R5473	Sub. Code
	541201

M.C.A. DEGREE EXAMINATION, APRIL – 2021

Second Semester

Computer Applications

DESIGN AND ANALYSIS OF ALGORITHMS

(CBCS – 2020 onwards)

Time : 3 Hours Maximum : 75 Marks

Section A $(10 \times 2 = 20)$

Answer **all** the questions.

1. What is meant by worst case?
2. Define algorithm design technique
3. What is meant by knapsack problem?
4. Write the procedure for selection sort
5. Define the Single Source Shortest Path Problem
6. Compare Greedy method and Dynamic Programming
7. List the major variations of transform-and-conquer
8. Write down the notions of the Heap
9. List out the application of backtracking.
10. What is meant by optimization problem?

Section B (5 × 5 = 25)

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

11. (a) What is empirical analysis of an algorithm? Discuss its strength and weakness.

Or

(b) Explain the various criteria used for analyzing algorithms.

12. (a) Write a quick sort algorithm and derive the worst case and average case complexity class of this algorithm.

Or

(b) Explain the divide and conquer strategy with example.

13. (a) Write down the floyds algorithm.

Or

(b) What is knapsack problem? Describe how it can be solved using dynamic programming

14. (a) Apply insertion sort to sort the list *E, X, A, M, P, L, E* in alphabetical order.

Or

(b) Elucidate the Transform-and-conquer strategy.

15. (a) Explain the knapsack problem using branch and bound technique with an example

Or

(b) What is Backtracking? Draw the state - space tree for 4-queens problem.

Section C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss Fundamentals of the analysis of algorithm efficiency elaborately.

17. (a) Write algorithm to find closest pair of points using divide and conquer and explain it with example.

    (b) Derive the worst case and average case time complexity.

18. What is dynamic programming? How will you solve a knapsack problem using dynamic programming? Illustrate briefly.

19. With suitable example explain the Heap sort technique.

20. Explain graph coloring problem with an example.

R5474	Sub. Code 541202

M.C.A. DEGREE EXAMINATION, APRIL –2021

Second Semester

Computer Applications

ADVANCED JAVA PROGRAMMING

(CBCS – 2020 Onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What are the features of Java Language?
2. What is platform independency?
3. Differentiate overloading and overriding.
4. What is the need for abstract classes?
5. What is JDBC Driver?
6. Define Result Set.
7. What is URL Connection?
8. What is the use of DNS?
9. Define Japplet
10. What is the use of AWT controls

Part B (5 × 5 = 25)

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

11. (a) Explain the characteristics and features of java language.

Or

(b) What do you understand by type casting and automatic promotion? Explain with suitable examples.

12. (a) What is the difference between the>> and>>> operators? Explain with the help of a program.

Or

(b) Compare and contrast overloading and overriding methods in java.

13. (a) Explain the types of JDBC drivers

Or

(b) With suitable example explain ResultSet Interface

14. (a) What is UDP? Explain its purpose

Or

(b) What is a socket? How is it used in networking?

15. (a) Explain the graphics methods

Or

(b) Briefly explain Java AWT Hierarchy

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the concepts JDK, JRE and JVM.

17. Develop an Interest Interface which contains Simple-Interest and Comp- Interest methods and static final field of Rate 5%. Write a class to implement those methods.

18. Explain the steps to connect any Java application with the database using JDBC.

19. Explain the Various Networking Classes and interfaces using Java.Net Package.

20. Explain the various layout manager with suitable example.

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R5475	Sub. Code 541203

M.C.A. DEGREE EXAMINATION, APRIL – 2021.

Second Semester

Computer Application

ACCOUNTING AND FINANCIAL MANAGEMENT

(CBCS – 2020 onwards)

Time : Three Hours Maximum : 75 Marks

Part A ($10 \times 2 = 20$)

Answer **all** the questions.

1. Pass journal entries for the following transaction
   (a) Goods used personally by proprietor for Rs. 5,000
   (b) Commenced business with a Capital of Rs.50,000.

2. What is current ratio?

3. What is Management Accounting?

4. Define breakeven point.

5. What is Variance analysis?

6. Write short note on: Fixed Budget.

7. Define the term Financial Management.

8. What is time of value of money?

9. Define capital structure.

10. What is optimum capital structure?

Part B (5 × 5 = 25)

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

11. (a) Explain 'Accounting Equation' with examples.

Or

(b) Pass the opening entry in the journal of Ram (as on 1-1-2001) from the following particulars:

	Rs.
Cash in hand	1,000
Cash at bank	5,000
Stock	20,000
Land and Building	1,00,000
Plant Machinery	50,000
Owning from Mr.X	12,500
Prepaid insurance	500
Owing to Z Ltd.	3750
Interest received in advanced	250

12. (a) What is Cost Accounting? Explain the advantages and limitations of Cost Accounting?

Or

(b) Calculate

(i) P/V ratio

(ii) Fixed Cost

(iii) Sales volume to earn a profit of Rs. 40,000.

Sales Rs. 2,00,000

Profit Rs.25,000

Variable Cost is 80% of Sales.

13. (a) Explain the advantages and Limitations of budgetary control.

Or

(b) Calculate Material Cost Variance, Material Quantity Variance and Material price Variance from the following.

Material	Standard		Actual	
	Qty.	Rate (Rs.)	Qty.	Rate(Rs.)
X	1,000	6	1,100	7
Y	700	10	600	8

14. (a) The prudential company has investigated the profitability of its assets and the cost of its funds. The results indicate.

		Parentage
(i)	Current assets earn	1
(ii)	Fixed Assets Return	13
(iii)	Current Liabilities cost	3
(iv)	Average Cost of Long –term funds	10

The current Balance sheet is as follows:

Liabilities	Rs.	Assets	Rs.
Current liabilities	5,000	Current assets	10,000
Long-term funds	35,000	Fixed assets	30,000
	40,000		40,000

(1) What is the net profitability?

(2) The company is contemplating lowering its networking capital to Rs. 3500 by (A) either shifting Rs. 1500 of current assets into fixed assets or (B) shifting Rs. 1,500 of its long-term funds into current liabilities. Workout the profitability for each of these alternatives. Which do you prefer? Why?

(3) Can both these alternative be implemented simultaneously? How would it affect the net profitability?

Or

(b) A project costs Rs. 10,00,000 and yields annual cash inflow of Rs. 2,00,000 for 10 years. Calculate its pay-back period.

15. (a) A company issues 10% irredeemable debentures of Rs. 1,00,000. The company is in the 55% tax bracket. Calculate the cost of debt(before as well as after tax) if the debentures are issued at (i) par (ii) 10% discount and (iii) 10% premium.

Or

(b) Distinguish between 'Financial structure' and 'Capital structure'.

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

Answer any **three** questions.

16. The following balances were extracted from the ledger of Ramakrishna Engineering Works on 31st March 1977. You are required to prepare trail balance as on that date in proper from

Particular	Rs.	Particular	Rs.
Drawings	6,000	Salaries	9,500
Capital	24,000	Sales Returns	1,000
Sundry creditors	43,000	Purchase Returns	1,100
Bill payable	4,000	Traveling expenses	4,600
Sundry debtors	50,000	Commission paid	100
Bills receivable	5,200	Trading expenses	2,500
Loan from Karthik	10,000	Discount earned	4,000
Furniture and fixtures	45,000	Rent	2,000

Particular	Rs.	Particular	Rs.
Opening stock	47,000	Bank overdarft	6,000
Cash in hand	900	Purchases	70,800
Cash at bank	12,500		
Tax	3,500		
Sales	1,28,000		

17. Define Cost and Management Accounting. Discuss the scope and function of Management Accounting.

18. Prepare the details of overhead of a company named, K Ltd. at 70% capacity are stated as follows.

Particulars	Rs.
Variable Overheads :	
Indirect Material	14,000
Indirect Wages	17,500
Indirect Expenses	5,000
Fixed-Varaible Overheads :	
Salary	40,000
Insurance	10,000
Depreciation	12,000
Semi-Variable overheads :	
Repairs and Maintenance(90% Fixed and 10%Variable)	15,000
Electricity (60% Fixed and 40% Varaible)	20,000
Supervisors Salary (80% Fixed and 20% Variable)	25,000
Total Overheads	1,58,500

R5475

19. From the following information calculate the net present value of the two project's and suggest which of the two projects should be accepted assuming a discount rate of 10%

Particular	Project X	Project Y
Initial Investment	Rs. 20,000	Rs. 30,000
Estimated life	5 Years	5 Years
Scrap value	Rs. 1,000	Rs. 2,000

The profit before depreciation and after taxes are as follows:

Projects	Year-1	Year-2	Year-3	Year-4	Year-5
Project X Rs.	5,000	10,000	10,000	3,000	2,000
Project Y Rs.	20,000	10,000	5,000	3,000	2,000
PV factor @10%	.909	.826	.751	.683	.621

20. What are the different types of dividend policies?

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R5476	Sub. Code
	541204

M.C.A. DEGREE EXAMINATION, APRIL – 2021

Second Semester

Computer Applications

OPERATING SYSTEMS

(CBCS – 2020 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are functions of operating system?

2. What do you mean by system calls?

3. Define semaphores.

4. Write down the scheduling criteria.

5. Differentiate Pre-emptive and Non-preemptive scheduling technique.

6. What are the necessary conditions for deadlock to occur?

7. List out the difference between Physical and logical address.

8. Define thrashing.

9. What are file attributes?

10. Define directory structure.

Part B (5 × 5 = 25)

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

11. (a) Describe the difference between symmetric and asymmetric multiprocessing. Discuss the advantages and disadvantages of multiprocessor systems.

Or

(b) What are the five major categories of System Calls? Explain.

12. (a) Distinguish among short-term, medium-term and long-term scheduling with suitable example

Or

(b) Explain Interprocess Communication.

13. (a) Evaluate Round CPU Scheduling algorithm for given Problem. Time slice = 3 ms

Process:	P1	P2	P3	P4
Process Time:	10	5	18	6
Arrival Time:	5	3	0	4

Or

(b) Explain the difference between preemptive and non-preemptive scheduling.

14. (a) Explain with neat diagram internal and external fragmentation.

Or

(b) What is Paging? Explain with Example.

15. (a) Explain the method used for implementing directories.

Or

(b) Write a short note on free space management.

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

Answer any **three** questions.

16. Describe the operating system structure.

17. Discuss the classic problem of synchronization in detail.

18. Explain Dead lock Avoidance Algorithm with Example.

19. What is disk scheduling? Explain FCFS and SCAN disk scheduling algorithms with an example.

20. Elaborately explain file system implementation.

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R5477	Sub. Code
	541205

M.C.A. DEGREE EXAMINATION, APRIL – 2021.

Second Semester

Computer Application

MOBILE APPLICATIONS DEVELOPMENT

(CBCS – 2020 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define Embedded System.

2. What is the .apk file?

3. What is the role of XML in APP Design?

4. Specify any two hardware constraints for mobile apps.

5. Define GPS.

6. What is Pattern Lock?

7. What is SQLite?

8. Specify the use of Google Maps.

9. What is UI?

10. Define iOS.

Part B (5 × 5 = 25)

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

11. (a) Explain any five market scopes for Mobile applications.

Or

(b) Explain the steps to publish your mobile app into Playstore.

12. (a) Explain about Embedded OS.

Or

(b) Explain any two quality constraints for mobile apps.

13. (a) Write the procedures to integrate multimedia with your mobile app.

Or

(b) Explain any two methods for mobile app lock.

14. (a) Explain activities and views.

Or

(b) Explain mobile app interaction with social media applications.

15. (a) Explain the touch frameworks.

Or

(b) How will you integrate your calendar into the mobile app.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. How requirements gathering and validation is done for mobile apps.

17. How will you design user interfaces for mobile applications?

18. How a mobile app is accessing a cloud application?

19. Explain about mobile app integration with GPS, Wifi, and Maps.

20. Explain location-aware mobile apps.

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R5478	Sub. Code 541556

M.C.A. DEGREE EXAMINATION, APRIL –2021

Second Semester

Computer Applications

Elective – MACHINE LEARNING

(CBCS – 2020 Onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Compare training and testing.

2. Define version space.

3. What are neural networks?

4. Define Softmax function.

5. Write the Bayes theorem.

6. What is a belief network?

7. What is KNN?

8. What is the radial basis function?

9. Define Q Learning.

10. What is Tensor Flow?

Part B (5 × 5 = 25)

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

11. (a) Explain decision tree learning.

Or

(b) Explain heuristic space search.

12. (a) Explain multilayer networks.

Or

(b) Explain genetic programming.

13. (a) Explain the Gibbs algorithm.

Or

(b) Explain the Naive Bayes classifier.

14. (a) Explain locally weighted regression.

Or

(b) Explain case-based learning.

15. (a) Explain reinforcement learning.

Or

(b) Explain Keras and its functions for deep learning.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. How candidate elimination is done in ML?

17. Explain backpropagation networks.

18. Explain probability learning.

19. Explain KNN Algorithm.

20. Explain binary classification.

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R5479

Sub. Code
541401

M.C.A. DEGREE EXAMINATION, APRIL – 2021

Fourth Semester

Computer Applications

VISUAL PROGRAMMING WITH .NET

(CBCS – 2019 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define Toolbar.
2. What is the use of a status bar?
3. Define Code Skelton.
4. What is Namespace?
5. Compare cleaning vs. rebuilding in VB.NET Projects.
6. What are delegates?
7. Define breakpoints.
8. What is IntelliTrace?
9. What is the Grid Layout?
10. What is MVC?

Part B (5 × 5 = 25)

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

11. (a) Compare Windows Project vs. Web Projects.

Or

(b) Explain any five Visual Studio Project types.

12. (a) Write a VB.NET Program to print the odd numbers from 1 to 100.

Or

(b) How will you pass parameters to the methods in VB.Net?

13. (a) Explain the ICON and Manifest with examples.

Or

(b) What is the use of a class view? Explain.

14. (a) How will you use a quick watch window?

Or

(b) How will you connect databases to your application?

15. (a) Explain the canvas layout.

Or

(b) Explain the Dock Panel layout.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Compare Share point projects vs. database projects.

17. Write a VB.Net program to demonstrate a simple calculator (Addition, Subtraction, Multiplication, and Division).

18. Explain the different options to compile an application in VB.NET.

19. How will you inspect your application using an IntelliTrace?

20. Explain WPF Architecture with diagrams.

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R5480	Sub. Code 541402

M.C.A. DEGREE EXAMINATION, APRIL – 2021

Fourth Semester

Computer Applications

DATA MINING AND WAREHOUSING

(CBCS – 2019 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define Data Warehouse.
2. What is Data Extraction?
3. Write the steps in the KDD process.
4. Write any four data statistics methods.
5. What is the purpose of the partition algorithm?
6. Define Association Rule Mining.
7. Define DBSCAN.
8. What is CACTUS?
9. Define Rapidminer.
10. List any four metrics used for web structure mining.

Part B (5 × 5 = 25)

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

11. (a) Specify the role of metadata in data mining with examples.

Or

(b) Explain warehouse architecture.

12. (a) How data dimension is reduced in data mining?

Or

(b) Compare Data Cleaning vs. Data Integration.

13. (a) How Item Set Count Algorithm works?

Or

(b) Explain the partition algorithm.

14. (a) Explain machine learning with examples.

Or

(b) How Backpropagation Neural Network works?

15. (a) How text clustering is done?

Or

(b) Explain Data Store with examples.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. How data warehousing is used in Genomics Data? Explain.

17. Explain the applications of Data mining with examples.

18. How decision tree classification is performed?

19. Explain clustering techniques with examples.

20. How will you use Rapid Miner for Data analytics?

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R5481	Sub. Code
	541403

M.C.A. DEGREE EXAMINATION, APRIL – 2021.

Fourth Semester

Computer Application

SOFTWARE ENGINEERING

(CBCS – 2019 onwards)

Time : Three Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define software Engineering.

2. What is meant by process model?

3. What is requirement engineering?

4. Define behavioral modeling.

5. What are the golden rules for an interface design?

6. Write any two characteristics of requirement engineering Task.

7. Define software testing.

8. Distinguish between verification and validation.

9. What is meant by software quality assurance.

10. What are the types of Agile metrics?

Part B (5 × 5 = 25)

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

11. (a) Explain the evolutionary and incremental model. What are the advantages and disadvantages.

Or

(b) Explain the prototype paradigm in process model.

12. (a) What is requirement engineering? State its process and explain the requirements elicitation problem.

Or

(b) Describe the primary difference between structural analysis and object oriented analysis.

13. (a) Explain architectural design for a software Engineering.

Or

(b) Discuss in detail about the design process in software development process.

14. (a) What are the attributes of the good test? Explain the test case design.

Or

(b) What is the necessity of unit testing? Write down all unit test consideration.

15. (a) List the principles of Agile software development.

Or

(b) Explain in detail about FDD.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss in detail about the types of Evolutionary process model.

17. Explain in detail about all modeling techniques in software requirements.

18. Discuss about user interface design of a software with an example and neat sketch.

19. Explain automated testing tools. How test cases are generated? Discuss when to stop testing?

20. What is Agile methodology? Write down the technique and concepts involves in Agile product development.

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R5482	Sub. Code
	541552

M.C.A. DEGREE EXAMINATION, APRIL – 2021

Fourth Semester

Elective — SOFTWARE PROJECT MANAGEMENT

(CBCS – 2019 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. List out the several cost estimation models.

2. Why we need round-trip engineering in software environment?

3. What is the use of coupling and cohesion in software engineering?

4. Define: WBS.

5. What do you mean by a view?

6. State the use of workflow.

7. What is forward-looking, top-down approach in project plan?

8. Expand the term SEEA.

9. Mention the different types of globalization.

10. Write note on dot project.

Part B (5 × 5 = 25)

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

11. (a) List out the top 10 Boehm's quotations on conventional software management performance.

Or

(b) Explain how to improve effectiveness of a software team.

12. (a) What is Capability Maturity Model (CMM)? Explain.

Or

(b) Outline the role of engineering sets in evaluating the quality of each artifact set.

13. (a) Write down the different aspects of architecture in management perspective.

Or

(b) Analyze the role of minor milestones.

14. (a) Discuss about iteration planning process.

Or

(b) Write a short note on the following.

(i) Meta Process.

(ii) Macro Process.

(iii) Micro Process

15. (a) What challenges do managers face in building global teams? Explain.

Or

(b) Describe about the project management software PRINCE2.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe briefly about waterfall model.

17. Discuss in Detail about the top five principles of modern software management.

18. With neat sketch, explain about the technical perspective of model based architecture.

19. List and illustrate the tools to automate the software development process.

20. Write a short note on the following project management software.

    (a) dot project

    (b) Lanuch pad

    (c) Openproj

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R5483	Sub. Code
	541565

M.C.A. DEGREE EXAMINATION, APRIL – 2021.

Fourth Semester

Elective: BIG DATA ANALYTICS

(CBCS – 2019 onwards)

Time : Three Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Big Data Analytics?

2. Is Bid Data a Data base?

3. Why is dimensionality reduction so important?

4. How do you define hyper-acceleration?

5. State the use if kernel in machine learning.

6. Define the term Bigraph.

7. What is regression?

8. List the difference between the bayes and Naive bayes classifier.

9. How does cluster analysis work?

10. Define: Neural Network.

Part B (5 × 5 = 25)

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

11. (a) List and explain the four types of data analytics.

Or

(b) Explain how data is stored in big data.

12. (a) Summarize the applications of machine learning.

Or

(b) Write a short mote on social networks analytics.

13. (a) How market basket analysis works? Explain.

Or

(b) Justify the term collective inference.

14. (a) What does RFM Mean? Discuss.

Or

(b) Can neural networks be used for prediction? Discuss.

15. (a) Discuss how clustering can be evaluated?

Or

(b) Elaborate with different types of algorithms used in ensemble Learning method.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. What is a Data Analytics Life Cycle? List and explain the different phases of data analytics life cycle.

17. Write a short note on the following with example.

18. Discuss in detail about Relation Logistic Regression. (RLR).

19. Explain multivariate regression analysis. List the pros and cons of statistical data analysis.

20. What is Support Vector Machine? (SVM)? Explain its model.

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