# B.TECH. SEM -VII ( COMPUTER) 2014 COURSE (CBCS) : WINTER - 2017

## SUBJECT: ELECTIVE – III ARTIFICIAL INTELLIGENCE AND ROBOTICS

Day: **Monday** Time: **02.30 PM TO 05.30 PM**

Date: **22/01/2018** Max Marks. 60

**W-2017-2282**

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**N.B. :**

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Assume suitable data, if necessary.
4) Draw neat Diagram **WHEREVER** necessary.

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**Q.1** Explain MIN-MAX algorithm to determine the optimal strategy for MAX to decide the best first move. **(10)**

**OR**

**Q.1** How to evaluate the performance of an Algorithm? How does uniform cost search use algorithms performance? **(10)**

**Q.2** Explain various methods of Knowledge Representation with example. **(10)**

**OR**

**Q.2** Transform the Predicate Logic statements given below into equivalent conceptual graphs. **(10)**

a) $\forall$ x normal (x) $\wedge$ grown (x) $\rightarrow$ walk(x)
b) $\forall$ x,y married (x,y) $\rightarrow$ married (y,x)
c) $\forall$ x haswings (x) $\wedge$ layseggs(x) $\rightarrow$ bird(x)

**Q.3** Define Partial Order Planner. Explain STRIPS representation of planning problem. **(10)**

**OR**

**Q.3** Define Planning. Explain the components of Planning system in detail. **(10)**

**Q.4** What are the basic building blocks of Learning Agent? Explain each of them with a neat block diagram. **(10)**

**OR**

**Q.4** Explain Decision tree learning with an example. What are Decision rules? How to use it for classifying new samples. **(10)**

**Q.5** What are the different elements of Robots? Explain each in detail with neat sketches. **(10)**

**OR**

**Q.5** List and discuss various Position Sensor used in robots. **(10)**

**Q.6** What is direct and inverse kinematics of a Robot? Explain the Euler-Angle representation for Robot Kinematics. **(10)**

**OR**

**Q.6** Classify the Robots according to the Coordinates of Motion with a sketch and example. Explain the features of each type. **(10)**

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