



Expert Systems in Business Applications (BIS 401)

Wednesday, 27th December 2017

02:00pm – 05:00pm

EXAMINATION INSTRUCTIONS:

- Students are not allowed to use calculators.
- Do not use highlighters on your answer booklet.
- Write clearly in blue or black ink.

QUESTION 1 – 60 minutes (20 Marks)

Choose the correct answer (In your answer booklet, write the number of the statement and your answer):

- 1- A rule-based system consists of a bunch of IF-THEN rules. State whether true or false.
a) True
b) False
- 2- LISP was created by:
a) John McCarthy
b) Marvin Minsky
c) Alan Turing
d) Allen Newell and Herbert Simon
- 3- Connective constraints may include:
a) \sim
b) $|$
c) Both (a) and (b)
d) None of the above
- 4- If **LOGICAL1** and **LOGICAL2** are the two required arguments to be evaluated to be either true or false, then the following equation can be used:
 $\text{=IF(And(C3/D3>=1), "Good", "Bad")}$
a) True
b) False
- 5- What is Artificial intelligence?
a) Putting your intelligence into Computer
b) Programming with your own intelligence
c) Making a Machine intelligent
d) Playing a Game
- 6- Which of the following is/are a component(s) of an expert system?
a) inference engine
b) knowledge base
c) user interface
d) all of the above



- 7- If you have multiple patterns in a rule, then:
- The rule will not fire if only one of the patterns is satisfied.
 - The rule is placed on the agenda only if *all* the patterns are satisfied by facts.
 - Both (a) and (b)
 - None of the above.
- 8- If you press the ENTER key after the following code, what will be displayed?
- ```
CLIPS> (assert(auditing))
<Fact-1>
CLIPS> (assert(auditng))
```
- <Fact-2>
  - FALSE
  - CLIPS>
  - None of the above
- 9- The Balanced Scorecard measures organizational performance across ..... different but linked perspectives:
- Three
  - Six
  - Two
  - None of the above
- 10- Decision support programs are designed to help managers make:
- budget projections
  - visual presentations
  - business decisions
  - production schedules
- 11- What is the term used for describing the judgmental or common sense part of problem solving?
- Heuristic
  - Critical
  - Value based
  - Analytical
- 12- Variable identifier is written by:
- A symbol followed by a question mark
  - A hyphen followed by a symbol
  - Both (a) and (b)
  - None of the above
- 13- The Match command is used to:
- Identify which patterns in a rule match facts
  - To add rules
  - Both (a) and (b)
  - None of the above



14- Financial measures are:

- a) Lag indicators
- b) Sacrifice long-term thinking
- c) Irrelevant to many levels of the organization
- d) All of the above

15- Within an expert system, the \_\_\_\_\_ contains facts about a specific subject area and rules that express the reasoning procedures of an expert on the subject.

- a) Inference engine
- b) Knowledge engineer
- c) Knowledge base
- d) None of the above

16- Instead of representing knowledge in a relatively declarative, static way (as a bunch of things that are true), rule-based system represent knowledge in terms of \_\_\_\_\_ that tell you what you should do or what you could conclude in different situations.

- a) Raw Text
- b) A bunch of rules
- c) Summarized Text
- d) Collection of various Texts

17- A spying aeroplane is an example of:

- a) Expert systems
- b) Intelligent robots
- c) Vision systems
- d) None of the above

18- Frames is:

- a) A way of representing knowledge
- b) Data Structure
- c) Data Type
- d) None of the above

19- .....can find the patterns, trends, relations, and keywords and generates a report from the data

- a) Expert systems
- b) Natural language generation
- c) Speech recognition
- d) None of the above

20- If you want to include the double quotes in a field, then you can use:

- a) \
- b) /
- c) |
- d) None of the above



- 21-  $\Rightarrow$  symbol means that:
- a) A fact is entering memory
  - b) A fact is leaving memory
  - c) Both (a) and (b)
  - d) None of the above
- 22- Statistical models perform many tasks, including:
- a) Summary statistics
  - b) Hypothesis testing
  - c) Both (a) and (b)
  - d) None of the above
- 23- Ratio analysis:
- a) Involves the construction of ratios using elements from the financial statements
  - b) Helps identify the strengths and weaknesses of the firm
  - c) Includes profitability ratios, liquidity ratios, financing ratios, activity ratios, and market ratios
  - d) All of the above
- 24- A knowledge engineer has the job of extracting knowledge from an expert and building the expert system knowledge base. State whether true or false.
- a) True
  - b) False
- 25- Following is/are the application(s) of artificial intelligence:
- a) Gaming
  - b) Expert systems
  - c) Vision systems
  - d) All of the above
- 26- To add a rule in CLIPS, you can use:
- a) Assert command
  - b) Deffacts command
  - c) Defrule command
  - d) Ppdefrule command
- 27- Which of the following represents knowledge in the form of a network of data elements including both the data and the methods/processes that act on those data?
- a) Case-based reasoning
  - b) Frame-based knowledge
  - c) Object-based knowledge
  - d) Rule-based knowledge



28- Expert system is:

- a) A computer program that simulates the thought process of a human expert to solve complex decision problems in a specific domain.
- b) A knowledge-based information system that uses its knowledge about a specific, complex application area to act as an expert consultant to end users.
- c) An interactive computer-based decision tool that uses both facts and heuristics to solve difficult decision problems based on knowledge acquired from an expert.
- d) All of the above.

29- Who is the “father” of artificial intelligence?

- a) Fisher Ada
- b) John McCarthy
- c) Allen Newell
- d) Alan Turning

30- What is the name of the computer program that contains the distilled knowledge of an expert?

- a) Data base management system
- b) Management information System
- c) Expert system
- d) Artificial intelligence

31- To print a rule that you can't remember its name, you can use:

- a) Deffacts command
- b) Defrule command
- c) Ppdefrule command
- d) Rules command

32- The Clear command can be used to:

- a) Remove all facts from memory
- b) Restore CLIPS to its original start-up state
- c) Reset the fact-identifier to zero
- d) All of the above

33- CLIPS originally developed by:

- a) NASA/Lyndon B. Johnson Space Center
- b) Nuance Communications
- c) Narrative Science
- d) Attivio, Automated Insights

34- All of the following are major limitations of an expert system except:

- a) Expert systems excel only in solving specific types of problems in a limited domain of knowledge
- b) Expert systems may also be difficult and costly to develop and maintain
- c) Expert systems can maintain themselves
- d) None of the above



- 35- “Accounting” is an example of:
- a) Numeric fields
  - b) Symbol fields
  - c) String fields
  - d) Address fields
- 36- Following is/are the application(s) of Expert systems:
- a) Disease Diagnosis
  - b) Planning
  - c) Decision making
  - d) All of the above
- 37- Speech recognition programs can be used to:
- a) Control PCs with voice alone
  - b) Convert audio to text
  - c) Dictate e-mails using voice commands
  - d) All of the above
- 38- Floats and integers are examples of:
- a) Numeric fields
  - b) Symbol fields
  - c) String fields
  - d) Address fields
- 39- The expert system offers ..... to the decision maker:
- a) Recommendations
  - b) Information
  - c) Data
  - d) None of the above
- 40- Dragon Naturally Speaking software is an example of:
- a) Natural language generation
  - b) Handwriting recognition
  - c) Speech recognition
  - d) None of the above

**QUESTION 2 – 30 minutes (4 marks)**

During the lectures, you were required to hand in various assignments.

**Required:**

Discuss the topic of each assignment and summarize your work or your group work.  
(Maximum **Two** pages)



**QUESTION 3– 60 minutes (20 marks)**

**a) Find the errors in the following:**

CLIPS> (assert (number 1))

<Fact-0>

CLIPS> (defrule (x 1.5))

<Fact-2>

CLIPS> (assert (y -1))

<Fact-3>

CLIPS> (assert (z 6))

<Fact-4>

CLIPS> (assert (distance 3.5\*5))

<Fact-5>

CLIPS> assert (coordinates 1 2 3))

<Fact-6>

CLIPS> (assert (coordinates 1 2 3))

<Fact-7>

CLIPS> (fact)

f-1 (number 1)

f-2 (x 1.5)

f-3 (y -1)

f-4 (z 65)

f-5 (distance 350000.0)

f-6 (coordinates 1 2 3)

f-7 (coordinates 1 3 2)

For a total of 7 facts.

CLIPS>



**b) Find the errors in the following:**

(ppdefrule financial performance)

(ROI > 0.20)

(Current Ratio > 1)

(Financing Ratios < 1)

(printout Good Performance crlf))

CLIPS> (assert(ROI > 0.20))

<Fact-0>

CLIPS> (run financial-performance)

Matches for Pattern 1

None

Matches for Pattern 2

None

Matches for Pattern 3

None

Partial matches for CEs 1 - 2

None

Partial matches for CEs 1 - 3

None

Activations

1

CLIPS>

**QUESTION 4– 30 minutes (6 marks)**

Give your opinion about the following statements and justify your answer:

- 1- Artificial Intelligence: Friendly or Frightening? (Maximum **One** page)
- 2- Expert systems are about the people, not the machines. (Maximum **One** page)

**End of the Exam**







FACULTY OF COMMERCE  
BIS PROGRAM

**Good Luck**