SEMANTIC WEB TECHNOLOGIES

Paper Code: ETIT-411	**L**	**T/P**	**C**
Paper: Semantic Web Technologies	**3**	**0**	**3**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: This is the aim behind the Semantic Web, which is also being referred to as Web 3.0 and which is heavily embedded in the Artificial Intelligence area. Its long-term goal is that of enhancing the human and machine interaction by representing the data in an understandable way for the machine.

UNIT-I

Introduction: Why Semantics-Data integration across the web, Traditional data modelling methods, semantic relationships, metadata, Building models, Calculating with knowledge, Exchanging information, Semantic web technology.

[T1, T2][No. of Hours: 10]

UNIT-II

RDF Resource description language: Simple Ontology's in RDF and RDF schema- Introduction, syntax for RDF, advanced features, Simple ontology's in RDF schemas.

RDF Formal semantics: Why semantics, Model theoretic semantic for RDF(S), Semantic reasoning with deduction rules, the semantic limits of RDF(S).

[T1, T2][No. of Hours: 12]

UNIT-III

Web Ontology Languages (OWL): OWL syntax and intuitive semantics, owl species, Description logics, Model theoretic semantics of owl, Automated Reasoning with OWL.

[T1, T2][No. of Hours: 10]

UNIT-IV

Rules and Queries: Ontology and Rules-What is Rule, Data log as a first order rule language, Combining Rules with OWL-DL, Rule interchange format RIF.

Query Language: SPARQL-Query language for RDF, Conjunctive queries for OWL-DL.

[T1, T2][No. of Hours: 12]

Text Books:

[T1] Foundation Of Semantic Web Technology:-Pascal Hitzler, Marcus Krotzsch, Sebastion Rudolph.by Chapman and Hall Book(CRC Press).

[T2] Programming The Semantic Web:-Toby Segaran, Colin Evans, Jamie Taylor by O'Reilly Media Publication.

Reference Books:

[R1] A Semantic Web Primer MIT Press.

[R2] Knowledge Representation: Logical, Philosophical, and Computational Foundations, John Sowa,(ISBN-13:978-0534949655

[R3] Foundations of Semantic Web Technologies, Pascal Hitzler, Markus Krotzsch, Sebastian Rudolph (ISBN:978-1-4200-9059-5).

[R4] Agency and the Semantic Web, Christopher Walton, ISBN-13: 978-0199292486.

[R5] Artificial Intelligence: A Modern Approach, 3rd Edition, Stuart Russell, Peter Norvig (ISBN-13:978-0-13-604259-4).