B.Tech. DEGREE EXAMINATION, DECEMBER 2017

Third/ Fourth/ Fifth Semester

15CS424E – SEMANTIC WEB

(For the candidates admitted during the academic year 2015 – 2016 onwards)

Note:

(i) **Part - A** should be answered in OMR sheet within first 45 minutes and OMR sheet should be handed over to hall invigilator at the end of 45th minute.

(ii) **Part - B** and **Part - C** should be answered in answer booklet.

Time: Three Hours

Max. Marks: 100

PART – A (20 × 1 = 20 Marks)

Answer ALL Questions

1. An ontology is an _____ specification of conceptualization.
   (A) Explicit and formal
   (B) Implicit and formal
   (C) Explicit and informal
   (D) Implicit and informal

2. Rule based language is incorporated in _____ layer.
   (A) Trust
   (B) Ontology
   (C) Proof
   (D) Logic

3. _____ provides modelling primitives for writing ontologies.
   (A) XML
   (B) RDF
   (C) RDF-S
   (D) XML-S

4. _____ is the building block of syntactic web.
   (A) XML
   (B) Ontology
   (C) RDF
   (D) HTML

5. _____ are optional and are used to refer the addressed nodes.
   (A) Filter expressions
   (B) Node test
   (C) Access specifier
   (D) Preposition

6. In RDF schema we cannot declare _____ that apply to some classes only.
   (A) Range restrictions
   (B) Cardinality restrictions
   (C) Range extensions
   (D) Cardinality extensions

7. Which of the following is not a requirement for ontology languages?
   (A) Well defined syntax
   (B) Efficient reasoning
   (C) Informal semantics
   (D) Convenient expressions

8. An RDF statement is _____.
   (A) Vocabulary value triple
   (B) Class object value triple
   (C) Entity object triple
   (D) Object attribute-value triple

9. In OWL ontology, properties equality and inequality can be stated between _____.
   (A) Arbitrary things
   (B) Classes
   (C) Arbitrary values
   (D) Resources

10. _____ logics have been used for formulating semantics in OWL ontology.
(A) Propositional and discovery
(B) Predicate and description
(C) Predicate and discovery
(D) Propositional and description

11. Laddering and grid analysis can be productively used to _____ in ontology engineering.
(A) Define taxanomy
(B) Define properties
(C) Enumerate terms
(D) Check for anomalies

12. _____ contain lexical relations between language concepts and do not require frequent updates.
(A) Domain ontologies
(B) Web service modeling ontology
(C) Ontology instances
(D) Natural language ontologies

13. WSDL-S is an _____.
(A) Extension of WSDL
(B) Extension of WSMO
(C) Extension of SWSO
(D) Extension of OWL

14. Ontology design in WSMO demands and supports _____.
(A) Decoupling
(B) Encapsulation
(C) Abstraction
(D) Cohesion

15. _____ in webservice provides keyword search.
(A) Syntactic level
(B) Semantic level
(C) Light semantic level
(D) Detailed semantic level

16. _____ offered by service provider changes state dynamically with time instant.
(A) Web service
(B) Abstract service
(C) Discovery service
(D) Mobile service

17. The matchmaking between two services inspite of description with different keywords is called _____.
(A) Inexact matching
(B) Exact matching
(C) Direct matching
(D) Indirect matching

18. _____ architecture eliminates the need for installing, the matchmaking infrastructure either on the registry or requestor's side.
(A) P2P discovery
(B) Centralized discovery
(C) Client server discovery
(D) Distributed discovery

19. _____ addresses the handling of heterogeneities that naturally arise in open environments like the web.
(A) Description
(B) Implementation
(C) Mediation
(D) Conceptualization

20. In WSMO, _____ describes the interface for service consumption by a client.
(A) Non functional properties
(B) Orchestration
(C) Capability
(D) Choreography

PART – B (5 × 4 = 20 Marks)
Answer ANY FIVE Questions

21. Justify how artificial intelligence can be incorporated in semantic web technology.

22. Sketch the vocabulary differentiating RDF and RDF-schema layers.

23. Enlist the syntactic rules for well-formed XML documents.

24. Define the axiomatic semantics of "inversOf".

25. What are the strict notions of upward compatibility between the OWL sub languages?

26. How will you resolve the mismatches between loosely coupled WSM ontologies?

27. Write the shortcomings of conventional web service discovery.

PART – C (5 × 12 = 60 Marks)
Answer ALL Questions

28. a. Explain the layered approach of semantic web in detail.

(OR)

b. Elaborate the comparison between fully structured, semi structured and non-structured web content with reference to suitable properties.

29.a.i. Briefly explain the reification mechanism with a suitable illustration.

ii. Compare entity-relationship modelling to RDF.

(OR)

b. Construct an XML schema for structuring E-mail vocabulary to allow an arbitrary number of texts and attachments.

30. a. Mention the pros and cons of the following antology sub languages.

(i) OWL FULL
(ii) OWL DL
(iii) OWL LITE
(iv) OWL DLP

(OR)

b.i. What problem would emerge if
OWL : all values from is replaced by
OWL : Some values from? Illustrate it with suitable axiomatic semantics with reference to African wildlife ontology. (8 Marks)

ii. Why is it necessary to declare?
OWL : class as a subclass of rdfs : class? (4 Marks)

31. a. Tabulate the comparative analysis of web programming languages for providing and representing the semantics in web services.

(OR)

b. Determine the design principles for web service modeling ontology.

32. a. Describe the centralized discovery architecture with neat structure diagrams for the following scenarios.

(i) Importing semantics to UDDI

(ii) External matching services

(OR)

b. Discuss the various levels of conceptual model for service discovery.

* * * * *