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R–3063	Sub. Code
	541201/ 545201

M.C.A. (R/WE) DEGREE EXAMINATION, APRIL 2019

Second Semester

Computer Application

OBJECT ORIENTED PROGRAMMING AND C++

(Common for M.C.A. (R)/ M.C.A. (WE))

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is an Object Oriented Paradigm?
2. What is a stream?
3. What is the difference between call by reference and call by address?
4. What is use of 'this' pointer?
5. What are the advantages of Inheritance?
6. What is an abstract class?
7. What is a generic programming?
8. What is a sequential file?
9. Write the throwing mechanism.
10. Which exception is raised while overloading an operator function?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the basic concepts of Object Oriented Programming.

Or

(b) Explain the unformatted I/O operations with example.

12. (a) Explain private member function with a C++ program.

Or

(b) Explain pointer to object with a C++ program.

13. (a) Explain polymorphism with a program.

Or

(b) Explain virtual base class with a program.

14. (a) Explain function template with an example.

Or

(b) Explain class template with multiple arguments with an example.

15. (a) Explain the exception handling mechanism in C++ with an example.

Or

(b) Explain the exceptions in class template with an example.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain about manipulators in C++ with examples.

17. Explain multiple constructors in a class with a C++ program.

18. Write a C++ program to calculate the total mark obtained by a student using hierarchical inheritance. (Assume your own data).

19. Create a file to store the student's details. Write another program to read the contents and display it on screen. (Assume your own data).

20. Explain multiple catch classes with a program.

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R–3064

Sub. Code
541202/ 545202

M.C.A. (R/WE) DEGREE EXAMINATION, APRIL 2019

Second Semester

Computer Application

OPERATING SYSTEMS

(Common for M.C.A. (R)/M.C.A. (WE))

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is meant by Operating System?
2. List the Operating System Services.
3. Write a note on: Process Control Block.
4. What is meant by Turnaround time?
5. Define: Critical Section.
6. What are Semaphores?
7. What is the purpose of Memory-Management Unit?
8. What are file attributes?
9. Write a note on: Boot Control Block.
10. Define: Seek time.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss briefly on: Storage Structure of a Computer-System.

Or

(b) Write Short Notes on: System Calls.

12. (a) Discuss briefly on: Operations on Process.

Or

(b) Write Short Notes on: Multiple Processor Scheduling.

13. (a) Discuss about Synchronization Hardware.

Or

(b) Explain the methods for handling Deadlocks.

14. (a) Write Short Notes on: Swapping.

Or

(b) Discuss any TWO access methods in file handling.

15. (a) Write Short Notes on: File-System Structure.

Or

(b) Discuss about Disk Formatting.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. What are the problems we face when designing and implementing a system? Explain them.

17. Explain any FOUR CPU Scheduling Algorithms with examples.

18. Explain about Banker's Algorithm for Deadlock Avoidance with an example

19. Describe about the most common techniques for structuring the Page table.

20. Discuss about any TWO Allocation Methods in File-System Implementation.

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R–3065

Sub. Code
541203/ 545203

M.C.A. (R/WE) DEGREE EXAMINATION, APRIL 2019

Second Semester

Computer Application

DESIGN AND ANALYSIS OF ALGORITHMS

(Common for M.C.A.(R)/M.C.A. (WE))

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Section A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. Define: Pseudocode.
2. Write a note on: Sequential Algorithm.
3. List any TWO examples of Brute Force Approach.
4. Define: Binary Search.
5. Write a note on: Principle of Optimality.
6. Define: Transitive Closure.
7. What is a meant by Topological Sorting?
8. Define: Cross Edge.

9. What is meant by Optimal Solution?

10. Write a note on: Subset Sum Problem.

Section B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Discuss about methods of specifying an algorithm.

Or

(b) Design an algorithm to find the number of binary digits in the binary representation of a positive decimal Integer.

12. (a) Write an algorithm to find two closest points in the plane by Brute Force.

Or

(b) Compare the time complexity of Merge Sort and Quick Sort algorithms.

13. (a) Design an algorithm for computing Binomial Coefficient using Dynamic Programming.

Or

(b) Discuss the steps in Prim's Algorithm with an example.

14. (a) Discuss about Decrease by a constant factor.

Or

(b) Write short notes on: Presorting.

15. (a) Discuss about Hamiltonian Circuit Problem.

Or

(b) Describe about Assignment Problem using Branch and Bound Technique.

Section C (3 × 10 = 30)

Answer any **three** questions.

16. Explain the algorithm for Computing Fibonacci Numbers.

17. Design an algorithm for non recursive binary search and explain it.

18. Describe Greedy based Dijkstra algorithm with an example.

19. Explain Heap Sort algorithm with an example.

20. Describe the Knapsack Problem using Branch and Bound Technique with an example.

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R–3066

Sub. Code
541204/545204/
415701/536701

M.C.A. R/WE/M.A/M.Sc. DEGREE EXAMINATION, APRIL 2019.

Second Semester

Computer Application/History/Chemistry

COMMUNICATION SKILLS

(Common for M.C.A (R)/M.C.A (WE)/M.A. History/ M.Sc. Chemistry)

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define interpersonal communication.

2. Which communication involves higher level management communicating to lower level management a shift in organizational objectives, as well as the ensuing dialog about how best to achieve the new goals?

3. What is the mode of apoligizing a person?

4. How would you formally greet a person?

5. What is proxemics?

6. What are visual aids?

7. Define an interview.

8. What is the purpose of a meeting?

9. What are called memos?

10. Define resume.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What are the advantages and limitations of horizontal communication?

Or

(b) Highlight the importance of communication.

12. (a) What are the do's and don'ts of telephonic conversations?

Or

(b) What are the attributes of non-verbal communication?

13. (a) Bring out the nuances and delivery of presentation skills.

Or

(b) Analyze the patterns of preparing in presentation skills.

14. (a) Explain the patterns in Group Communication.

Or

(b) Bring out the skills needed for team work.

15. (a) How would you prepare the minutes of a meeting?

Or

(b) Analyze the advantages of e -mail.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Examine the different channels of communication.

17. Discuss the various levels of conversation skills.

18. Examine the significance of practice and presentation.

19. Discuss the salient features of Group Discussion.

20. Write a job application letter for the post of System Analyst to Jacques Systems India, Bangalore.

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R–3067

Sub. Code
541205/ 545205

M.C.A. (R/WE) DEGREE EXAMINATION, APRIL 2019

Second Semester

Computer Application

ACCOUNTING AND FINANCIAL MANAGEMENT

(CBCS – 2017 onwards)

(Common for MCA (R)/MCA (WE))

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. What is Financial Accounting?
2. What is "Marginal Costing"?
3. Write a short note on Current Ratio.
4. What is 'Funds Flow Statement'?
5. What is working capital?
6. What is meant by flexible budget?
7. What are the advantages of pay-back period?
8. What are the advantages of Standard Costing?

9. What do you understand by time value of money?

10. What are the elements of cost?

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

All questions carry equal marks.

11. (a) Bring out any five differences between financial accounting and cost accounting.

Or

(b) Discuss the managerial uses of ratio analysis with examples.

12. (a) Explain the advantages of marginal costing in managerial decision making.

Or

(b) What are the implications of a stable dividend policy?

13. (a) Evaluate debt and equity as sources of funds from the Firm's point of view.

Or

(b) Explain any two appraisal methods of capital budgeting.

14. (a) Current ratio 2.5; working capital Rs. 63,000. Calculate the amount of current assets and current liabilities.

Or

(b) Determine the amount of fixed expenses from the following particulars:

Sales Rs. 2,50,000

Direct material 80,000

Direct labour 50,000

Variable overhead 20,000

Profits 60,000.

15. (a) Data relating to a job are thus;

	Rs.
Standard rate of wages per hour	10
Standard hours	300
Actual rate of wages per hour	12
Actual hours	200

Calculate

(i) Labour cost variance,

(ii) Labour rate variance.

Or

(b) A project requires an investment of Rs. 50,000. It is expected to yield profit after taxes for the five years amounting to Rs. 14,000. Rs. 16,000. Rs. 17,000. Rs. 15,000 and Rs. 5,000. What is the pay-back period?

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. What is Break Even Analysis? Explain its importance.

17. Outline the functions financial management.

18. What is capital structure? What are the various determinants of capital structure?

19. A company at present operating at 60% capacity produces and sells 40,000 units.

Given below are the expenses per unit.

Per unit

Direct material Rs. 150

Direct labour Rs. 100

Factory overhead (30% fixed) 50

Office overhead (60% variable) 30

Selling and distribution overhead (50% fixed) 20

Selling price 450

Prepare a budget at 90% capacity.

20. A Co. plans to buy a machine for Rs. 1,00,000. It is expected to have a life of 5 years. The machine is expected to generate the Cash in flow before tax.

Year	Profit before tax (Rs.)	P.V. of Re 1 @ 10%
1	30,000	0.909
2	40,000	0.826
3	50,000	0.751
4	45,000	0.683
5	16,000	0.621

If the tax rate is 50% and the cost of capital is 10%, find net present value and give your comments.

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R–3068

Sub. Code
541401/ 545401

M.C.A. (R/WE) DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Computer Applications

VISUAL PROGRAMMING WITH .NET

(Common for M.C.A. (R)/M.C.A. (W/E))

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Why we need status bar?
2. Define: database projects.
3. Write the importance of book marks.
4. What is class inheritance?
5. What do you mean by delegates?
6. How can you add a blank class diagram to a project?
7. What are the importance of Breakpoints?
8. Define: Foreign key.
9. What do you mean by canvas layout?
10. Give the expression of IIS.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What are web projects?

Or

(b) How can you create work area in visual studio?

12. (a) Write the features of VS code editor.

Or

(b) What is property snippet? How to insert it?

13. (a) How can you create and build a project?

Or

(b) Give short notes on Icon and manifest.

14. (a) State the purpose of locals and autos window.

Or

(b) How can you configure database options?

15. (a) Write a program to create a stack panel dynamically, sets its properties and add five ellipses.

Or

(b) What is ASP.Net MVC? How to create web applications with ASP.NET MVC?

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain the controls in VS tool box.

17. How can you create methods? Explain method snippets with an example.

18. Explain the following

    (a) Assembly name

    (b) Default namespace.

19. How can you debug with intellitrace events? Explain.

20. Explain one-way WPF databinding with an example coding.

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R–3069

Sub. Code
541402/ 545402

M.C.A. DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Computer Application

DATA MINING AND WARE HOUSING

(Common for M.C.A.(R)/M.C.A. (WE)

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. Define wave housing.
2. State the importance of data Mining.
3. Differentiate: KDD and Data Mining.
4. List out any two DM techniques.
5. Write the uses of decision tree.
6. Write the steps FP Tree growth algorithm.
7. What are the advantages of clustering Techniques?
8. Define neural networks.
9. Define web mining.
10. List out the various mining tools.

Part B (5 × 5 = 25)

Answer **all** questions.

All questions carry equal marks.

11. (a) Explain the architecture of data warehouse with neat diagram.

Or

(b) Distinguish between data warehousing and data mining.

12. (a) Explain about issues and challenges in data mining.

Or

(b) Explain visualization technique in data mining.

13. (a) Explain about partition algorithm.

Or

(b) Explain tree growth algorithms.

14. (a) Explain about any one partition algorithm

Or

(b) Write down the concept of Genetic Algorithm.

15. (a) Write a brief introduction about web mining.

Or

(b) Explain about :

(i) Web structure mining

(ii) Web usage mining.

Part C (3 × 10 = 30)

Answer any **three** questions.

All questions carry equal marks.

16. Explain preliminary analysis of the data set using traditional query tools in detail.

17. What is data mining? Describe the evolution of data mining.

18. Explain in detail about :

    (a) Apriori algorithm

    (b) Pincer search algorithm.

19. Explain in detail about clustering techniques.

20. Explain various mining tools and techniques for implementing using weka.

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R–3070

Sub. Code
541403/ 545403

M.C.A. DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Computer Applications

WEB TECHNOLOGY

(CBCS – 2017 onwards)

(Common for MCA (R)/MCA (W/E))

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. List out the form elements in HTML.
2. What is XML schema?
3. What is the use of Java bean?
4. Define : Bean descriptor.
5. What are the advantages of Servlet?
6. Why JSP in preferred over servlet?
7. What are the paths followed by JSP?
8. What is the use tomcat server?
9. Mention the layers in JDBC architecture.
10. Write down the properties of Java bean.

Part B (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Write a program to illustrate the concept of frame.

Or

(b) What is DOM? Write the importance of DOM.

12. (a) What is Java persistence? Explain.

Or

(b) What are the types of enterprise java bean?

13. (a) Write a note on JSDK.

Or

(b) What are the security issues by using cookies?

14. (a) How can you install the Java Software Development kit? Explain.

Or

(b) What are implicit JSP object? Explain.

15. (a) Explain the types of JDBC drivers.

Or

(b) What are specific database actions?

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Describe the objects of JavaScript.

17. Discuss the interfaces and classes used in Java Beans API.

18. How JSP handles the dynamic contents? Explain.

19. Explain the life cycle of a servlet.

20. How can you access a database from a JSP page? Explain.

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R–3071

Sub. Code
541552/545552

M.C.A. DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Computer Applications

SOFTWARE PROJECT MANAGEMENT

(Common for M.C.A. (R)/M.C.A. (W/E))

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Conventional Software Management?

2. What are the symptoms exhibited by trouble destined project?

3. What is meant by Round Trip Engineering?

4. What should be done to minimize intellectual distance?

5. What is a Component view?

6. What is the purpose of Checkpoints?

7. What are the conventional web issues?

8. What are the Iteration profiles for a typical project?

9. What is CCPDS-R?

10. What is meant by Project profile?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the Conventional Software performance.

Or

(b) Explain the Software Economics.

12. (a) Describe any three life cycle phases.

Or

(b) Write a note on :

(i) Management artifacts

(ii) Programmatic artifacts.

13. (a) Explain the various Major Mile stones.

Or

(b) Explain the Technical perspective of software architecture.

14. (a) Explain the Project environment.

Or

(b) Write about work Break down Structures.

15. (a) Explain the Pragmatic Software Metrics.

Or

(b) Explain the Modern Project profiles.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain how to improve (a) Team Effectiveness (b) Automation.

17. Describe the principles of Conventional Software engineering.

18. Explain (a) Line-of-Business Organizations (b) Project Organizations.

19. Write about process automation in detail.

20. What are the seven core metrics used in project control? Explain.

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R–3072

Sub. Code
545561/ 541561

M.C.A. DEGREE EXAMINATION, APRIL 2019

Fourth Semester

Computer Applications

SOFT COMPUTING

(Common for M.C.A.(R)/M.C.A.(W/E))

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. What is the use of Soft Computing?

2. List out the characteristics of Soft Computing.

3. Define the terms Adaline and Madaline.

4. What is meant by Associative Memory?

5. What is Fuzzy set?

6. Define: Membership Function.

7. What is Fuzzy Inference System?

8. List out various steps involved in designing a Fuzzy Logic controller.

9. What is meant by Genetic Algorithm?

10. Define: Fitness Function.

Part B ($5 \times 5 = 25$)

Answer **all** questions, choosing either (a) or (b).

11. (a) Define Soft Computing. Distinguish between Soft Computing and Hard Computing.

Or

(b) Discuss about Hebb Network.

12. (a) Discuss the Back Propagation Learning Methods and Algorithm in detail.

Or

(b) Describe the Architectural functions and Characteristics of Hopfield Network.

13. (a) Explain the basic fuzzy Set Operations with suitable example.

Or

(b) Discuss: Crisp Relations with example.

14. (a) Write a short note on Fuzzy Reasoning.

Or

(b) State the importance of Fuzzy arithmetic.

15. (a) Compare and Contrast Traditional algorithm and Genetic Algorithm.

Or

(b) Explain in detail about various Operators involved in Genetic Algorithm.

Part C (3 × 10 = 30)

Answer any **three** questions.

All questions carry equal marks.

16. Explain briefly about the Neural Network Architecture.

17. What is learning in Neural Networks? Differentiate between Supervised and Unsupervised Learning.

18. What is fuzzy Relation? How it differs from Crisp Relation? Explain.

19. Elaborate Fuzzy Inference System.

20. State the General Genetic Algorithm. With the neat Flowchart, explain the Operations of a simple Genetic Algorithm.

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R–3253

Sub. Code
541104/ 545104

M.C.A. (R)/(WE) DEGREE EXAMINATION, APRIL 2019

First Semester

Computer Applications

DISCRETE MATHEMATICS

(Common for M.C.A. (R)/M.C.A. (WE))

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. Prove the equivalences by proving the equivalences of the duals,

$$\neg\left(\left(\neg p \wedge q\right) \vee \left(\neg p \wedge \neg q\right)\right) \vee \left(p \wedge q\right) \equiv p \,.$$

2. Write the valid set of premises for :

   P: It rains heavily.

   Q: Travelling is difficult.

   R: Sometimes arrived on time

3. What do you mean by characteristic function? Give an example.

4. Define hashing function with an example.

5. Define Group Homomorphism.

6. Write the Kernel of a homomorphism.

7. Prove that the inverse of a function f, if exists, is unique.

8. If the identity for a binary operation * on a set exists, it is unique.

9. Find $P(A/B) = ?$

10. If $p(x) = 6x^2 + 5$, find $E(x)$.

Part B $(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

All questions carry equal marks.

11. (a) Find the conjunction normal forms of the statement.

$$\left(p \wedge \neg(q \vee r)\right) \vee \left((p \wedge q) \vee \neg r\right) \vee p$$

Or

(b) Without using truth table, find the principal conjunctive normal forms of the statement,

$$(p \rightarrow (q \wedge r)) \wedge \left(\neg p \rightarrow \left(\neg q \wedge \neg r\right)\right)$$

12. (a) (i) If R is the relation on the set of positive integers such that $(a, b) \in R$ if and only if $a^2 + b$ is even, prove that R is an equivalence relation.

(ii) If R is the relation on the set of integers such that $(a, b) \in R$, if and only if $3a + 4b = 7n$ for some integer n, prove that R is an equivalence relation.

Or

(b) Using characteristic function, prove that $A \cup (B \cup C) = (A \cup B) \cap (A \cup C)$.

13. (a) If $\{G, *\}$ is an abelian group, show that $(a * b)^n = a^n * b^n$, for all $a, b \in G$, where n is a positive integer.

Or

(b) Show that, if $\{U_n\}$ is the set of n^{th} roots of unity, $\{U_n, X\}$ is a cyclic group. Is it abelian?

14. (a) Every subgroup of a cyclic group is also cyclic.

Or

(b) Show that the group $\{Z_{n,} +_n\}$ is isomorphism to every cyclic group of order n.

15. (a) You toss a fair coin three times :

(i) What is the probability of three heads, HHHHHH?

(ii) What is the probability that you observe exactly one heads?

(iii) Given that you have observed at least one heads, what is the probability that you observe at least two heads?

Or

(b) A bucket, A, contains 5 red marbles and 4 blue marbles and another bucket B contains 7 red marbles and 5 blue marbles. One bucket is selected at random and a marble is drawn from it. If the marble drawn is found red, find the probability that the bucket chosen was A.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

All questions carry equal marks.

16. Obtain the principle disjunctive normal forms and the principal conjunctive normal forms of the following statements using truth tables : $p \vee \left(\neg p \rightarrow \left(q \vee \left(\neg q \rightarrow r \right) \right) \right)$.

17. (a) If R is the equivalence relation on the set A = {1, 2, 3, 4, 5} given below, find the partition of A induced by R:R={(1, 1), (1, 2), (2, 1), (2, 2), (3, 3), (4, 4), (4, 5), (5, 4), (5, 5), (6, 6)}.

(b) If R is the equivalence relation on the set A = {(–4, –20), (–3, –9), (–2, –4) (–1, –11), (–1, –3), (1, 2), (1, 5), (2, 10), (2, 14), (3, 6), (4, 8), (4, 12)}, where $(a, b)\ R\ (c, d)$ if $ad = bc$, find the equivalent classes of R.

18. List the ordered pairs in the relations R and S whose matrix representations are given as follows :

(a) $$M_R = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

(b) $$Ms = \begin{bmatrix} 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 0 \\ 0 & 1 & 1 & 1 \\ 1 & 0 & 1 & 1 \end{bmatrix}.$$

Also draw the directed graphs representing R and S. Use the graphs to find if R and S are equivalence relations.

19. (a) Show that every quotient group of cyclic group is cyclic.

(b) Show that the set M of all n × n matrices, with real elements is a non-commutative ring with unity with respect to matrix addition and matrix M.

20. A diagnostic test has a probability 0.95 of giving a positive result when applied to a person suffering from a certain disease, and a probability 0.10 of giving a (false) positive when applied to a non-sufferer. It is estimated that 0.5 % of the population are sufferers. Suppose that the test is now administered to a person about whom we have no relevant information relating to the disease (apart from the fact that he/she comes from this population). Calculate the following probabilities: (a) that the test result will be positive; (b) that, given a positive result, the person is a sufferer; (c) that, given a negative result, the person is a non-sufferer; (d) that the person will be misclassified.

R–3254	Sub. Code
	541501/ 545501

M.C.A. (R/WE) DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Computer Applications

MULTIMEDIA AND ITS APPLICATIONS

(Common for M.C.A. (R)/M.C.A. (WE))

(CBCS – 2012 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Hypermedia?
2. What are the elements of Multimedia?
3. What is meant by quantization?
4. What are the advantages of sound digitization?
5. What are the advantages of lossless compression?
6. What is meant by Multimedia data Compression?
7. Define ADPCM.
8. What is the need for Video compression?
9. What is meant by Data Rate and Latency?
10. What is meant by Media-on-Demand?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the color models in images.

Or

(b) Explain the various image file formats used in multimedia.

12. (a) Explain the MIDI format.

Or

(b) Explain the transmission of audio signals.

13. (a) Explain the lossy compression algorithm.

Or

(b) Explain Arithmetic coding method of compression.

14. (a) Explain the MPEG file format.

Or

(b) Explain any one basic audio compression technique.

15. (a) Explain the applications of Multimedia Network.

Or

(b) Explain Multimedia over IP.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain the various Multimedia tools.

17. Explain the various types of video signals.

18. Explain any two lossless image compression algorithms.

19. Explain the Video compression methods.

20. Explain the Quality of Multimedia Data transmission.

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R–3255

Sub. Code
541502/ 545502

M.C.A. (R/WE) DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Computer Applications

DATA MINING AND WAREHOUSING

(Common for M.C.A.(R)/M.C.A.(WE))

(CBCS – 2012 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define the term data warehouse.

2. Expand the following :
   (a) ETL
   (b) OLAP.

3. How is data mining different from KDD?

4. What is text mining?

5. Write note on priori algorithm.

6. What is meant by decision tree Classification?

7. Write a note on clustering.

8. Write down the uses of Neural networks.

9. Define spatial mining.

10. What is the use of Rapidminer tool?

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Give atleast six features of a data warehouse.

Or

(b) What are the three major types of metadata in data warehouse? Discuss.

12. (a) Write down the issues occurred in data mining technique.

Or

(b) Discuss about the role of visualization in data mining.

13. (a) Explain Dynamic Itemset algorithm.

Or

(b) Illustrate the concept of Bayesian classification.

14. (a) How is CLARANS different from CLARA? Illustrate this using a example.

Or

(b) Describe the working principle of Genetic algorithm.

15. (a) Discuss the various temporal Data mining tasks.

Or

(b) Discuss the principles underlying text clustering.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. What is your understanding of data warehouse architecture? Describe in detail with suitable diagram.

17. Discuss in detail about different forms of knowledge in data mining.

18. Define a FP Tree. Discuss the method of computing a FP-tree.

19. Describe the working principle of the DBSCAN algorithm.

20. Write short notes on :

    (a) Page Rank

    (b) Web Usage Mining.

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R–3256	Sub. Code
	541503/ 545503

M.C.A. (R/WE) DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Computer Application

MOBILE COMMUNICATION

(Common for M.C.A./M.C.A. (WE))

(CBCS – 2012 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Wireless Transmission?
2. Define Modulation and Demodulation.
3. What is GSM?
4. Write different types of multiplexing.
5. What are the basic concepts behind Ad-hoc?
6. What is 802.11 standard?
7. What is dynamic host Configuration Protocol?
8. What is Mobile IP?
9. Define Mobile TCP.
10. What is selective re-transmission?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Describe about Signal Propagation.

Or

(b) Explain briefly about cellular wireless network.

12. (a) What is GSM System Architecture? Explain briefly.

Or

(b) Write a note on Routing.

13. (a) Explain about fragmentation in 802.11.

Or

(b) Compare Infrastructure and Adhoc Network.

14. (a) Explain about DSDV.

Or

(b) Explain about DHCP.

15. (a) Explain about fast retransmission and fast recovery.

Or

(b) What is WML Script? Explain.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss in detail about various multiplexing methods.

17. Narrate GSM system architecture and protocol.

18. Discuss on :
    (a) Frequency hopping spread spectrum.
    (b) Direct sequence spread spectrum.

19. Explain in detail about PSDV, DSX and AODV.

20. Discuss in detail about WTLS, WTP and WSP.

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R–3257

Sub. Code
541553/ 545553

M.C.A. (R/WE) DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Computer Applications

SOFTWARE TESTING METHODOLOGIES

(Common for M.C.A. (R)/ M.C.A. (WE))

(CBCS – 2012 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are logic bugs?

2. What are the kinds of loops?

3. What is Data-flow testing?

4. Define: Ugly Domain.

5. State the Absorption Rule.

6. What is the use of Decision Table?

7. What is unreachable state?

8. Why is matrix representation not convenient for larger graphs?

9. Give any two important aspects of WinRunner.

10. What is the use of JDBC connectivity test?

Part B $(5 \times 5 = 25)$

Answer **all** questions choosing either (a) or (b).

11. (a) Draw a model for testing and explain.

Or

(b) Describe the usage of flow graph.

12. (a) Describe the role of instrumentation and test databases in transaction – flow testing.

Or

(b) List the data-flow anomalies and explain.

13. (a) Describe the basic concepts of path products.

Or

(b) How are impossible terms handled?

14. (a) Write the procedure that recognize the equivalent states.

Or

(b) Describe any three matrix operations.

15. (a) How can you perform rapid testing?

Or

(b) Describe the capabilities of J Meter.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain the consequences of bugs.

17. Describe the data-flow testing strategies in detail.

18. Explain the reduction procedure for converting a flow graph.

19. Explain the need of the powers of a matrix tool.

20. Explain how to do performance testing of a HTTP connection for Web site access.

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R–3543

Sub. Code
541301/545301

M.C.A. (R)/M.C.A.(W.E.) DEGREE EXAMINATION, APRIL 2019

Third Semester

COMPUTER GRAPHICS

[Common for M.C.A. (R)/M.C.A.(W.E.)]

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define Random Graphics.

2. Give any two primitives for ellipse.

3. Give the equation for 2D-Translation.

4. What are the advantages of Cyrus beck line clipping algorithm?

5. Define B-Spline Surface.

6. Define Bezier Curve.

7. Write the equation for 3D Scaling.

8. What is perspective projection?

9. What is Back face detection?

10. Give any two examples for computer animation.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) How will you fill the polygons?

Or

(b) Write the mid-point circle algorithm.

12. (a) Explain about Window to Viewport Transformation.

Or

(b) Explain about Polygon Clipping.

13. (a) Explain about quadratic surfaces.

Or

(b) Write about Bezier surfaces.

14. (a) Explain 3D Rotation with examples.

Or

(b) Explain about parallel projection.

15. (a) What are Animation Languages? Explain.

Or

(b) Describe the depth sorting with an example.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Derive the points between the line whose end points are (1,1) (6,6) using Bresenhaum's Line Drawing Algorithm.

17. Explain Hodgeman Polygon Clipping Algorithm.

18. Describe the Basic illumination methods.

19. Explain about 3D Viewing Process.

20. Write about Computer Animation with examples.

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R–3544

Sub. Code
541302/545302

M.C.A. DEGREE EXAMINATION, APRIL 2019

Third Semester

M.C.A.(R)/M.C.A.(W.E.)

ADVANCED JAVA PROGRAMMING

[Common for M.C.A.(R)/M.C.A.(W.E.)]

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. List out java features.
2. Compare Java and C++.
3. Give the syntax to create arrays in Java.
4. Define vector.
5. Mention the uses of interfaces.
6. Write about metadata function.
7. What is URL?
8. Define RMI.
9. Write any four methods of Java Applet class.
10. What is AWT?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss about operators and expressions with example.

Or

(b) Illustrate the looping concepts in java with example.

12. (a) Explain methods overloading. Give example.

Or

(b) Describe multiple inheritance with example program.

13. (a) Explain about JDBC connection. Write a Java program for EB Bill calculation with neat format using JDBC connection.

Or

(b) Write about SQL Exception and SQL Warning concepts.

14. (a) Discuss about TCP/IP client sockets and TCP/IP Server sockets.

Or

(b) How will you establish URL Connection in Java? Explain it with example.

15. (a) How will you create Trees and Tables using JApplet. Explain it with example.

Or

(b) Write a program to illustrate the uses of Graphics, Font and Colour.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. List and explain the various fundamental OOPs concepts.

17. How will you implement interfaces in Java? Explain it with example program.

18. Explain about JDBC connection. Write a Java program for displaying an employee paybill details using JDBC.

19. Elaborate RMI with example.

20. Create an Applet program which displays student information.

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R–3545

Sub. Code
541303/545303

M.C.A (R)/M.C.A (WE) DEGREE EXAMINATION, APRIL 2019

Third Semester

SOFTWARE ENGINEERING

[Common for M.C.A. (R)/ M.C.A.(WE)]

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Section A (10 × 2 = 20)

Answer **all** the questions.

1. Define Water fall model.
2. List the advantages of prototyping model.
3. How will you verify the requirements?
4. How will you model the flow of control in SE?
5. List the types of software design.
6. List any four design considerations for software design.
7. What is White Box Testing?
8. List any two metrics for measuring software.
9. How a reactive risk can be managed?
10. Define ISO 9000.

Section B (5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Explain about Rapid Prototyping Model.

Or

(b) Explain about Layered Technology in Software Engineering.

12. (a) How will you convert requirements in to functional specification?

Or

(b) Explain Class Based Modeling.

13. (a) How will you design Interfaces?

Or

(b) How will design GUI?

14. (a) Explain the fundamentals of software testing.

Or

(b) Explain Unit Testing with examples.

15. (a) Explain about RMMM.

Or

(b) How a risk can be mitigated?

Section C (3 × 10 = 30)

Answer any **three** questions.

16. Explain the evolutionary process models.

17. Explain about Scenario Modeling with examples.

18. How architecture of the software is done?

19. Explain the test strategies for Object Oriented Software.

20. Explain ISO 9000 Quality Standard.

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R–3546

Sub. Code
541551/545551

M.C.A. (R)/M.C.A.(WE) DEGREE EXAMINATION, APRIL 2019

Third Semester

OBJECT ORIENTED ANALYSIS AND DESIGN

[Common for M.C.A. (R)/M.C.A.(WE)]

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Section A (10 × 2 = 20)

Answer **all** the questions.

1. Define Object.
2. Outline SDLC process.
3. Differentiate OOSE and OOBE.
4. Define pattern.
5. List the types of approaches used to identify classes.
6. Infer the relationship between attributes and methods.
7. List the object oriented corollaries and axioms.
8. What applications are responsible for view layer?
9. List the objectives of Testing.
10. What do you understand from test plan?

Section B (5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b)

11. (a) How does Object oriented methodology different from other programming methodologies? What are the advantages of DO methodology?

Or

(b) Discuss about UML Diagrams.

12. (a) Define patterns. How do analysis patterns differ from design patterns?

Or

(b) Describe UML Static and Dynamic ModeI.

13. (a) Explain in detail about use-case driven approach.

Or

(b) How will you identify the use cases?.

14. (a) What is coupling? Tabulate types of coupling among objects or components.

Or

(b) What are the activities of designing view for layer classes?

15. (a) How will you perform user satisfaction test?

Or

(b) What are the various testing strategies and discuss the impact of object orientation on testing?

Section C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Write an algorithm to find the area of plane figures when the objects are rectangle circle, square, triangle etc.

17. What are the major differences between a framework and a pattern?

18. What is the difference between users and actors? How would you identify them? Discuss the relationships and aggregation.

19. What are the guidelines for defining attributes? How would you identify a super-sub class structure?

20. Discuss inheritance testing with an example

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R–3547

Sub. Code
541560/ 545560

M.C.A. (R)/(WE) DEGREE EXAMINATION, APRIL 2019

Third Semester

M.C.A. (R)/M.C.A. (WE)

RESOURCE MANAGEMENT TECHNIQUES

(Common for M.C.A. (R)/M.C.A. (WE))

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Section A (10 × 2 = 20)

Answer **all** the questions.

All questions carry equal marks.

1. Define Linear Programming Problem.

2. What do you mean by Convex Region?

3. Write the dual for the Linear Programming Problem,

   Maximize $F = x_1 + 2x_2 + x_3$

   subject to

   $$2x_1 + x_2 - x_3 \leq 2$$
   $$-2x_1 + x_2 - 5x_3 \geq -6$$
   $$4x_1 + x_2 + x_3 \leq 6$$
   and $x_1, x_2, x_3 \geq 0$

4. Write the Mathematical formulation of Transportation Problem.

5. Define Integer Programming for Pure and Mixed Integers.

6. Write the uses of Branch and Bound Technique.

7. Draw Network for Project

Activity	A	B	C	D	E	F	G	H	I
Immediate Predecessor	–	–	A, B	B	B	A, B	F, D	F, D	C, G

8. Define Critical path Method.

9. Define Steady States and Transient State.

10. Write the formula for the avenge number of customers in the system.

Section B $(5 \times 5 = 25)$

Answer **all** the questions, choosing either (a) or (b).

All questions carry equal marks.

11. (a) A Company making cold drinks has two bottling plants located at towns T_1 and T_2 Each Plants produces three drinks A. B and C and their production capacity per day is given below:

Cold drinks	Plant at	
	T_1	T_2
A	6000	2000
B	1000	2500
C	3000	3000

The marketing department of the company forecasts a demand of 80,000 bottles of A, 22,000 bottles of B and 40,000 bottles of C during the month of June. The operating costs per day of plants at T_1 and T_2 are Rs. 6,000 and Rs. 4,000 respectively. Find graphically, the number of days for which each plant must be run in June so as to minimize the operating costs while meeting the market demand.

Or

(b) Use simplex method to solve the Linear Programming Problem

Maximize $Z = 4x_1 + 10x_2$

Subject to

$$2x_1 + x_2 - x_3 \leq 50$$
$$2x_1 + 5x_2 \leq 100$$
$$2x_1 + 3x_2 \leq 90$$
and $x_1, x_2 \geq 0$

12. (a) Use dual simplex method to solve the Linear Programming Problem

Maximize $Z = 6x_1 + 4x_2 + 4x_3$

Subject to

$$3x_1 + x_2 + 2x_3 \geq 2$$
$$2x_1 + x_2 - x_3 \geq 1$$
$$-x_1 + x_2 + 2x_3 \geq 1$$
and $x_1, x_2, x_3 \geq 0$

Or

(b) Solve the Transportation Problem

	1	2	3	4	Supply
I	21	16	25	13	11
II	17	18	14	23	13
III	32	27	18	41	19
Demand	6	10	12	15	

13. (a) Using Gomory's cutting plane method

Maximize $Z = 2x_1 + 2x_2$

Subject to

$$5x_1 + 3x_2 \leq 8$$
$$2x_1 + 4x_2 \leq 8$$
$$x_1, x_2 \geq 0$$

and are all integers.

Or

(b) Use Branch and Bound technique to solve the following:

Maximize $Z = x_1 + 4x_2$

Subject to

$$2x_1 + 4x_2 \leq 7$$
$$5x_1 + 3x_2 \leq 15$$
$$x_1, x_2 \geq 0$$

and are integers.

14. (a) Construct the network for the project whose activities are given below and compute the total, free and independent float of each activity and hence determine the critical path and the project duration.

Activity	0-1	1-2	1-3	2-4	2-5
Duration (in weeks)	3	8	12	6	3
Activity	3-4	3-6	4-7	5-7	6-7
Duration (in weeks)	3	8	5	3	8

Or

(b) Construct the network for the project whose activities and the three time estimates of these activities (in weeks) are given below. Compute

Activity	t_o	t_m	t_p
1-2	3	4	5
2-3	1	2	3
2-4	2	3	4
3-5	3	4	5
4-5	1	3	5
4-6	3	5	7
5-7	4	5	6
6-7	6	7	8
7-8	2	4	6
7-9	1	2	3
8-10	4	6	8
9-10	3	5	7

(i) Expected duration of each activity

(ii) Expected variance of each activity

(iii) Expected variance of the project length.

15. (a) In a railway Marshalling yard, goods train arrives at a rate of 30 Trains per day. Assuming that inter arrival time follows an exponential distribution and the service time distribution is also exponential, with an average of 36 minutes. Calculate the following:

(i) the mean Queue size (line length)

(ii) the probability that the Queue size exceeds 10

(iii) If the input Train increases to an average 33 per day, what will be the changes in (i), (ii)?

Or

(b) A company has a demand of 12,000 units/year for an item and it can produce 2000 such items per month. The cost of one setup is Rs. 400 and the holding cost/unit/month is Rs. 0.15. Find the optimum lot size, max inventory, manufacturing time, total time.

Section C (3 × 10 = 30)

Answer any **three** questions.

All questions carry equal marks.

16. Use Two-Phase method to

Maximize $Z = -4x_1 - 3x_2 - 9x_3$

Subject to

$$2x_1 + 4x_2 + 6x_3 \geq 15$$
$$6x_1 + x_2 + 6x_3 \geq 12$$
and $x_1, x_2, x_3 \geq 0$

17. Five workers are available to work with the machines and the respective costs (in rupees) associated with each worker–machine assignment is given below. A sixth machine is available to replace one of the existing machines and the associated costs are also given below:

		Machines					
		M_1	M_2	M_3	M_4	M_5	M_6
Workers	W_1	12	3	6	–	5	8
	W_2	4	11	–	5	–	3
	W_3	8	2	10	9	7	5
	W_4	–	7	8	6	12	10
	W_5	5	8	9	4	6	–

(a) Determine whether the new machine can be accepted.

(b) Determine also optional assignment and the associated saving in cost.

18. Using Gomory's cutting plane method, solve the mixed integer programming problem Maximize

Maximize $Z = x_1 + x_2$

Subject to

$2x_1 + 5x_2 \leq 16$

$6x_1 + 5x_2 \leq 30$

and $x_2 \geq 0$

and x_1

nonnegative integer.

19. Three time estimates (in months) of all activities of a project are as given below:

	Time in months		
Activity	a	m	b
1-2	0.8	1.0	1.2
2-3	3.7	5.6	9.9
2-4	6.2	6.6	15.4
3-4	2.1	2.7	6.1
4-5	0.8	3.4	3.6
5-6	0.9	1.0	1.1

(a) Find the expected duration and standard deviation of each activity

(b) Construct the project network.

(c) Determine the critical path, expected project length and expected variance of the project length.

(d) What is the probability that the project will complete

(i) two months later than expected

(ii) not more than 3 months earlier than expected

(iii) What due dale has about 90% chance of being met?

20. The following mortality rates have observed for a certain type of bulbs.

Week	1	2	3	4	5
% of failing by the end of week	10	25	50	80	100

There are 100 bulbs in use and it costs Re. 1 to replace an individual bulb which has burnt out. If all bulbs were replaced simultaneously it would cost 25 paise per bulb. It is proposed to replace all bulbs at fixed intervals whether or not they have burnt out and to continue replacing burnt out as they failed. At what intervals should all the bulbs be replaced?

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