agent is deliberating, as for instance students keep coming in and going out. The environment is continuous as for instance sound waves are being generated by the students which are continuous.

Agents

Q1: Fill in the blanks using the options provided below:

a) Sensors and Actuators.
b) Sensors.
c) Autonomous.
d) Complete history of perceived things.
e) Complete history of actuator.
f) Program.
g) Observing agent.
h) Observing.
i) Simplex, Model, Goal-based and Utility based.
j) Condition-action rule.
k) Program & Architecture.
l) Simple-action rule.
m) Learning Agent.
n) Utility based agent
o) Model based agent.
p) Perceive.
q) Search & Plan
r) Critic.
s) Actuators.
t) Percept histories to Actions.
u) Percept histories to Actuators.
v) Partially observable.
w) Fully observable.
x) Sensorless.
y) Performance.
z) Semi-Dynamic.

1: Which instruments are used for perceiving and acting upon the environment?
_____ a
2: What is meant by agent's percept sequence?
_____ d
3: What are the types of agents in artificial intelligence?
_____ i
4: What is the rule of simplex-based agent?
_____ j
5: What is the composition for agents in artificial intelligence?
_____ k
6: In which agent is the problem generator present?
_____ n
7: Which is used to improve the agent's performance?
_____ m
8: Which agent deals with happy and unhappy states?
_____ n

9: Which action sequences are used to achieve the agent's goal, especially when the environment is partially observable?
_____ q

10: Which element in the agent are used for selecting external actions?
_____ y

11: An agent's behavior is defined by the agent function which perform mapping of?
_____ t

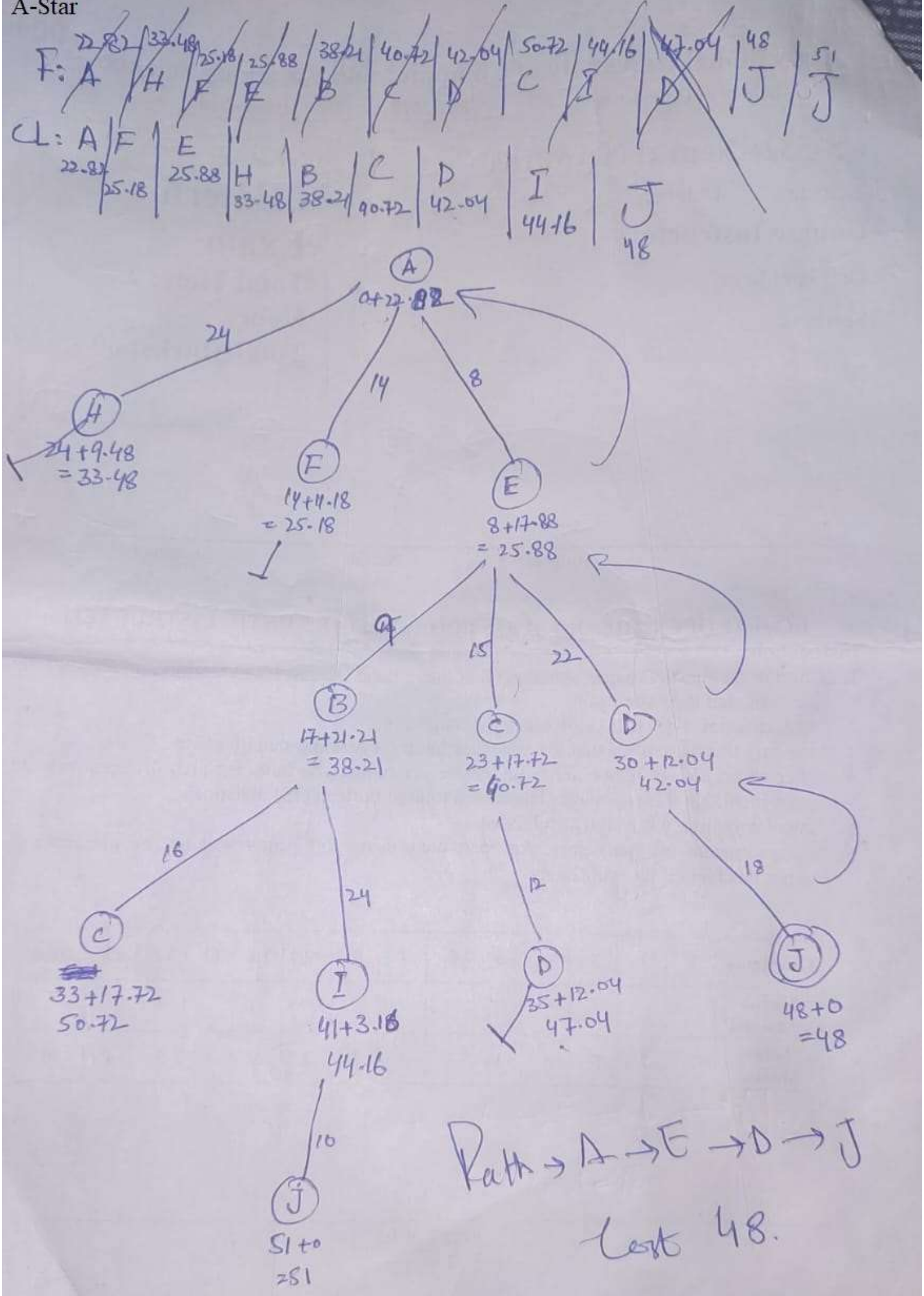
12: Learning element uses feedback from which element in an agent?
_____ r

13: If the sensors of an agent are providing noisy data, in which environment the agent residing in?
_____ v

14: PEAS consists of performance metric, environment, sensors and?
_____ s

15: An agent is what, if its behavior is determined by its own experience?
_____ c

A-Star


F: A | H | F | E | B | C | D | C | I | D | J | J
22.88 | 33.48 | 25.18 | 25.88 | 38.21 | 40.72 | 42.04 | 50.72 | 44.16 | 47.04 | 48 | 51
CL: A | F | E | H | B | C | D | I | J
22.88 | 25.18 | 25.88 | 33.48 | 38.21 | 40.72 | 42.04 | 44.16 | 48
A
0+22.88
24
14
8
H
24+9.48
=33.48
F
14+11.18
=25.18
E
8+17.88
=25.88
9
15
22
B
17+21.24
=38.21
C
23+17.72
=40.72
D
30+12.04
42.04
16
24
12
18
C
33+17.72
50.72
I
41+3.18
44.16
D
35+12.04
47.04
J
48+0
=48
10
J
51+0
=51
Path → A → E → D → J
Cost 48.

Uniform Cost Search

A	E: 8, F: 14, H: 24
E	F: 14, B: 17, C: 23, H: 24, D: 30
F	B: 17, C: 23, H: 24, D: 30
B	C: 23, H: 24, D: 30, I: 41
C	H: 24, D: 30, I: 41
H	D: 30, I: 41
D	I: 41, J: 48
I	J: 48
J	Goal

B 9+8 = 17
C 15+8 = 23
D 22+8 = 30

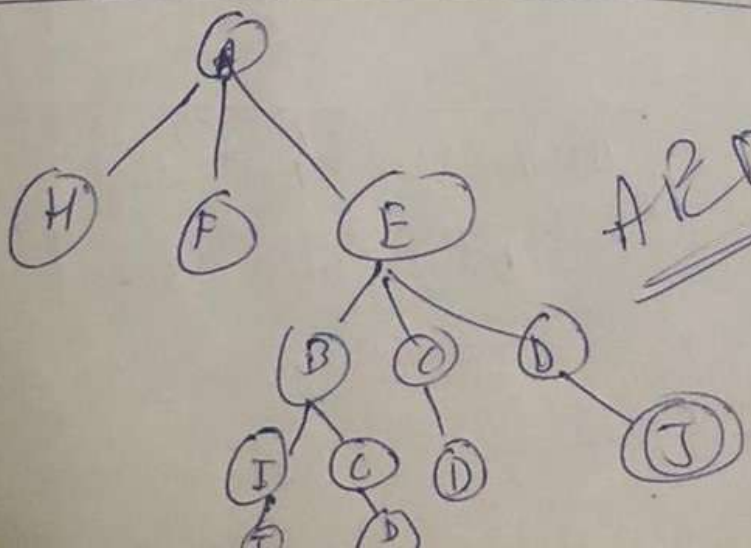
B = 9+8+16 = 33

8+9+24 = 41

D = 8+15+12 = 35

J: 8+22+18 = 48

A	E	F	B	C	H	D	I	J
0	8	14	17	23	24	30	41	48



AEDJ

48