

Faculty of Engineering

End Semester Examination May 2025

CA5EL04 Artificial Intelligence

Programme	:	MCA / BCA-MCA (Integrated)	Branch/Specialisation	:	-
Duration	:	3 hours	Maximum Marks	:	60

Note: All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Section 1 (Answer all question(s))

Q1. Which of the following is not an application of Artificial intelligence?

Marks CO BL
1 2 2

Rubric	Marks
Database management system	1

- Natural Language Processing Digital Assistant
 Computer vision Database management system

Q2. Which statement is false with respect to knowledge in AI?

1 1 1

Rubric	Marks
knowledge is not varying time to time	1

- The knowledge must capture Generalization. It can easily be modified to correct errors and to reflect changes.
 It is huge. Knowledge is not varying time to time.

Q3. Blind search can be used for which of the following situations?

1 2 1

Rubric	Marks
small search space	1

- Real life simulation Small search space
 Advanced game theory None of the above

Q4. Which of the following mentioned searches are heuristic searches?

1 2 1

Rubric	Marks
Best first search	1

- Random Search Depth First Search
 Breadth First Search Best First Search

Q5. _____ is the ability to represent all kinds of knowledge that are needed in that domain.

1 3 2

Rubric	Marks
Representational Adequacy	1

- Representational Adequacy Inferential Adequacy
 Inferential Efficiency Acquisitional Efficiency

Q6. From which rule the modus ponen is derived?

1 3 1

Rubric	Marks
Inference Rule	1

- Inference Rule
- Module Rule
- Both (A) & (B)
- None of these

Q7. The STRIPS representation in AI planning is used to-

1 4 1

Rubric	Marks
Represent actions in planning problem	1

- Encrypt planning data
- Represent actions in planning problem
- Encode Network protocols
- Optimize data storage in planning

Q8. Which value is assigned to alpha and beta in the alpha-beta pruning?

1 4 4

Rubric	Marks
both alpha =max & beta=min	1

- Alpha = max
- Beta = max
- Beta = min
- Both Alpha = max & Beta = min

Q9. Which of the following is not a Characteristics of Expert Systems?

1 5 2

Rubric	Marks
Unreliable	1

- Understandable
- Unreliable
- Highly responsive
- High performance

Q10. A _____ is nothing but an expert system without knowledge base.

1 5 1

Rubric	Marks
shell	1

- Tools
- Expert System
- Shell
- Knowledge

Section 2 (Answer all question(s))

Marks CO BL

Q11. What are the approaches to AI? Explain.

4 1 1

Rubric	Marks
Strong AI,Weak AI	4

Q12. (a) State out features of LISP programming. Describe any four basic list manipulation functions of LISP.

6 1 2

Rubric	Marks
feature	2
list functions	4

(OR)

(b) What are the characteristics of AI problems? Explain the areas where AI can be applied.

Rubric	Marks
characteristics	2
application area	4

Section 3 (Answer all question(s))

Q13. How will you formally specify problem definition?

Marks CO BL

2 2 3

Rubric	Marks
definition	2

Q14. (a) Write algorithm of Problem Reduction (AND-OR Graph) with example diagram.

8 2 1

Rubric	Marks
algorithm	4
example	4

(OR)

(b) Solving the following crypt arithmetic problem-

$$\begin{array}{r}
 \text{SEND} \\
 + \text{MORE} \\
 \hline
 \text{MONEY}
 \end{array}$$

Rubric	Marks
full solution	8

Section 4 (Answer all question(s))

Q15. Explain inferential knowledge and procedural knowledge with example.

Marks CO BL

4 3 2

Rubric	Marks
Inferential knowledge	2
Procedural knowledge	2

- Q16. (a)** Convert the following sentence to predicate logic (Any Six)-
- (i) Marcus was a man.
 - (ii) Marcus was a Pompeian.
 - (iii) All Pompeians were Romans.
 - (iv) Caesar was a ruler.
 - (v) All Romans were either loyal to Caesar or hated him.
 - (vi) Everyone is loyal to someone.
 - (vii) People only try to assassinate rulers they are not loyal to.
 - (viii) Marcus tried to assassinate Caesar.
 - (ix) Everyone can fool some person all the time.

6 3 3

Rubric	Marks
each sentence carry 1 marks	6

(OR)

- (b)** Define Horn clause. Write normal steps for conversion to a clause form.

Rubric	Marks
horn clause definition	1
steps for conversion	5

Section 5 (Answer any 2 question(s))

Marks CO BL

- Q17.** Define Planning. What are the components of planning system that are needed for representing a plan?

5 4 2

Rubric	Marks
Planning definition	2
Components of planning system	3

- Q18.** How will you solve block world problem with Goal stack Planning?

5 4 1

Rubric	Marks
2+3	5

- Q19.** Explain minimax search procedure with example.

5 4 1

Rubric	Marks
2+3	5

Section 6 (Answer any 2 question(s))

Marks CO BL

- Q20.** Name the various types of expert systems and explain any one of them in detail.

5 5 1

Rubric	Marks
Write The name of expert system with little bit explanation	5

- Q21.** What are the major application areas of an expert system? Explain in detail.

5 5 1

Rubric	Marks
at least 3 areas	5

- Q22.** What are the different methods of learning in AI? Explain in detail.

5 3 1

Rubric	Marks
Write at least five methods of learning with brief explanation	5
