Seat No

BE/IT/SEM-VII/CBCS

20 NOV 2019

[Time: 03 Hours] [Marks: 80]

Note: 1. Question number **1** is **compulsory**.
2. Solve any **three** questions out of the remaining **five** questions
3. Assume suitable data if necessary
4. Figure to right indicate full marks

Q.1 Solve any **Four** of the following.

(a) Explain different definitions of artificial intelligence according to different categories. **05**

(b) Solve the given problem using Crypt Arithmetic method. **05**

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      S   E   N   D
  +   M   O   R   E
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  M   O   N   E   Y
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(c) Represent each of the following sentences in first-order logic. **05**

i) A whale is a mammal.
ii) Jane likes John.
iii) If it's raining, then the ground is wet.
iv) If the switch is on and the light is off then the light-bulb is broken.
v) All computers have a processor.

(d) Differentiate between STRIPS language and ADL. **05**

(e) Explain main components of a Cognitive Computing system. **05**

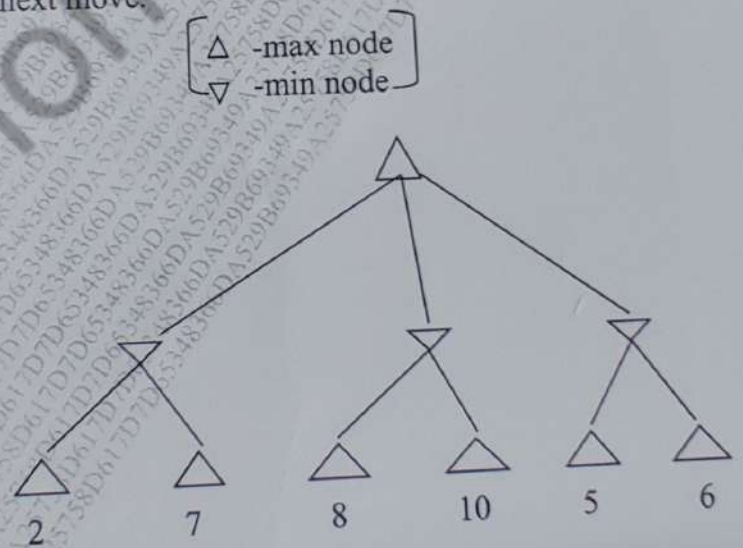
Q.2 **(a)** Explain Model based Reflex agent and Utility based agent with block diagram. **10**

(b) Explain different knowledge representation methods with example. **10**

Q.3 **(a)** Differentiate between Informed and Uninformed search techniques. Also explain A*algorithm with suitable example. **10**

(b) Explain Planning in AI. Compare Partial Order Planning with Conditional Planning. Also, explain the real time application of hierarchical planning. **10**

Q.4 **(a)** Apply Mini-max and Alpha-Beta Pruning on given game tree and find which is the next move. **10**



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Q.4 (b) Consider two medical tests, A and B, for a virus. Test A is 95% effective at recognizing the virus when it is present, but has a 10% false positive rate (indicating that the virus is present, when it is not). Test B is 90% effective at recognizing the virus, but has a 5% false positive rate. The two tests use independent methods of identifying the virus. The virus is carried by 1% of all people. Say that a person is tested for the virus using only one of the tests, and that test comes back positive for carrying the virus. Which test returning positive is more indicative of someone really carrying the virus? Justify your answer mathematically. **10**

Q.5 (a) Explain Forward-chaining and Backward-Chaining algorithm with the help of example. **10**

(b) Explain different components of Natural Language processing? Also, explain different levels of knowledge used in language understanding? **10**

Q.6 Write a short note on any **Four**.

(a) Bayesian Network with example **05**

(b) Supervised and Unsupervised learning **05**

(c) Role of NLP in Cognitive System **05**

(d) Conditional Probability and Its role in AI **05**

(e) Knowledge based agent **05**

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