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Sixth Semester B.C.A. Degree Examination, March 2021

Career Related First Degree Programme under CBCSS

Group 2 (b) - Computer Applications

Core Course

CP 1642 - OBJECT ORIENTED ANALYSIS AND DESIGN

(2015 - 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A (Very Short Answer type)

(One word to maximum of one sentence. Answer **all** questions.)

1. What is an object?
2. Expand UML.
3. What is a process?
4. Define a model.
5. OCL Stands for ————————.
6. What do you mean by an attribute?
7. Define a base class and a derived class.
8. What is a qualifier?

P.T.O.

9. Who are the actors in OOA?

10. What do you mean by aggregation?

(10 × 1 = 10 Marks)

SECTION – B (Short answer)

(Not to exceed one paragraph. Answer any **eight** questions. **Each** question carries **2** marks.)

11. What is the difference between coupling and cohesion?

12. What do you mean by polymorphism?

13. What is the main advantage of object oriented approach?

14. What is the difference between a method and a message?

15. What are the primary symbols used in a DFD?

16. What is a use case?

17. Briefly explain the term encapsulation.

18. What is the purpose of using an activity diagram?

19. Compare static and dynamic models.

20. What is a meta-model?

21. Define object oriented analysis and design.

22. What are the parts of an object modeling technique?

(8 × 2 = 16 Marks)

SECTION – C

(Answer any **six** questions.)

23. What is a collaboration diagram? What are its elements?
24. Write notes on modelling interface.
25. Draw a simple use case diagram for a library system.
26. Explain in detail the difference between users and actors with an example.
27. What are the characteristics of an object oriented approach? Explain.
28. Explain Booch method with diagrams.
29. Explain the phases of object modeling technique.
30. With the help of an example, draw a state chart diagram.
31. Explain patterns.

(6 × 4 = 24 Marks)

SECTION – D (Long Essay)

(Answer any **two** questions. **Each** question carries **15** marks.)

32. Explain the different types of interaction diagrams.
33. What are the elements of a deployment diagram? Explain with an example.
34. Discuss UML diagrams in detail.
35. Write notes on
    (a) Activity diagram (5)
    (b) Component diagram (5)
    (c) Algorithmic decomposition and object oriented decomposition. (5)

(2 × 15 = 30 Marks)

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Sixth Semester B.C.A. Degree Examination, March 2021

Career Related First Degree Programme Under CBCSS

Group 2(b) — Computer Applications

Core Course

CP 1644 — TRENDS IN COMPUTING

(2018 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Very Short Answer Type)

(**One** word to maximum of **one** sentence. Answer **all** questions).

1. Expand ANN.
2. Expand SaaS.
3. Give an example for pay per use model in computing.
4. What do you mean by back end in cloud computing?
5. Mention any two advantages of IaaS.
6. List any two challenges in cloud computing.
7. Give two types of storage devices in cloud computing.

P.T.O.

8. What is the role of adder in a perceptron?

9. What is fuzzification?

10. Name any two operations on fuzzy set.

(10 × 1 = 10 Marks)

SECTION – B

(Not to exceed **one** paragraph, answer **any eight** questions. **Each** question carries **2** marks).

11. What is virtualization?

12. What is grid computing?

13. What is unmanaged cloud storage?

14. What is soft computing?

15. What is a community cloud?

16. What is a file storage device in cloud computing?

17. What is data redundancy?

18. What is perceptron learning rule?

19. What is cloud computing?

20. What is the use of artificial neural network?

21. What are the different layers in cloud computing?

22. What are the different models for deployment in cloud computing?

23. What is the use of "EUCALYPTUS" in cloud computing?

24. What is Virtual Private Network?

25. What is Service Oriented Architecture?

26. What is edge computing?

(8 × 2 = 16 Marks)

SECTION – C

(Short Essay)

(Not to exceed **120** words, answer **any six** questions. **Each** question carries **4** marks).

27. Explain private cloud.

28. Define grid computing and mention its advantages.

29. What are the advantages of distributed computing system?

30. Explain crossover in genetic algorithm.

31. Explain the components of perceptron.

32. Explain two types of artificial neural networks.

33. Discuss on any two types of decision making.

34. Explain classification in Artificial Neural Network.

35. Explain basic concept of competitive network.

36. Explain supervised learning in neural networks.

37. Discuss architecture of Adaline.

38. Explain the need for edge computing.

(6 × 4 = 24 Marks)

SECTION – D

(Long Essay)

Answer **any two** questions. **Each** question carries **15** marks.

39. Explain cloud computing architecture.

40. Explain the advantages and disadvantages of cloud computing.

41. Explain grid computing.

42. Discuss on application of neural networks.

43. Discuss on Software as a Service.

44. Compare different aspects of human brain and a computer.

(2 × 15 = 30 Marks)

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Sixth Semester B.Sc./B.C.A. Degree Examination, March 2021.

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science/Computer Applications

Elective Course: CS1661.3/ Core Course CP 1643

DATA MINING AND DATA WAREHOUSING

(2015 – 2017 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer type]

(One word to maximum of one sentence, Answer **all** questions.)

1. The full form of OLAP is _____

2. _____ is a subject-oriented, integrated, time-variant, non-volatile collection or data in support of management decisions.

3. Stored data cannot be updated in _____

4. Group of similar object that differ from each other known as_____

5. In KDD and Data Mining Noise is referred to us in the form of _____

6. _____ is the process of removing inconsistent data.

7. _____ predicts future trends and behaviours, allowing business managers to make proactive, knowledge-driven decisions.

8. The view over an operational data warehouse is known as a ————————

9. ———————— operation selects one particular dimension from a given cube and provides a new sub-cube.

10. ———————— is a logical description of the entire database.

(10 × 1 = 10 Marks)

SECTION – B [Short Answer]

[Not to exceed one paragraph, answer **any eight** questions.
Each question carries **2** marks.]

11. Define Data mining.

12. What is the need for data reduction?

13. What is the need of data warehouses?

14. Write short notes on multidimensional data model.

15. List out the various OLAP operations.

16. What is decision tree?

17. What are outliers?

18. Write short notes on k-means algorithm.

19. What is meant by Market basket analysis?

20. What is meant by Frequent itemset?

21. What is prediction?

22. State and explain Bayes Theorem,

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

[Not to exceed 120 words, answer **any six** questions. Each question carries **4** marks.]

23. Explain steps in data transformation

24. Give in detail about the various types of data mining.

25. Explain data cleaning phases.

26. Explain features of data warehouse.

27. Explain Apriori Algorithm

28. Explain Rule based classification

29. Discuss various issues involved in classification.

30. Write notes on outlier detection in clustering?

31. Explain various partitioning methods in clustering

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

[Answer **any two** questions. Each question carries **15** marks.]

32. Explain various data mining functionalities with examples.

33. What are the major differences between OLTP and a data warehouse system?

34. Discuss about Decision tree induction algorithm with an example.

35. Discuss clustering in detail.

(2 × 15 = 30 Marks)

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Sixth Semester B.C.A Degree Examination, March 2021.

Career Related First Degree Programme under CBCSS

Group2(b)- Computer Applications

Core Course

CP 1642

OBJECT ORIENTED ANALYSIS AND DESIGN

(2018 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

One word to maximum of 2 sentences. Answer **all** questions.
Each question carries **1** mark.

1. What is Object-Oriented Analysis?
2. What is Object-Oriented Design?
3. Mention the purpose of Information hiding.
4. What is unified approach? Why is it needed?
5. What is the UML?
6. Define Use Case.
7. Define Unified Process (UP).
8. What is the need for modeling?
9. Define generic class.
10. Mention the purpose of various Interaction Diagrams.

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B [Short Answer]

Not to exceed one paragraph. Answer **any eight** questions.
Each question carries **2** marks.

11. What is Analysis and Design?

12. Classify the Different kinds of actors in use case.

13. List the four phases in UP.

14. How is the use case model useful in every phase of software development? Discuss.

15. Develop an activity diagram to show the business process of the library.

16. What are the graphical diagrams defined in UML? Illustrate each.

17. Define design Class Diagram. When to use Class Diagrams?

18. Examine the Characteristics of use case to describe requirements.

19. Define State Chart Diagram. When to use State Diagram?

20. Define UML and list out its perspectives.

21. Classify the different kinds of Decomposition.

22. Write a brief note on class visibility.

23. Mention the benefits of Sequence Diagram.

24. Discuss the purpose of various Modelling Interfaces.

25. Write a brief note on Activity and State Diagrams.

26. Mention the role of Deployment Diagram in OOAD.

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

Not to exceed 120 words, Answer **any six** questions. Each question carries **4** marks.

27. What kinds of errors do you make if you directly rush into the implementation phase of a software project? How do you decide which classes, associations and generalizations should be eliminated?

28. Illustrate the Concepts of Generalization Relationship.

29. Identify all the attributes and methods of the Cheque book object.

30. Write a short description of services that each method provides.

31. Illustrate the relationship used in Use case.

32. What are the different ways and perspectives to Apply UML?

33. Is UML a programming language? Is it process dependent or independent? Pen down the names all the UML Diagrams, Identify each of the UML diagrams belong to structural and which of these belong to behavioral group.

34. Differentiate between object oriented Analysis and object-oriented Design. Explain following design concept:

    (a) Estimating Performance

    (b) Identifying concurrency

    (c) Handling global Resource and boundary condition

35. Compose your views on various Decomposition and write it benefits.

36. Describe the following UML diagrams with an example.

    (a) State chart diagram

    (b) Component diagram

37. Define State Chart Diagram. When to use State Diagram?

38. Differentiate the following

(a) Event and State

(b) Activity and operation

(c) Abstract class and Interface

(d) Inheritance and Multiple Inheritance

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

Answer **any two** questions. Each question carries **15** marks

39. With a suitable example explain how to design a class. Give all possible representation in a class (such as: name, attribute, visibility, methods and responsibilities).

40. Draw the use case diagram for the process sale and specify actor, use case and scenario.

41. Explain with an example, how use case modeling is used to describe functional requirements, Identify the actors, scenario and use cases for the example.

42. For Airline Ticket reservation system explain and draw the following UML diagrams

(a) sequence and collaboration diagram (booking a ticket) **7**

(b) Activity diagram. **4**

(c) State chart diagram **4**

43. Design and illustrate the use case model for activities involved in ordering food in a restaurant from the point when the customer enters a restaurant to the point when he leaves the restaurants.

44. Explain the benefits and concepts of use case and use case model and analyze the relating use cases have in ATM system.

(2 × 15 = 30 Marks)

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Sixth Semester B.C.A. Degree Examination, March 2021

Career Related First Degree Programme Under CBCSS

Group 2(b) – Computer Applications

Core Course

CP 1643 : DESIGN AND ANALYSIS OF ALGORITHMS

(2018 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – A [Very Short Answer Type]

(One word to maximum of **two** sentences. Answer **all** questions. **Each** question carries **1** mark.

1. What is an algorithm?
2. What is the time complexity of linear search?
3. Write any two applications of greedy algorithm.
4. What is a spanning tree?
5. When do you use dynamic programming?
6. Define principle of optimality.
7. Define backtracking.
8. How many possible solutions exist for an 8-queen problem?

P.T.O.

9. What is a live node in branch and bound?

10. What is the worst case time complexity of quick sort?

(10 x 1 = 10 Marks)

SECTION – B [Short Answer Type]

(Not to exceed one paragraph, answer **any eight** questions. Each question carries **2** marks)

11. What do you meant by space complexity of an algorithm?

12. How to calculate the time complexity of a binary search?

13. What is the advantage of binary search over linear search?

14. What is the importance of asymptotic notations?

15. Explain the general approach behind divide and conquer technique.

16. Mention the steps for achieving a greedy algorithm?

17. Construct the minimum spanning tree for the given graph using Kruskal's Algorithm.

18. Write the steps of dynamic programming approach.

19. What is single source shortest path?

20. Differentiate explicit constraints and implicit constraints.

21. Discuss the importance of branch and bound technique.

22. What is sorting? What is its significance?

23. What are deterministic algorithms?

24. What is NP hard problem?

25. What do you understood by average-case complexity of an algorithm?

26. What is the advantage of quick sort?

(8 × 2 = 16 Marks)

SECTION – C [Short Essay]

(Not to exceed **120** words, answer **any six** questions. **Each** question carries **4** marks)

27. Discuss the properties of a good algorithm.

28. Differentiate worst case and best case time complexity of algorithm with the help of an example.

29. Implement binary search using divide and conquer strategy.

30. What is the procedure of Strassen matrix multiplication?

31. Write Prim's algorithm to find the minimum cost spanning tree.

32. Differentiate between divide and conquer method and dynamic programming method.

33. Computes binomial coefficient, C(n,k) by the dynamic programming algorithm.

34. Explain travelling salesman problem in detail.

35. How to solve 8-queens problem using backtracking method?

36. Sort the following list using quick sort. Also explain each phases of its iteration.

    {9, 7, 5, 11, 12, 2, 14, 3, 10, 6}

37. Explain the features of nondeterministic algorithms.

38. Define NP-completeness. Give examples.

(6 × 4 = 24 Marks)

SECTION – D [Long Essay]

(Answer **any two** questions. **Each** question carries **15** marks)

39. What is recursion? How to convert a recursive algorithm to non-recursive? Explain with an example.

40. Write an algorithm to find the maximum and minimum elements in an array using divide and conquer method. Analyze the algorithm to find the number of comparisons required.

41. How will you implement Knapsack problem using greedy method? Explain with an example.

42. Explain Floyd-Warshall algorithm with an example.

43. Explain least cost branch and bound search with an example.

44. Discuss merge sort algorithm with an example. Also find its complexity.

(2 × 15 = 30 Marks)

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Sixth Semester B.Sc./B.C.A. Degree Examination, March 2021.

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Science/ Computer Applications

Core Course/Elective Course

CS 1642/CP 1661.3 – INTERNET OF THINGS (IoT)

(2018 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – A

(Answer **all** questions. Each question carries **1** mark)

1. What are sensors?
2. What is cloud computing?
3. Write the components of Smart Objects.
4. OCTAVE stands for?
5. What is RPL?
6. Expand MEMS.
7. What is WSN?
8. Expand RFID.

P.T.O.

9. What is Actuator?

10. Define MQTT.

SECTION – B

(Answer **any eight** questions. Each question carries **2** marks)

11. List any four advantages of Big Data systems.

12. What is FAIR?

13. What you mean by Data Analytics?

14. Is Machine Learning related to IoT? How?

15. Define SCADA.

16. What is fog computing?

17. Define Payload.

18. What is Latency?

19. Describe 6LoWPAN header compression.

20. Write the features of MQTT.

21. List the layers in oneM2M IoT Standardized Architecture.

22. What are pressure sensors?

23. What is DNP3?

24. Write a note on CoAP.

25. Describe BAS systems.

26. What are the applications of IoT?

SECTION – C

(Answer **any six** questions Each question carries **4** marks)

27. Discuss about the advantages and disadvantages of IoT.

28. Explain the Communication Protocol for WSN.

29. Write a note on smart objects.

30. Explain how IoT Data Management is done.

31. What are the applications of Big Data systems?

32. What is the connection of Big Data with IoT?

33. Write a note on Smart Connected Buildings.

34. What are HVAC systems?

35. How Cloud Computing is beneficial for IoT?

36. What are the trends in Smart Objects?

37. Why public safety is a major concern in IoT?

38. Write a note on OT security.

SECTION – D

(Answer **any two** questions. Each question caries **15** marks)

39. Discuss about various applications of IoT.

40. Describe IoT World Forum (IoTWF) Standardized Architecture.

41. Explain the simplified IoT Architecture.

42. Discuss about Smart Objects.

43. What are the common challenges in OT security?

44. Explain in detail about SCADA.

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Sixth Semester B.C.A. Degree Examination, March 2021

Career Related First Degree Programme under CBCSS

Group 2(b) – Computer Applications

Core Course

CP 1641 – MULTIMEDIA SYSTEMS

(2018 Admission Regular)

Time : 3 Hours Max. Marks : 80

SECTION – A

Answer **all** questions :

1. How does documents help in acquiring knowledge?
2. Define an edge.
3. Expand HAM.
4. How is the physical size of an image specified?
5. Expand PNG.
6. Is MIDI a standard?
7. MPEG is expanded as what?
8. Write a simple note on PAL.
9. What is sampling?
10. Signal to Noise Ratio (SNR) is to be defined as what?

(10 × 1 = 10 Marks)

P.T.O.

SECTION – B

Answer **any eight** questions.

11. Explain a node.

12. Write the explanation for simple reference.

13. What does this reference mean?

14. Provide a definition of explicity reference.

15. What do you mean by 1-bit image?

16. How will you define GIF?

17. Write a note on spatial resolution.

18. In what way pixels per inch defined?

19. Define PAL video.

20. Write any one advantage of digital video.

21. List the other formats of HDTV.

22. Discuss about sampling in digitization of sound.

23. Define encoding in digital audio.

24. How will you explain text-to-speech technology?

25. How does Articulatory technique works?

26. The built-in text-to-speech program in Mac is called as what?

(8 × 2 = 16 Marks)

SECTION – C

Answer **any six** questions.

27. How can anchors be properly represented?

28. Define hypermedia system.

29. With suitable examples explain the relationships expressed in references.

30. Write a note on 8-bit color images.

31. Describe on Portable Document Format.

32. Elaborate on JPEG.

33. Discuss on composite video - 1 signal.

34. Compare component, composite and s-video signals.

35. Elucidate about 4:2:2 Scheme.

36. Explain quantization error/noise.

37. Elaborate on the invention of speech synthesis.

38. Define Formant in phonemes to sound.

(6 × 4 = 24 Marks)

SECTION – D

Answer **any two** questions.

39. Define in detail keyboards as one of the multimedia hardware input device.

40. Bring out a detailed study on the Image File Formats.

41. Elaborate black and white images in detail.

42. Describe Musical Instruments Digital Interface (MIDI) in detail.

43. Elucidate in detail quantization of audio.

44. Explain in detail text-to-words.

(2 × 15 = 30 Marks)
