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PRESIDENCY UNIVERSITY BENGALURU

SCHOOL OF ENGINEERING

MAKEUP EXAMINATION - JULY 2024

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| **Semester :** I | **Date** :05 July 2024 |
| **Course Code :**CSE5006 | **Time :**1.30PM TO 4.30PM |
| **Course Name :**KNOWLEDGE ENGINEERING &EXPERT SYSTEMS | **Max Marks :**100 |
| **Program :** MTECH | **Weightage :** 50% |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Question paper consists of 3 parts.*
3. *Scientific and non-programmable calculator are permitted.*
4. *Do not write any information on the question paper other than Roll Number.*

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| **PART A** | | | |
| **ANSWER ANY 5 QUESTIONS 5Q X 2M=10M** | | | |
| 1 | Define data, information and knowledge | (CO 1) | [Knowledge] |
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| 2 | What is a prototype? | (CO 1) | [Knowledge] |
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| 3 | Define i) Declarative Knowledge ii)Procedural knowledge | (CO 2) | [Knowledge] |
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| 4 | Define the following i) Tautology ii) Contradiction iii) Contingency iv) Identity | (CO 2) | [Knowledge] |
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| 5 | What is universal instantiation? | (CO 3) | [Knowledge] |
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| 6 | Mention the types of logical reasoning. | (CO 3) | [Knowledge] |
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| 7 | Differentiate monotonic and non-monotonic reasoning | (CO 4) | [Knowledge] |
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| **PART B** | | | |
| **ANSWER ANY 5 QUESTIONS 5Q X 10M=50M** | | | |
| 8 | Describe the process of knowledge engineering for designing a knowledge based system | (CO1) | [COMPREHENSION] |
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| 9 | Show that the following are logically equivalent   1. ¬P 🡪 (Q🡪R) and Q 🡪 (P v R) 2. P **↔** Q and (P🡪Q) ˄ (Q🡪P) | (CO2) | [APPLY] |
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| 10 | Let P, Q and R be propositions; P: You have the flu, Q: You miss the final exam, R: You pass the course.  Express the following sentences as propositions   1. If you have the flu, then you miss the final exam 2. You will pass the course if and only if you don’t miss the final exam 3. If you miss the final examination, then you will not pass the course 4. If you either have the flu or miss the final exam, then you will not pass the course 5. Either you have the flu and miss the final exam, or you don’t miss the final exam and pass the course | (CO3) | [APPLY] |
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| 11 | Reduce to conjunctive normal form (CNF)   1. ¬ ( ¬ P v Q) v ( R 🡪 ¬ S) 2. ( ¬ P 🡪 Q) 🡪 (Q🡪 ¬ R) | (CO3) | [APPLY] |
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| 12 | Prove that "Fido will die" from the following statements:  "Fido is a dog",  "all dogs are animals"  "all animals will die", | (CO4) | [APPLY] |
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| 13 | Explain the process of evaluation of a knowledge based system | (CO4) | [COMPREHENSION] |
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| 14 | What is reasoning? Explain the different types of reasoning. Give examples for each. | (CO4) | [COMPREHENSION] |
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| **PART C** | | | |
| **ANSWER ANY 2 QUESTIONS 2Q X 20M=40M** | | | |
| 14 | State the contrapositive, converse and inverse of the following conditional statements   1. I go to the beach whenever it is a sunny summer day 2. If it rains tonight, then I will stay at home | (CO3) | [APPLY] |
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| 15 | Intelligent tutoring systems are knowledge-based systems specifically designed to support learning. These systems provide users with personalized feedback and instructions based on their performance and inquiries. They allow students to have a personalized learning experience without direct intervention from a teacher. Describe the process of knowledge engineering for designing such a system | (CO2) | [APPLY] |
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| 16 | 1. Differentiate the characteristics of problems in which it is better to use rule-based expert systems and problems where the case-based systems are more appropriate. 2. What is reasoning? Explain the different types of reasoning. Give examples for each. | (CO4) | [APPLY] |
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