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Exam Roll No. 11

## END TERM EXAMINATION

FOURTH SEMESTER [MCA] MAY JUNE- 2018

Paper Code: MCA-208

Subject: Object Oriented Analysis and Design

Time: 3 Hours

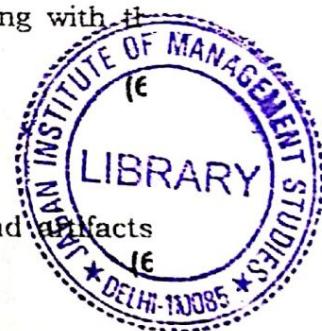
Maximum Marks:

Note: Attempt five questions in all including Q.No1 which is compulsory. Select one question from each unit.

- Q1 Answer the following: (2.5x10=)
- (a) What is modeling? Explain how modeling can play an important role in designing a system.
  - (b) What is the difference between include and extends. Explain with example.
  - (c) Define data types and abstract data types.
  - (d) What are the structural things in UML? Explain with suitable examples.
  - (e) Describe attributes and operations with respect to an object with relevant example.
  - (f) Distinguish between analysis object model & Dynamic model.
  - (g) What are behavioral things in UML? Explain with suitable example.
  - (h) What is the significance of rounds in the spiral model?
  - (i) How do you identify the Actors in particular system? Give example.
  - (j) What is a use case model? Why is the use case modeling useful for analysis?

### UNIT-I

- Q2 (a) What is RUP? Explain the various phases of RUP along with their outcomes?  
(b) Explain the following:-
  - i. Object modeling technique
  - ii. HOOD and OMT
- Q3 (a) Establish the relationships between roles, activities and artifacts in RUP.  
(b) Differentiate between the following:-
  - i. Aggregation and generalization
  - ii. Aggregation and composition
  - iii. Association and dependency



### UNIT-II

- Q4 The system of Automatic Prospectus purchasing machine controls the process of purchase of prospectus forms. The machine can be used by several customers at the same time and each customer can purchase different type and number of prospectus forms at a particular time. The system should enable the customer to enter the prospectus type displayed on screen and the number of prospectus to be purchased. The system should also enquire the customer about the mode of payment. According to the mode of payment (cash/credit card) required verifications must be made before the final delivery of form to the customer. The system must also prompt an alarm to the operator when the number of prospectus reaches the least optimum level.

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The operator should also periodically collect cash from the machine to ensure that no theft or robbery takes place. It should also stop the machine and should load the prospectus at the end of each day. In case of any fraud in case of credit card or fake money, no beep will be delivered and an alarm will be generated. If customer has inserted few amounts then a beep should be produced once and if no amount is deposited or less amount is deposited then no beep will be delivered and the money deposited will be retained by the machine permanently.

The machine should also provide a receipt to the customer after the completion of transaction smoothly. The machine should also enable the operator to generate daily reports of total sales of prospectus of different types, amount received in cash and amount received via credit card.

- Identify entity, Interface and control objects. (4)
- What are the uses cases that can be identified in the system? (3)
- Identify various associations between objects and construct complete object oriented solution. (5.5)

Q5 (a) Consider the Hospital Management System with the following requirements:

- The system should handle the in-patient and out-patient information through the receptionist.
- Doctors can view the patient history and give their prescriptions
- There should be an additional system to provide the desired information. Identify entity, interface and control classes along their relationships. (6)

(b) Take an example of Airways company that has a booking officer in different cities of India. The customer can make reservations, cancellations, and rescheduling in the booking office. The company wants to design an online system which connect the headquarter database with all the branches so that the information is available instantaneously. **Construct an analysis model of the above system.** (6.5)

### UNIT-III

Q6 (a) Take an example of Airways Company that has a booking officer in different cities of India. The customer can make reservations, cancellations, and rescheduling in the booking office. The company wants to design an online system which connect the headquarter database with all the branches so that the information is available is available instantaneously. **Write the use case description of "making reservations". Construct a sequence and collaboration diagram.** (8)

(b) What is the purpose of centralized structure in a sequence diagram? Differentiate between centralized and decentralized structures. (4.5)

Q7 The ABC banks want you to write a software application that runs its ATMs. The bank has customers, and a customer has one or more accounts in the bank. Consider the example of withdrawing cash from an ATM machine. Construct the following:

- scenario diagram
- scenario matrix and test case matrix

(6+6.5)

## UNIT-IV

- Q8 (a) Differentiate between activity and state chart diagram with example and symbols. (1)  
(b) Consider an example of stack where two operations push and pop are allowed. There are four events namely: new, push, pop and destroy with understood meaning. Identify the states and draw their state chart diagram. (6.)
- Q9 (a) What is UML? Explain the building blocks of UML. (1)  
(b) Construct an activity diagram for automatic water controller system.

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# END TERM EXAMINATION

FOURTH SEMESTER [MCA] MAY 2017

Paper Code: MCA-208

Subject: Object Oriented Analysis & Design

Time: 3 Hours

Maximum Marks: 75

Note: Attempt any five questions including Q.no. 1 which is compulsory.  
Select one question from each Unit.

Q1 Attempt all the questions:

- (a) Functional & Non Functional Requirements.
- (b) Extend, Uses & Grouping relationship in use case.
- (c) Uses of Synchronization & Swim lanes in Activity diagram.
- (d) Port & dependencies in Component diagram.
- (e) Actor object, Boundary Object, Controller object & Entity Object.
- (f) OMT (Object Modeling Techniques).
- (g) Provide & Required Interface.
- (h) Difference between Patterns & Framework.
- (i) CRC (Class Responsibilities Collaboration).
- (j) Conceptual Modeling.



## Unit-I

- Q2 (a) What is CRC (Class Responsibilities Collaboration) card? How classes are represented in CRC card? (6.25)  
(b) What is Booch Methodology? Briefly describe the Booch Macro & Micro development Process. (6.25)

- Q3 (a) Write the Use Case Scenario & Draw Activity diagram for Modeling the e-shop system (major functions of e-shop system are User Authentication, Search product Shopping cart, Payment, Debit/Credit Card verification, Billing & Dispatch etc.). (6.25)  
(b) Compare RumBaugh's, Booch, Coad-yourdon & Ivar Jacobson Methodology with relative advantages & Disadvantages. (6.25)

## Unit-II

- Q4 (a) The Requirements Model aims to delimit the system and define the Functionality that the system should offer." Give the comment and explain with example. (6.25)  
(b) Draw a use-case diagram for an educational Institute that would like to keep track of each students. In order to maintain strong ties to its alumni, the college holds various events. The college needs to keep track of which student have attended which events. The college keeps in contact with students by mail, email, telephone and fax to announce each event and keep students information up to date. The college would like to be able to produce a report showing the latest information about a student and the event the graduate attended.(6.25)

- Q5 A University gives the loan to students before getting a loan, there is a evaluation process after which if the loan is approved, agreement is reached. A transaction records each step of the evaluation process, and another transaction records the overall loan agreement. A student can

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take any number of loans, but only one can be active at any time. Each loan is initiated by a separate transaction. Then, the student repays the loan with a series of repayments. Each repayment transaction is recorded. After the complete settlement, finally the loan account is closed.

- (a) What is Collaboration diagram? Draw the Collaboration diagram for apply for Loan & balance enquiry use case. (6.25)
- (b) Draw Object diagram & Class diagram for student Loan system given in Q.no.5(a). (6.25)

### **Unit-III**

- Q6**
- (a) What is Design Model? Develop Design Model for Library Management System. (6.25)
  - (b) What is RUP (Rational Unified Process) Model? Explain Iterations, Workflow & Outcomes of each Phase of this model. (6.25)

- Q7**
- (a) What is incremental integration testing? Explain thread based, use case based and cluster strategies for integration testing. (6.25)
  - (b) List the steps involved in construction of Component diagram. Draw component diagram for CCMS system discussed in Q.8 (a). (6.25)

### **Unit-IV**

- Q8**
- (a) SBI is a Global Commercial Bank. It plans to build an online credit card management system (CCMS). In order to obtain an SBI credit card, customers may fill the application through the CCMS. In the application, they need to specify the type of credit card they want to apply, e.g. platinum Gold or Standard. The difference among them are the requirement on the minimum personal annual income, credit limit & annual fee. Information such as personal contact information, current employment and financial status, is also required to application. Once SBI accepts the application, it will send a confirmation mail to the applicant and state the available date, expiration date and credit limit of the credit card. When the applicants receive the mail with credit card, they need to call the CCMS to activate the card. Draw Sequence diagram for applying, verification of Credit Card & Bill statement generation. (6.25)
  - (b) Describe basic building blocks of UML and explain structural modeling. (6.25)

- Q9**
- (a) What are the consequences of implementation environment? Why analysis objects are required before design objects? Explain with example. (6.25)
  - (b) What is State Chart Diagram? Draw the state chart diagram for phone Call System. (6.25)

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**END TERM EXAMINATION**

FOURTH SEMESTER [MCA] MAY-JUNE 2016

Paper Code: MCA208

Subject: Object Oriented Analysis  
& Design

Maximum Marks: 60

Time: 3 Hours

Note: Attempt any five questions including Q no. 1 which is compulsory.

Q1 Attempt all the Questions.

(2x10=20)

- (a) Full-scale test and overload test
- (b) Extend, Uses & Grouping relationship in use case.
- (c) Uses of Synchronization & Swim lanes in Activity diagram
- (d) Port & dependencies in Component diagram
- (e) Actor object, Boundary Object, Controller object & Entity Object
- (f) OMT (Object Modeling Techniques)
- (g) Physical, Catalog & Homomorphism aggregation.
- (h) Exclusive - OR & Reflexive association
- (i) Super State & Composite State
- (j) Conceptual Modeling

Q2 ✓ (a) What is CRC (class Responsibilities Collaboration) card? How classes are represented in CRC card? (5)

✓ (b) What is Rumbaugh's Methodology? Explain Static, Dynamic &amp; Functional model in detail. (5)

Q3 (a) Write the Use Case Scenario &amp; Draw Activity diagram for ATM system (major functions of ATM are Pin change, withdrawing cash, fund Transfer, Utility Bill Payment etc.) (5)

(b) Compare RumBaugh's, Booch, Coad-yourdon &amp; Ivar Jacobson Methodology with relative advantages &amp; disadvantages. (5)

Q4 ✓ (a) The Requirements model aims to delimit the system and define the Functionality that the system should offer". Give the comment and Explain with example. (5)

✓ (b) Draw a use-case diagram for a MCA college that would like to keep track of each students. In order to maintain strong ties to its alumni, the college holds various events. The college needs to keep track of which student have attended which events. The college keeps in contact with students by mail, email, telephone and fax to announce each event and keep students information up to date. The college would like to be able to produce a report showing the latest information about a student and the events the graduate attended. Write the Use case template for any one use case. (5)

Q5 A University gives the loan to students before getting a loan, there is a evaluation process after which if the loan is approved, agreement is reached. A transaction records each step of the evaluation process, and another transaction records the over all loan agreement. A student can take any number of loans, but only one can be active at any time. Each loan is initiated by a separate transaction. Then, the student repays the loan with a series of repayments. Each repayment transaction is recorded. After the complete settlement, finally the loan account is closed.

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P1,

- (a) What is collaboration diagram? Draw the Collaboration diagram for apply for Loan & balance enquiry use case. (5)
- (b) Draw Object diagram & Class diagram for student Loan system. (5)
- Q6** (a) What is Analysis Model? Develop Analysis Model for Banking System. (5)  
 (b) What is RUP (Rational Unified Process) Model? Explain Iterations, Workflow & Outcomes of each Phase. (5)
- Q7** (a) What is incremental integration testing? Explain thread based, use based and cluster strategies for integration testing. (5)  
 (b) List the steps involved in construction of State Transition diagram. Draw the state Transition diagram for ATM system. (5)
- Q8** (a) ICICI is a Global Commercial Bank. It plans to build an online credit card management system (CCMS). In order to obtain an ICICI credit card, customers may fill the application through the CCMS. In the application, they need to specify the type of credit card they want to apply, e.g. platinum Gold or Standard. The difference among them are the requirement on the minimum personal annual income, credit limit & annual fee. Information such as personal contact information, current employment and financial status, is also required to application. Once ICICI accepts the application, it will send a confirmation mail to the applicant and state the available date, expiration date and credit limit of the credit card. When the applicants receive the mail with credit card, they need to call the CCMS to activate the card. Draw Sequence diagram for Applying & verification of Credit Card. (5)  
 (b) Describe the purpose of the construction phase? What are the main steps to develop design model? Explain with suitable example. (5)
- Q9** (a) What are the consequences of implementation environment? Why analysis objects are required before design objects? Explain with example. (5)  
 (b) What is State Chart diagram? Draw the state chart diagram for phone Call System. (5)

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**END TERM EXAMINATION**

FOURTH SEMESTER [MCA] MAY-JUNE 2018

**Paper Code: MCA-210****Subject: Web Technologies****Time: 3 Hours****Maximum Marks: 75****Note: Attempt any five questions including Q no.1 which is compulsory.**

- Q1** Answer the following questions:- **(any five)** **(5x5=25)**  
 (a) Why do we create HTML forms? Explain using suitable example.  
 (b) What is cascading style sheet?  
 (c) Explain UDDI?  
 (d) What are ASP.NET web applications?  
 (e) Describe XML schema?  
 (f) What are features of Dream Weaver?  
 (g) Why form validation is required?
- Q2** (a) Write short note on DHTML. Write a DHTML to demonstrate event handling related to mouse. **(7.5)**  
 (b) What is java scripting language? What are its advantages? **(5)**
- Q3** (a) What do you understand by building ASP.NET page and building forms with web server controls? **(6.5)**  
 (b) Write the differences and similarities between HTML and DHTML. **(6)**
- Q4** (a) Explain the following objects of ADO.NET: SqlConnection, SqlCommand, SqlDataAdapter with example. **(6.5)**  
 (b) What is dataset object? What is the difference between dataset and datareader? **(6)**
- Q5** (a) Write the SOAP message structure and specify the web services available in SOAP. **(7.5)**  
 (b) What are XML namespaces? Why do we need them? **(5)**
- Q6** (a) What is cloud computing technique? What are the advantages of that technique? **(7.5)**  
 (b) Explain web services description language in short. **(5)**
- Q7** (a) What are sessions in ASP.NET applications? Explain the work of session state in ASP.NET. **(7.5)**  
 (b) Explain form based authentication. How do we implement it? **(5)**
- Q8** (a) What do you understand by encrypting data over the network? **(7.5)**  
 (b) Write a case study for developing interactive web base applications. **(5)**

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# END TERM EXAMINATION

FOURTH SEMESTER [MCA] MAY 2017

Paper Code: MCA-210

Subject: Web Technologies

Time: 3 Hours

Maximum Marks: 75

Note: Attempt any five questions including Q.no. 1 which is compulsory.  
Select one question from each Unit.

- Q1 (a) List the different Table creation tags in HTML. ✓ (2.5x10=25)  
(b) Explain Data Reader and Dataset. ✓  
(c) Differentiate between HTML and DHTML. ✓  
(d) What are the benefit of using Java Script in a web page? Explain. ✓  
(e) What are validation controls in Asp .Net? Explain. ✓  
(f) Explain Windows-Based Authentication with example. ✓  
(g) How is XML used in a web application? Explain with an example. ✓  
(h) How can you encrypt data from a web page? Explain with example. ✓  
(i) What is partial page caching in Asp .Net. ✓  
(j) How can we secure ASP.NET application by using Form-Based Authentication? ✓

## Unit-I

- Q2 (a) What is HTML? How do you make an image clickable in HTML? Give an example. (6)  
(b) What is Java Script? How can Java Script be used to validate controls in a web form? Give examples. (6.5)

- Q3 (a) Explain in brief the popular Web Designing Tools. Also explain the need of Cascading Style Sheets (CSS). (6)  
(b) Design & code a form for a publishing house called "Sultan Chand" that allows the book to be ordered via the Internet. The form should include the Customer's name, Address, Phone no. and Book's title, Author and Edition, with cash on delivery option for payment. (6.5)

## Unit-II

- Q4 (a) What is the page life cycle in ASP.Net. Write the web server controls with their use. (6)  
(b) Explain different objects used in ADO.NET. Write steps to execute a query for all operation (Select, Insert, Update and Delete) in a class with separate functions. (6.5)

- Q5 (a) What is Binding Data to web Control? Show the use of Grid view and Data List Controls with their important properties. (6)  
(b) Design a Web Form to fill a Professional Resume of a candidate with all proper Validation control and make the use of Calendar control also. (6.5)

## Unit-III

- Q6 (a) What is a session? Why do we use it? Give an example to use session in a web application. (6)  
(b) What are the benefits of using caching in a web application and list different types of caching. (6.5)

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- Page number

- Q7 (a) Explain with an example the concept of Application Tracking and Error Handling in a web applications. (6)  
(b) Design & code a web application to authenticate all form using Form-Based Authentication and redirect all to login.aspx. (6.5)

### Unit-IV

- Q8 (a) Explain Web Services. Also describe service oriented architecture using example. (6)  
(b) What is the role of SOAP in web services? Explain the SOAP message structure. (6.5)

- Q9 Write short notes on: (12.5)  
(a) WSDL  
(b) UDDI  
(c) Grid Computing  
(d) Cloud Computing

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# END TERM EXAMINATION

LIBRARY Exam Roll No. 015

Paper Code: MCA210

FOURTH SEMESTER [MCA] MAY-JUNE 2016

Subject: Web Technologies  
(Batch 2010 Onwards)

Maximum Marks: 60

Time: 3 Hours

Note: Attempt any five questions including Q no. 1 which is compulsory.  
Select one question from each Unit.

- Q1 (a) List the various features of the DHTML. (10x2=20)  
(b) Why Java Script is used.  
(c) How Many types of validation controls are provided by ASP.Net?  
(d) Differentiate between HTML and XML.  
(e) What is W3C?  
(f) What is the function of the WSDL?  
(g) Differentiate between internet and intranet.  
(h) List the merits and demerits of XML.  
(i) Explain the different types of HTML Tags.  
(j) What is Public Key Encryption System?

## UNIT-I

- Q2 (a) What is web browser? Explain different parts of web browser. Also discuss how web browser works. (6)  
(b) Why list is used in HTML? Explain the various types of HTML list. (4)

- Q3 (a) What is cascading style sheets? Explain Inline, Internal and External styles. Also discuss the CSS style rule. (5)  
(b) Briefly explain the different types of web design tools. (5)

## UNIT-II

- Q4 Explain the following:-  
(a) Advanced Control Programming. (5)  
(b) Building Forms with Web Server Controls. (5)

- Q5 Explain ADO.Net technology and its comparison with the competing technologies. Also discuss the concepts of binding data to web control. (10)

- Q6 Discuss the procedure for building the ASP.Net page. Also discuss the concept of building form with server controls. (10)

## UNIT-III

- Q7 Discuss the application tracking and Error Handling in ASP.Net. (10)

- Q8 Discuss how to create ASP.Net application. Also discuss the concept of Form-Based and Windows-Based Authentication. (10)

## Unit-IV

- Q9 Write the short notes on the following:-  
(a) UDDI (3)  
(b) Grid and Cloud Computing (4)  
(c) SOAP (3)

- Q10 What is HTML5? How WSDL helps in creating faster loading web pages? (10)

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Q1 Differentiate between following:-

(5x5=25)

- (a) Deterministic and nondeterministic algorithm.
- (b) Time complexity and space complexity.
- (c) Dynamic Paradigm and Greedy Paradigm to solve any problem.
- (d) P, NP, NP-hard and NPC
- (e) Determine 0/1 Knapsack problem.

Q2 (a) Give Asymptotic upper and lower bound for  $T(n)$  in each of the following recurrence relation:

(6.5)

- (i)  $T(n) = 2T(n/2) + n^3$
- (ii)  $T(n) = T(n-1) + n$
- (iii)  $T(n) = 2T(n/4) + n^2$

(b) What is the behind divide and conquer method. Explain with example.

(6)

Q3 (a) Write an algorithm for Quick Sort and Explain. Also find its complexity in worst case, average case and burst case.

(6)

(b) Perform Quick sort dry run on following data. Show the various steps involved in the quick sorting of the data. (1,3,4,-5,9,2,6,5,3)

(6.5)

Q4 (a) Write an algorithm for Matrix Chain Multiplication and Explain why this strategy comes under the dynamic paradigm.

(5.5)

(b) Find optimal parenthesization of matrix-chain product whose sequence of dimensions as follows:

(7)

5,10,3,15,2,20

Q5 (a) Explain the algorithm for string matching with finite automata. Compare its complexity with other string matching algorithms.

(5.5)

(b) Construct the string matching automation for the pattern  $P='aabab'$  and illustrate its operations on the text string 'aaababaabaababaab'.

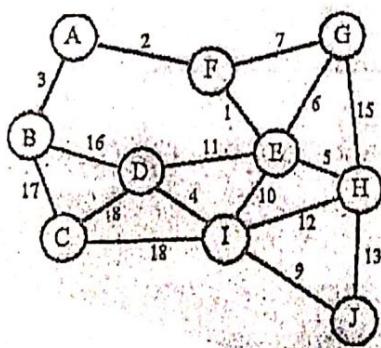
(7)

Q6 (a) Write any one algorithm for minimum spanning tree generation and explain. Find its complexity. Discuss the advantage of generating minimum spanning tree in computer networks.

(6)

(b) For the following graph generate the spanning tree using Kruskal's method and Prims method. Are both the spanning tree same? Justify.

(6.5)



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- Q7 (a) How to solve the sum of subset problem using approximation algorithms? Also find its time complexity. (6)
- (b) Prove that any algorithm that works by comparing keys to find the second largest from a set of  $n$  keys must do at least  $n + \log n - 2$  comparisons in the worst case. (6.5)
- ✓ Q8 (a) Prove that Hamiltonian Cycles is NP complete problem. (5.5)
- (b) Explain the relationship between NP-completeness and reducibility. (7)
- c Give definition of NP complete language.

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**END TERM EXAMINATION**

FOURTH SEMESTER [MCA] MAY-JUNE 2016

Paper Code: MCA-202

Subject: Design and Analysis of  
Algorithms

Time: 3 Hours

Maximum Marks: 60

Note: Attempt any five questions including Q.no. 1 which is compulsory.

Q1

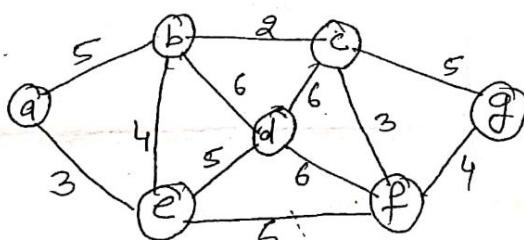
- (a) Discuss asymptotic notations in brief.  
 (b) Solve following recurrence relation:  
     (i)  $T(n) = T(n/2) + T(n/4) + T(n/8) + n$   
     (ii)  $T(n) = T(\sqrt{n}) + O(\log n)$   
         and find asymptotic bounds.  
 (c) Sort following array using heap sort and find complexities.  
     {5, 18, 3, 7, 20, 8, 1}.  
 (d) Describe n-Queen problem. Why it is NP-complete?  
 (e) State and provide proof of Cook's theorem.



(4x5=20)

Q2

- (a) For the following graph find the minimum spanning tree using Krushkal algorithm. (5)



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- (b) Explain with an example the Hamiltonian circuit problem. (5)

- Q3 (a) For the following six items, find the solution if the weight limit is 100.

<b>id</b>	<b>Weight</b>	<b>Value</b>	<b>Value/Weight</b>
A	100	40	0.4
B	50	35	0.7
C	40	20	0.5
D	20	4	0.2
E	10	10	1
F	10	6	0.6

Solve the same problem using greedy method? Is the solution optimal? Find Optimal Solution. (5)

- (b) Define metroids. How they are related to greedy paradigm? (5)

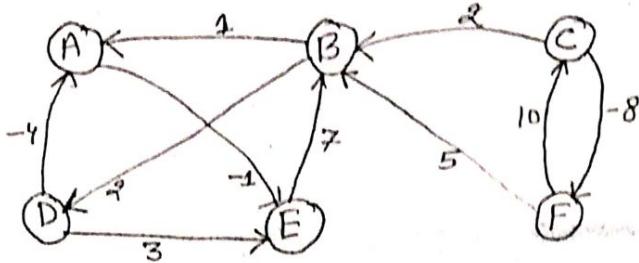
- Q4 (a) Write an algorithm for Floyd-Warshall algorithm and find its time complexity. (5)

- (b) For the following graph, show the values of matrices that result from each iterations. (5)

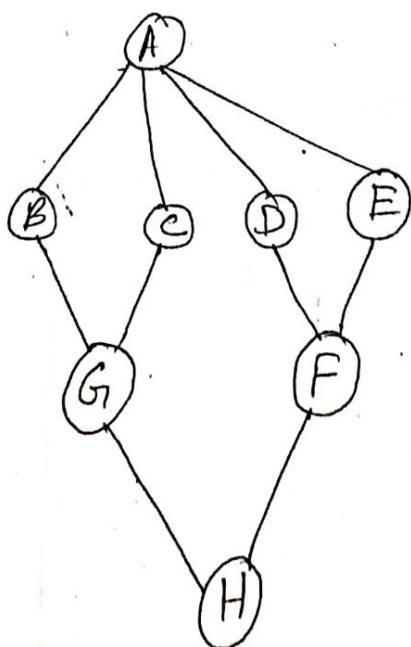
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MCA-202

P1/2



- Q5 (a) Write an algorithm for string matching with finite automata and explain. (5)  
 (b) For a string  $T = "lrrrlrlrr"$ . Find the pattern  $P = "rl"$  using the automata. (5)
- Q6 (a) What is circuit satisfiability problem? Prove that it is in class NP. (5)  
 (b) Explain the Branch-and-Bound technique in brief. (5)
- Q7 (a) Write an algorithm for quick sort and explain its working on following data:  $< 5, 7, 9, 11, 13 >$   $O(n^2)$   
 Why worst case time complexity came in this scenario?  
 (b) Make a AVL tree for the following insertions: 5, 7, 9, 8, 6, 11, 17. (5)
- Q8 (a) What is the complexity of linear search, binary search and direct search in terms of time? Explain Hashing. (5)  
 (b) For the following graph generate BFS and DFS. (5)



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**END TERM EXAMINATION**

FOURTH SEMESTER [MCA] MAY-JUNE 2018

Paper Code: MCA-206

Subject: Advanced Computer Networks

Time: 3 Hours

Maximum Marks: 75

Note: Attempt all questions as directed. Internal choice is indicated.

Q1

- Answer the following questions in brief:- (10x2.5=25)
- What is the role of SACK in TCP?
  - List the trailer fields in the CS layer of AL 5.
  - What do you mean by Message Authentication and Entity Authentication?
  - Describe the term Home Agent and Foreign Agent in Mobile IP.
  - What is Hidden and Exposed terminal problem?
  - What is Route Optimization in MIPv6?
  - Explain briefly one-way Hash function.
  - The AS number in an organization is 36709. Find the range of multicast addresses that the organization can use in Glop block.
  - What are the requirements of cluster analysis? Differentiate between Wi-Fi and Wimax.
  - Using the RSA public key crypto system with  $a = 1$ ,  $b = 2$ . If  $P = 13$ ,  $q = 31$  and  $d = 7$ , find how the string 'GGSIP' encrypted.

**UNIT-I**

Q2

- Discuss the need or lack of need for a network layer (OSI layer 3) in a broadcast network. (4.5)
- How does CSMA/CD differ from CSMA/CA? Draw a flow chart to depict CSMA/CA procedure. (8)

**OR**

Q3

- What are the common fast Ethernet and Gigabit Ethernet implementations? Explain each in brief. (6)
- What are the three types of frames used by Wireless LAN? Explain the purpose of NAV. (6.5)

**UNIT-II**

Q4

- What are four different forms of IP addressing? Compare and contrast IGMP protocol with PIM protocol. (8.5)
- What are general problems of mobile IP regarding security and support of quality of service? Explain in detail. (4)

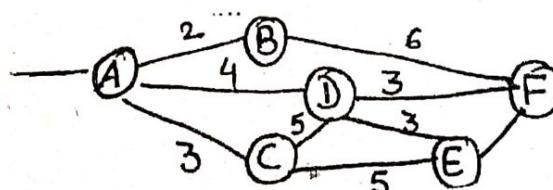
**OR**

Q5

- Describe UNI cell and NNI cell format. (6)
- Why AAL5 called SEAL? Discuss the address binding in IP over ATM. (6.5)

**UNIT-III**

- (8)
- Q6 (a) Using Dijkstra's algorithm compute shortest path from router A to the remaining nodes in the below network:



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(b) What is subnetting and supernetting? Explain with examples. (6.5)  
**OR**

Q7 Explain about:-

(4)

(a) Flooding

(4.5)

(b) Registration procedure of new host in mobile routing.

(4)

(c) Security issues in mobile networks

#### UNIT-IV

- Q8 (a) What are the differences between HTTP and HTTPs? (4)  
(b) Write the procedure to get Public-Key Certificates. (4.5)  
(c) Write a short note on TCP extensions for high speed networks. (4)

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**END TERM EXAMINATION**

FOURTH SEMESTER [MCA] MAY 2017

**Paper Code: MCA-206****Subject: Advanced Computer Networks****Time: 3 Hours****Maximum Marks: 75****Note: Attempt all questions as directed. Internal choice is indicated.**

- Q1** Answer the following questions: (5x5=25)
- What are three layer of X.25?
  - Compare ATM and Frame Relay.
  - Compare message, packet and circuit switching.
  - How ARP and RARP are different from each other? Explain.
  - What are the sizes of MAC address space, IPv4 and IPv6 address spaces? Give examples.

**Unit-I**

- Q2** (a) Discuss the reasons why layered structured is used in OSIRM. (4)  
 (b) What are fast access technologies? Explain various types of fast access technologies. (8.5)
- OR**
- Q3** Write notes on the following: (6.25x2=12.5)
- FDDI
  - ADSL

**Unit-II**

- Q4** (a) What are the different categories of addresses in IPv6? Discuss the extension headers in IPv6. (6.25)  
 (b) Draw the header format for IPv6. (6.25)
- OR**
- Q5** (a) Discuss the various fields of routing table in details. (6.25)  
 (b) Discuss ATM reference model. (6.25)

**Unit-III**

- Q6** (a) Define IP Multicast Address with the help of example. (6.25)  
 (b) Explain Distance Vector Multicast routing Protocol with the help of example. (6.25)
- OR**
- Q7** (a) Explain the mobility operation. (6.25)  
 (b) Show the Position of IGMP in TCP/IP Model. Explain IGMP Version 2. (6.25)

**Unit-IV**

- Q8** Write short notes on **any two** of the following: (6.25x2=12.5)
- Digital Certificates
  - Address Aggregation
  - Secure HTTP

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## END TERM EXAMINATION

FOURTH SEMESTER [MCA] MAY-JUNE 2016

Paper Code: MCA-206

Subject: Advanced Computer Networks

Time: 3 Hours

Maximum Marks: 60

Note: Attempt any five questions including Q.no. 1 which is compulsory.  
Select one question from each unit.

- Q1 Answer all the following questions briefly: (10x2=20)
- (a) What is Carrier extension approach and frame bursting in Gigabit Ethernet?
  - (b) What is HFC network?
  - (c) What are the values of subtype fields in control frames?
  - (d) What is encrypted security payload in IPv6?
  - (e) How is an ATM virtual connection identified?
  - (f) Why RIP uses UDP instead of TCP?
  - (g) Change the multicast IP address 232.43.14.7 to an Ethernet multicast physical address.
  - (h) What is the role of SACK in TCP?
  - (i) What is ISAKMP?
  - (j) Draw a block diagram showing the digital signature process.

### Unit-I

- Q2 Discuss Six goals of the IEEE 802.32 design. Explain its two common implementations with its corresponding encoding & decoding mechanism. (10)

- Q3 Discuss in detail four IEEE 802.11 addressing mechanism. (10)

### Unit-II

- Q4 Explain six extension headers types of IPv6 datagram. (10)

- Q5 Describe the architecture of ATM and its various layers. (10)

### Unit-III

- Q6 What is multicast distances vector routing? Describe four decision-making strategies involved in DVMRP. (10)

- Q7 Describe the three phases involved in the communication between mobile host and remote host. (10)

### Unit-IV

- Q8 Discuss the concept of send window and receive window for data transfer in TCP. What is Silly Window Syndrome and its proposed solution. (10)

- Q9 (a) Compare and contrast http and https. (5)  
(b) How message authentication code (MAC) is generated? (5)

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## END TERM EXAMINATION

FOURTH SEMESTER [MCA] MAY-JUNE 2018

Subject: Data Warehousing and Data Mining

Paper Code: MCA-204

Time: 3 Hours

Maximum Marks: 75

Note: Attempt five questions in all including Q no. 1 which is compulsory.  
Select one question from each unit.

Q1

Answer any ten of the following:-

(10x2.5=25)

- (a) What is Knowledge Discovery in Database? How does it relate to Data Mining?
- (b) Provide example for incomplete and inconsistent data.
- (c) What is the difference between classification and prediction?
- (d) What are the data mining tasks performed on a text database?
- (e) List out any two major strengths of decision tree method.
- (f) Discuss various data mining task primitive.
- (g) What is meant by 'Association Rule Mining'?
- (h) What is the difference between fact table and dimensional table?
- (i) What are the requirements of cluster analysis?
- (j) What is the difference between data warehouse and data mart.
- (k) What do you mean by Cluster Analysis?
- (l) Give some alternative terms for data mining.
- (m) What are the steps involved in KDD process.
- (n) List out the component of star schema.
- (o) What is roll-up operation?



### UNIT-I

Q2

- (a) Explain the three-tier data warehouse architecture. (6.25)
- (b) What is OLAP? Explain the OLAP operations on multidimensional data with example. (6.25)

Q3

- (a) What are the decision support applications? Why are the traditional DBMS inadequate for decision making? (6.25)
- (b) Perform Quick sort dry run on following data. Show the various steps involved in the quick sorting of the data. What is data warehousing and why it is important for decision support? (6.25)

### UNIT-II

Q4

- (a) What are the main considerations that are involved in the designing of the data Warehouse? Also discuss the methods for the implementation of Data Warehousing systems? (6.25)
- (b) With an example, describe any two schema (star/snowflake/fact constellation) definition using DMQL statements. (6.25)

Q5 (a) What are the drawbacks of virtual data warehouse? Explain in detail. (6.25)  
(b) Explain different type of OLAP servers? (6.25)

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**UNIT-III**

- Q6 (a) Described the data mining functionalities and examine what kind of patterns can be mined. (6.25)  
 (b) What is the necessity of data preprocessing of the data? How can data preprocessing techniques improves the quality of data. (6.25)
- Q7 (a) List any one tool for data mining and show how that tool will be useful for a ration shop system. (6.25)  
 (b) What are the various data mining task supported by the DB miner system? (6.25)

**UNIT-IV**

- Q8 (a) What is cluster analysis? Explain the classification of major clustering and partitioning methods. (6.25)  
 (b) What is decision tree? Elaborate on classification done using Decision tree induction. (6.25)
- Q9 (a) Write k-means and k-medoids algorithm and explain with example. (6.25)  
 (b) What is the difference between density based methods and grid based methods? Explain with suitable example. (6.25)

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# END TERM EXAMINATION

FOURTH SEMESTER [MCA] MAY 2017

Paper Code: MCA-204

Subject: Data Warehousing and  
Data Mining

Time: 3 Hours

Maximum Marks: 75

Note: Attempt any five questions including Q.no.1 which is compulsory.  
Select one question from each Unit.

- Q1 Attempt **any ten** questions:
- (a) Explain data granularity in a data warehouse.
  - (b) What are dimension hierarchies?
  - (c) Explain with an example meaning of slice-and-dice.
  - (d) Differentiate between slowly and rapidly changing dimensions.
  - (e) Write difference between ER Modeling and Dimensional Modeling.
  - (f) How are top-down and bottom-up approaches for building a data warehouse different?
  - (g) Explain two differences between operational systems and informational systems?
  - (h) List out any five modeling data mining tools.
  - (i) Explain Genetic Algorithm with example.
  - (j) How is the Data mining is the primary step in the process of knowledge discovery?
  - (k) Explain the cluster detection technique.

## Unit-I

- Q2 (a) What are the components of data warehouse? (6.25)  
(b) What are the three major types of metadata in a data warehouse?  
Explain the purpose of each type. (6.25)
- Q3 (a) Explain the three-tier data warehouse architecture? (6.25)  
(b) Differentiate between operational and decision-support systems. (6.25)

## Unit-II

- Q4 (a) Why is the entity-relationship modeling technique not suitable for the data warehouse? How is dimensional modeling different? (6.25)  
(b) What is fact less fact table? Design a simple Star schema with a fact less fact table to track patients in a hospital by diagnostic procedures and time. (6.25)
- Q5 (a) What are aggregate fact tables? Why are they needed explain with example. (6.25)  
(b) Explain STAR Schema with example and why a dimension table is wide and fact table is deep. (6.25)

## Unit-III

- Q6 (a) What are Multidimension Databases (MDDBS)? How do these store data? (6.25)  
(b) How is data mining different from OLAP. Explain with example. (6.25)  
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- Q7 (a) Explain knowledge Discovery Process (KDD) in detail. (6.25)  
(b) Compare and summarize the major distinguished features between OLTP and OLAP. (6.25)

#### Unit-IV

- Q8 (a) How does the memory based reasoning (MBR) technique work? What is the underlying principle? (6.25)  
(b) Write the three common applications of the link analysis technique. (6.25)
- Q9 (a) Explain the following Data Mining technique with example. (6.25)  
    (i) Decision tree based   (ii) Memory based reasoning  
(b) What is the difference between clustering and grouping of Data? Explain the clustering techniques in detail. (6.25)

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**END TERM EXAMINATION**

FOURTH SEMESTER [MCA] MAY-JUNE 2016

Paper Code: MCA204

Exam Roll No.

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Time: 3 Hours

Subject: Data Warehousing and  
Data Mining

Maximum Marks: 60

Note: Attempt any five questions including Q no. 1 which is compulsory.  
Select one question from each unit.

- Q1 Briefly explain 'data granularity' with the help of example. (2x10=20)  
(i) What is ETL (Extraction/Transformation>Loading) process?  
Discuss in brief. c.  
(ii) "Every data in Data warehouse is time stamped." Discuss.  
(iii) How is "Data mining" different from the "OLAP"?  
(iv) Briefly outline the major steps in decision tree classification.  
(v) Differentiate between 'Operational' and 'Decision Support' systems.  
(vi) Define Manhattan distance and Euclidean distance.  
(vii) Explain the difference between supervised and unsupervised learning with the help of a real world example.  
(viii) Discuss the different types of OLAP operations.  
(ix) Discuss the measure support and confidence used in association rule mining.  
(x) List the major benefits of Data mining.

### UNIT-I

- Q2 (a) Discuss in details three main reasons why data warehouse modeling requires modeling techniques other than OLTP database modeling. (7)  
(b) Every data structure in a data warehouse contains the time element. (3)  
Why?

- Q3 (a) What is the difference between three main types of data warehouse usage: information processing, analytical processing, and data mining? (6)  
(b) Discuss the motivation behind OLAP mining (OLAM). With the help of a clean diagram discuss architecture of OLAM. (4)

### UNIT-II

- Q4 (a) In real-world data, tuples with missing values for some attributes are a common occurrence. Describe any five methods for handling this problem. (5)  
(b) What is Apriori property? Why it is used? Discuss the Apriori algorithm for discovering frequent itemsets for mining Boolean association rules. (5)

- Q5 (a) What are the fields in which clustering techniques are used? Mention any four fields. Discuss basic requirements of cluster analysis. (3)  
(b) Why is outlier mining important? Briefly describe the different approaches behind statistical based outlier detection and distanced based outlier detection. (7)

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- Q6** (a) Why is decision tree induction popular? Discuss over-fitting of induced tree and two approaches to avoid over-fitting using suitable example/diagrams.  
 (b) How can you use the Web as a data source for your data warehouse? What types of information can you get from the Web?
- Q7** (a) name the major phases of a data mining operation. Out of these two phases, pick two and describe the types of activities in these phases.  
 (b) Explain data granularity and how it is applicable to the warehouse.

**UNIT-IV**

- Q8** (a) Apply any hierarchical clustering algorithm for clustering the following eight points. Determine the clusters with their elements. The distance function is Euclidean distance.  
 $A_1(2,10), A_2(2,5), A_3(8,4), A_4(5,8), A_5(7,5), A_6(6,4), A_7(1,2), A_8(4,9)$ .  
 (b) Suppose we have the following points:-

(1,1)  
 (2,4)  
 (3,4)  
 (5,8)  
 (6,2)  
 (7,8)

Use k-Means algorithm ( $k=2$ ) to find two clusters. The distance function is Euclidean distance. Find 2 clusters using k-means clustering algorithm. Use (1, 1) and (2, 4) to form the initial clusters.

- Q9** (a) Discuss naïve Bayesian classification. Why is it called "naïve"  
 (b) Write short notes on (Any Two):-  
 (i) Outlier Analysis  
 (ii) Decision Support System  
 (iii) Data Marts

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