Nov Dec = 2019 Semester = 3rd

Roll No.	
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Total No. of Pages: 02

Total No. of Questions: 09

MCA (E-I) (2015 & Onwards) (Sem.-3) SYSTEM PROGRAMMING Subject Code: MCA-305A M.Code: 74077

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES :

- SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks each and students has to attempt any ONE question from each SECTION.
- 2. SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY

SECTION-A

- Explain various data structure required for the design of a Macro-processor with an example.
- What do you mean by assembler? Explain Single pass assembler with algorithm.

SECTION-B

- Describe the data structure and algorithm for linking loader.
- 4. With the help of suitable diagram, explain in detail the structure of a text editor.

SECTION-C

- Explain various permanent and temporary tables used in the designing of Compiler.
- 6. What is YACC? Explain the different sections used in writing the YACC Specification.

SECTION-D

- Define distributed system. Explain key concepts and techniques used in distributed system.
- 8. What is operating system? Explain functions and types of operating system in detail.



SECTION-E

- 9. a) What do you mean by dynamic loading?
 - b) What is a macro call and macro expansion?
 - c) Explain use of linkage editor.
 - d) Define multitasking.
 - e) What do you mean by virtual devices?
 - f) What do you mean by device driver?
 - g) Explain briefly Network Operating system.
- h) What is a Deterministic finite automation?
- i) How system software is different from application software?
- j) What do you mean by dynamic linking?

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Semester = 3rd

Roll No. Total No. of Questions: 09

Total No. of Pages: 02

MCA (2015 & Onwards) (Sem.-3) DATABASE ADMINISTRATION

Subject Code: MCA-301 M.Code: 74073

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

- 1. SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks each and students has to attempt any ONE question from each SECTION.
- 2. SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY

SECTION-A

- What is database administration? Define the roles and responsibilities of Data Base Administrator (DBA). As a DBA, write the procedure to install and configure a database package (MS- SQL/MySQL/Oracle).
- 2. a) What is a database package? Introduce any five packages.
 - b) What are communication protocols? Explain any two.

SECTION-B

- 3. a) Describe the issues of data export and import in multiple servers.
 - b) What is a DBA can do to manage database integrity?
- Discuss the Database replication and its importance in the context of managing database

SECTION-C

- What are the steps taken to ensure secure User Access to the database? How is user activity monitoring helpful to ensure database security?
- What are the main goals of the RAID technology? How does it achieve them?

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SECTION-D

- 7. Write short notes on :
 - a) Optimize the performance of the database
 - b) Performance Tuning
 - c) Re-writing SQL queries
- a) How do Indexes help in improving database performance? Give suitable examples.
 - b) What is table optimization? How is it important for monitoring the performance of

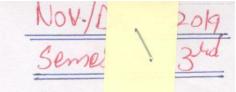
SECTION-E

- 9. Write briefly:
 - a) What do you understand by the word "views" in the context of databases?
 - b) What is the use of table functions?
 - c) What are steps involved in Database startup?
 - d) What is an indexes?
 - e) What is database encryption? Why is it important?
 - f) What is the difference between a database schema and a database instance?
 - g) What is the use of GROUP BY clause in SQL? Give example,
 - h) What are the types of failure?
 - i) What is privilege management? Why is it important?
 - j) How do you audit user activity in a database environment?

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Roll No.

Total No. of Questions: 09

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MCA (2015 & Onwards) (Sem.-3)
INFORMATION SECURITY

Subject Code: MCA-302 M.Code: 74074

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

- SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks each and students have to attempt any ONE question from each SECTION.
- 2. SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY marks in all.

SECTION-A

- 1) Illustrate various Security functional requirements and computer security strategies.
- Explain the given cryptographic tools: Public key Encryption, Digital signatures and hash functions.

SECTION-B

- 3) Explain in detail the working of practical application: An Iris Biometric System.
- 4) What is the need for Database security? Explain different database access control mechanisms used in relational databases.

SECTION-C

- 5) What do you understand by Malicious Software? Differentiate between Payload-system corruption, Payload-attack agent and Payload-stealthing.
- 6) Explain with suitable examples: Distributed Denial-of-service attacks and Application based bandwidth attacks.

SECTION-D

- 7) Discuss in detail the Bell-LaPadula model for computer security.
- 8) What are security safeguards? Write down the various steps for security management implementations.

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SECTION-E

9) Write briefly:

- a) Define Risk assessment.
- b) How can we provide security to operating system?
- c) Write down the applications for multilevel security.
- d) Differentiate between threats and attacks.
- e) What are bots?
- f) What do you understand by Trojans and rootkits?
- g) Differentiate between reflector and amplifier attacks.
- h) Explain the concept of confidentiality with symmetric encryption.
- i) Write a note on Payload-information theft?
- j) What are pseudo-random numbers and what are they used for?



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Roll No.

Total No. of Pages: 02

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B.Com. (Professional) (2013 to 2017 Batch)

(Sem.-3)

OPERATION RESEARCH Subject Code: BCOP-304

M.Code: 22016

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION-B contains SIX questions carrying TEN marks each and students have to attempt any FOUR questions.

SECTION-A

1. Answer briefly:

- a. State two applications of linear programming model.
- b. What is meant by unbounded solution?
- c. Differentiate between PERT and CPM.
- d. Name five OR models.
- e. What are the advantages and disadvantages of carrying large inventories?
- f. What are the main objectives network analysis?
- g. What is an unbalanced transportation problem?
- h. Enlist various duality theorems.
- i. What is degeneracy in a transportation problem?
- j. Define Slack variables, surplus variables and artificial variables.



SECTION-B

2. Use simplex method to solve the following LP problem.

Max $Z = 6x_1 + 8x_2$

Subject to Constraints:

 $2x_1 + 3x_2 \le 16$ and $4x_1 + 2x_2 \le 16$

- Discuss in detail the scope of operation research.
- Explain the following terms :
 - a. Mixed strategy
 - b. Pure strategy
 - c. Payoff matrix
 - d. Two person zero sum game
 - e. Value of the game
- 5. What is meant by inventory? Explain how the order quantity is calculated using basic EOQ model?
- 6. A bank plans to open a single server drive in banking facility at a particular center. It is estimated that 28 customers will arrive each hour on an average. If, on an average, it requires 2 minutes to process a customer transaction, determine:
 - a. The proportion of time the system will be idle.
 - b. On the average how long the customer will have to wait before reaching the server?
- Draw the network from the following activity and find the critical path and total project duration:

Activity	1-2	1-3	1-5	2-3	26	3_4			
Duration	2	4		2-3	2-0	3-4	4-7	5-6	6-7
Duration	3	4	14	10	5	1	-		

Nov. Dec. = 2019 Semester = 3rd

Roll No.

Total No. of Questions: 09

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MCA (2015 & Onwards) (Sem.-3)

SOFTWARE ENGINEERING & PROJECT MANAGEMENT
Subject Code: MCA-303

M.Code: 74075

Time: 3 Hrs.

Max. Marks:

INSTRUCTIONS TO CANDIDATES :

- SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks each students has to attempt any ONE question from each SECTION.
- SECTION-E is COMPULSORY consisting of TEN questions carrying TWEN marks in all.
- 3. Use of Non-Programmable scientific calculator is allowed.

SECTION-A

- Identify the stages through which a software product passes during its lifetime.
- 2. a. What is software crisis?
 - b. What are the shortcomings of iterative waterfall model?

SECTION-B

- How structural design methodology is used in function-oriented design? Explain different steps used in design methodology with a suitable example.
- 4. a. Explain the problems that need to be identified and solved in requirements analysis
 - b. Differentiate between FAST and QFD.

SECTION-C

- Explain the use of COCOMO model for cost estimation of a software project.
- a. Explain the approaches to design black-box tests cases.
 - b. Explain unit testing.

SECTION-D

- Explain the process of software reengineering.
- Explain die use of CASE tools in software life cycle.
 - b. What is change control? Explain.

SECTION-E

- 9. Answer briefly:
 - a. Differentiate between methodology and tools.
 - b. What is refactoring?
 - c. What is reverse engineering?
 - d. What is performance testing?
 - e. Differentiate between alpha and beta testing.
 - f. Explain software maintenance.
 - g. What is quality assurance?
 - h. Differentiate between abstraction and modularity.
 - i. What is function point?
 - j. What is drawback of waterfall model?

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May-June=20 Sem-3sed

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MCA (2015 & Onwards) (Sem.-3) DATABASE ADMINISTRATION Subject Code: MCA-301 M.Code: 74073

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

- 1. SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks each and students has to attempt any ONE question from each SECTION.
- 2. SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY marks in all.

SECTION-A

- What are the various aspects of a Database environment? What are the various, management issues in such an environment?
- Why are Views and Indexes required in a database? How are these created and managed?

SECTION-B

- How is Migration and Business policy implementation carried out in database servers? Explain in detail.
- Why are multiple database servers needed? How is Data Integrity an important issue in such servers? Give examples to justify your answer.

SECTION-C

- What are the various ways to manage User Access to the database? How can privileges be granted/revoked to a user?
- How is the Backup aspect of a database managed? Give examples of techniques used for taking backups in case of failures.

SECTION-D

- What do you mean by Performance Optimization of a database? How can maximum performance be achieved? Explain with the help of examples.
- Describe the process of Database Mirroring. When and why is it needed?

SECTION-E

- Write short notes on:
 - a) Role of a DBA.
 - b) Types of Failures in databases.
 - c) Features of Client/Server Model.
 - d) Database Instance Management.
 - e) Role of Encryption in Security of databases.
 - f) Advantages of RAID.
 - g) Table Optimization.
 - h) Difference between Mirroring and Clustering.
 - i) Comparison of MS SQL Server and Oracle.
 - j) Use of Database Compression.

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Roll No.		
Total No. of Questions	: 09	

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MCA (2015 & Onwards) (Sem.-3) JAVA PROGRAMMING Subject Code: MCA-304 M.Code: 74076

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

- 1. SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks each and students has to attempt any ONE question from each SECTION.
- 2. SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY marks in all.

SECTION-A

- 1) a) How Java is important to internet?
 - b) Explain various logical operators.
- 2) a) Discuss the role of break and continue statements by giving suitable examples.
 - b) Discuss the role of abstract keyword in Java.

SECTION-B

- 3) a) What do you mean by streams? Explain the process of Handling and using various stream classes.
 - b) Explain Exception handling mechanism used in java by giving suitable examples. 5
- 4) What are Packages? Explain the procedure of creating and using packages by giving an

SECTION-C

- 5) What do you mean by applets? Explain its types. How do applets differ from application program? Explain with help of example.
- Describe Graphic Programming in detail. What do you mean by Layouts, Frames and Panels? Explain in detail.

SECTION-D

- 7) What do you mean by socket programming? Explain various methods associated with TCP and UDP.
- 8) Describe the use of java beans in JSP for working with java Mail.

SECTION-E

9) Answer briefly:

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- a) What do you mean by Abstract classes?
- b) Discuss Method overriding.
- c) What is Type conversion?
- Admin d) What is JVM and JVM Programming?
 - e) What are remote objects?
 - f) Describe dynamic dispatch method with example.
 - g) What are the features of swings?
 - h) What are dynamic web pages?
 - i) Write short note on J2EE.
 - j) Discuss RMI Client.

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May-June = 20120 Sem - 3rd

Roll No.

Total No. of Pages: 02

Total No. of Questions: 09

MCA (E-I) (2015 & Onwards) (Sem.-3) SYSTEM PROGRAMMING Subject Code: MCA-305A

M.Code: 74077

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES :

SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks each and students has to attempt any ONE question from each SECTION.

SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY 2. marks in all.

Use of non-programmable scientific calculator is allowed.

SECTION-A

- 1. Draw detailed Flow Charts and Explain the Algorithm for Two Pass assembler.
- 2. a) Explain Two Pass Macro Processor using Flowcharts.

b) Explain concept of Conditional Macro Expansion and macros defining macros with example.

SECTION-B

- 3. a) Give overview of Dynamic Linking with example.
 - b) Explain the various types of Editors.
- 4. Explain various schemes of Loaders with its advantages and disadvantages. Also, Describe the Design of Absolute loader.

SECTION - C

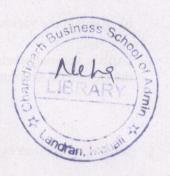
- 5. What do you mean by Compiler? Explain various phases of Compiler with example.
- 6. a) Differentiate between Regular and Context Free Grammars. Give Examples.
 - b) Describe YACC. What is the purpose of this tool?

SECTION-D

- 7. a) Define Operating System. What are the main functions of Operating System?
 - b) Explain Bootstrapping Techniques and its Subroutines.
- 8. a) Why I/O Programming is Important? Explain.
 - b) Explain USB and Plug and Play Systems. Name some Current plug and play interfaces.

SECTION-E

- 9. Give short answers of the following:
 - a) What is the Problem of Single Pass Assembly?
 - b) Explain Deterministic Finite Automata (DFA).
 - c) Differentiate between Compiler and Interpreter.
 - d) Why Macros are called as Preprocessor statements?
 - e) Explain different types of Real-Time Operating-System with example.
 - f) What is meant by Subroutine Linkages?
 - g) What are the Device Drivers?
 - h) What is Just-in-time Compiler?
 - i) Explain the use of Debugger.
 - j) Why is the System Programming APIs Important?



Sem- 3rd

Roll No.

Total No. of Pages: 02

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MCA (2015 & Onwards) (Sem.-3) INFORMATION SECURITY Subject Code : MCA-302

M.Code: 74074

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

- SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks each and students has to attempt any ONE question from each SECTION.
- 2. SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY

SECTION-A

- Q1. a. What are various Attacks done on Information Security?
 - b. Explain Security Architecture for Open Systems.
- Q2. What is Public/private key? How Encryption helps in achieving Information Security

SECTION-B

- O3. a. What is token based authentication? How much secure this system is?
 - b. What are various security issues for user authentication?
- Q4. What is the primary need for database security? How cloud security is different?

SECTION-C

- Q5. What is meant by writing safe program code? Discuss various software security issues.
- Q6. Describe:
 - a. Reflector and amplifier attacks

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b. Spyware

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c. Distributed Denial of Service attacks.

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SECTION-D

- Q7. What is Operating system hardening? What is trusted platform module?
- Q8. How security risk assessment is done? How IT security management implementation is done?

SECTION-E

Q9. Answer briefly:

- a. What are various types of Threats on Information security?
- b. Explain hash functions.
- c. What are various access control principles?
- d. What is role-based access control?
- e. Why we need database security?
- f. What are various types of rootkits?
- g. What is buffer overflow?
- h. Explain Virtualization Security.
- Explain Trusted Computing.
- j. Explain security implementation follow-up.

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May - June = 2019 Sem - 300

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Roll No.		

Total No. of Pages: 02

Total No. of Questions: 09

MCA (2015 & Onwards) (Sem.-3)
SOFTWARE ENGINEERING AND PROJECT MANAGEMENT
Subject Code: MCA-303
M.Code: 74075

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

- SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks each and students has to attempt any ONE question from each SECTION.
- SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY marks in all.

SECTION-A

- Why the role of software engineering has become important in developing modern software systems? Discuss any two software engineering principles.
- 2. Explain the agile methodology for developing software systems. How is the agile methodology better than the conventional software processes?

SECTION-B

- Discuss the software design principles.
- How is object oriented design better than procedural approach? Write the basic concepts of the object oriented approach.

SECTION-C

- Define error, fault, and failure. Explain the testing techniques to make a software system error free.
- How is effort defined in software industry? Explain the various effort estimation techniques.

SECTION-D

- Define software quality. Why is it important to measure software quality? Discuss the quality metrics.
- 8. Write short notes on CASE tools, software reengineering.

SECTION-E

9. Answer briefly:

- a. What is abstraction?
- b. Define coupling.
- c. List various stages of the waterfall model.
- d. Differentiate between verification and validation.
- e. What is modularity?
- f. What is a software metric?
- g. What is a software change?
- h. Explain unit testing.
- i. What is risk exposure?
- j. What is PERT/CPM?

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