

Nov/Dec = 2019
Semester = 3rd

Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

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 :

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

SECTION-B

3. 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

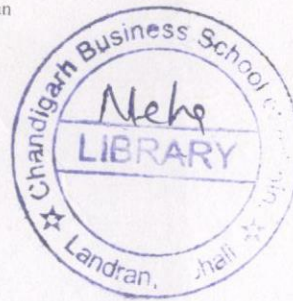
5. Explain various permanent and temporary tables used in the designing of Compiler.
6. What is YACC? Explain the different sections used in writing the YACC Specification.

SECTION-D

7. 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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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

1. 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?
4. Discuss the Database replication and its importance in the context of managing database servers.

SECTION-C

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

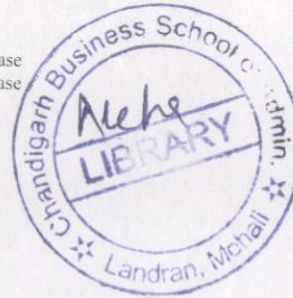
SECTION-D

7. Write short notes on :
 - a) Optimize the performance of the database
 - b) Performance Tuning
 - c) Re-writing SQL queries
8. 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 database?

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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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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Nov/Dec-2017
Semester = 3rd

Roll No. []

Total No. of Questions : 07

Total No. of Pages : 02

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 :

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



SECTION-B

- Use simplex method to solve the following LP problem.
 $\text{Max } Z = 6x_1 + 8x_2$
Subject to Constraints:
 $2x_1 + 3x_2 \leq 16$ and $4x_1 + 2x_2 \leq 16$
- Discuss in detail the scope of operation research.
- Explain the following terms :
 - Mixed strategy
 - Pure strategy
 - Payoff matrix
 - Two person zero sum game
 - Value of the game
- What is meant by inventory? Explain how the order quantity is calculated using basic EOQ model?
- 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 :
 - The proportion of time the system will be idle.
 - 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	2-6	3-4	4-7	5-6	6-7
Duration	3	4	14	10	5	4	6	1	1

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Total No. of Pages :

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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 :

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 TWEN marks in all.
3. Use of Non-Programmable scientific calculator is allowed.

SECTION-A

1. 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

3. 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

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

SECTION-D

7. Explain the process of software reengineering.
8. a. Explain the 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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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? 5
b) Explain various logical operators. 5
- 2) a) Discuss the role of break and continue statements by giving suitable examples. 4
b) Discuss the role of abstract keyword in Java. 6

SECTION-B

- 3) a) What do you mean by streams? Explain the process of Handling and using various stream classes. 5
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 example. 10

SECTION-C

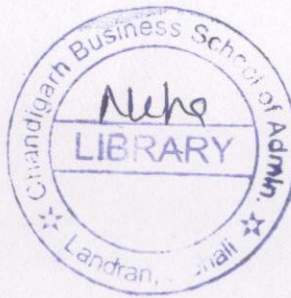
- 5) What do you mean by applets? Explain its types. How do applets differ from application program? Explain with help of example. 10
- 6) Describe Graphic Programming in detail. What do you mean by Layouts, Frames and Panels? Explain in detail. 10

SECTION-D

- 7) What do you mean by socket programming? Explain various methods associated with TCP and UDP. 10
- 8) Describe the use of java beans in JSP for working with java Mail. 10

SECTION-E

- 9) Answer briefly : (2×10=20)
 - a) What do you mean by Abstract classes?
 - b) Discuss Method overriding.
 - c) What is Type conversion?
 - 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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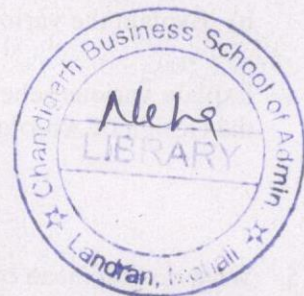
SECTION-D

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?



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Sem-3rd

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

MCA (2015 & Onwards) (Sem.-3)
INFORMATION SECURITY
Subject Code : MCA-302
M.Code : 74074

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

- 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

- Q3. 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 | 4 |
| b. Spyware | 3 |
| c. Distributed Denial of Service attacks. | 3 |

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.
- i. Explain Trusted Computing.
- j. Explain security implementation follow-up.

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