

Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

**MCA (Sem.-3)
SOFTWARE PROJECT MANAGEMENT**

Subject Code : PGCA-1930

M.Code : 90801

Date of Examination : 04-01-2023

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :

- a) Explain the project management tools.
- b) Write about safety and security in people management.
- c) Explain Project team and how does it help in managing a project?
- d) Discuss about project sequencing.
- e) What is ERP?
- f) Explain organization and team structure.
- g) What are the types of contract?
- h) Explain SQA activities in short.
- i) How to perform risk planning?
- j) Define critical path analysis.

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(S12)-1445

SECTION-B

2. Describe software size estimation techniques. Using a Schematic diagram and Suitable example show the order in which the following are estimated in the COCOMO estimation Techniques: Cost, Duration, Size?
3. Explain Conventional and Evolutionary work break down structures.
4. What do you understand by Sliding Window Planning? Explain using a few examples the types of projects for which this form of planning is especially suitable. What are its advantages over conventional planning?
5. Explain Feedback and Reporting mechanism in project evaluation.

SECTION-C

6. Explain how software quality assurance process differs from software development process? Also explain each phases of software quality development. Discuss the assessment of software quality according to the quality attributes. You should consider each attribute and explain how it might be assessed?
7. What is the role of a TEAM in decision making? Discuss. Explain the concept of technical/leadership, immediate checkpoints and risk reduction in detail.
8. Explain Organizational behavior. Explain why adding more manpower to an already late project makes it later.
9. What is project deliverable? Explain in detail that how it is related to milestone and



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MCA - Dec - 2022

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

**MCA (Sem.-3)
E-COMMERCE AND DIGITAL MARKETING**

Subject Code : PGCA-1921

M. Code : 90807

Date of Examination : 05-01-2023

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :
 - a) What do you understand by the term E-Commerce?
 - b) What do you understand by Internet service provider and World Wide Web?
 - c) What is electronic fund transfer?
 - d) What is EDI?
 - e) How EDI software implementation is done?
 - f) What is affiliate marketing, give examples?
 - g) Explain affiliate and influencer marketing with the help of examples.
 - h) What is search engine optimization?
 - i) What do you understand by web analytics? How e- mail marketing is done?
 - j) What is social media marketing?

SECTION-B

2. What are the technical components of the E-commerce? How E-commerce has helped Indian business to expand?
3. How smart cards have helped in digitalization of Indian economy? What are the risks involved in the electronic payment system?
4. What is the application of EDI in business? What are the legal issues involved in it?
5. How successful is e-governance in India? What is the security, issues involved?

SECTION-C

6. What are the various components of the online marketing and the impact of online marketing on business?
7. What is the role and importance of internet and search engine optimization? What is SEM?
8. How social media marketing is becoming a major tool of marketing in digital marketing? What in on page optimization and off page optimization?
9. How a successful content marketing strategy can be made and implemented?



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MCA (Sem.-3)
THEORY OF COMPUTATION
Subject Code : PGCA 1927
M. Code : 90800
Date of Examination : 21-12-22

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- SECTION - B & C. have FOUR questions each.
- Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
- Select atleast TWO questions from SECTION - B & C.

SECTION-A

- Write short notes on :
 - CFG.
 - Explain tractable problems with example
 - How will explain Russels's paradox?
 - Discuss about Moore machine.
 - Differentiate PDA and NPDA.
 - Explain steps for simplification of CFG.
 - Define halting problem.
 - What is the unrestricted grammar?
 - How to perform lexical analysis?
 - Explain the parse tree representation.

SECTION-B

- Explain DFA. Construct finite automata equivalent to the following regular expressions (stop by step): $((0+1)(0+1))^* + ((0+1)(0+1)(0+1))^*$
- Explain Pumping Lemma. Prove that the language $L = \{w \in \{a, b\}^* \mid w = w^R\}$ is not regular grammar.
- What is CNF? Convert the following grammars to Chomsky Normal Form:
 $S \rightarrow ASB, A \rightarrow aASA \mid a, B \rightarrow SbS \mid A \mid bb$
- Explain Regular grammar. Consider the language $L = \{w \in \{a, b\}^* \mid w \text{ has an odd number of } a\text{'s}\}$. Write a regular grammar for L. Use that grammar to derive a (possibly non-deterministic) FSA to accept L.

SECTION-C

- What is the significance of turing machine? Design and explain step by step. Turing Machine for computing "Concatenate two strings w_1 and w_2 , where each string is generated over $\{1, b\}$ "
- What is ambiguity in PDA? Write the Instantaneous descriptions and design PDA which recognizes the set of strings over $\{a, b\}$ where string length is odd and its middle symbol is 'a'.
- What is Post Correspondence Problem? How reduction works in the structure of undecidability proof? Design an instance and match of PCP to explore that the lists $M = (ab, bab, bbaaa)$ and $N = (a, ba, bab)$ include a Post Correspondence Solution?
- Write short notes on the list given below:
 - Chomsky Hierarchy of languages
 - CSL.



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**MCA (Sem.-3)
SOFTWARE TESTING & QUALITY ASSURANCE**

Subject Code : PGCA-1931

M.Code : 90808

Date of Examination : 07-01-2023

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :

- a) Explain the object oriented scenario based testing.
- b) Write about testing security.
- c) Explain graph based testing and how does it help in testing process?
- d) Discuss about code coverage testing.
- e) Differentiate stress testing from load testing.
- f) What is white box testing?
- g) Explain integrity, interoperability.
- h) What is the need for test plan development?
- i) Explain SQA activities in short.
- j) How to perform client/server system testing?

SECTION-B

2. Define software testing. Explain various level of testing with the help of V-model. Differentiate alpha testing from beta testing and discuss in detail. What do you interpret from the basis path testing? Explain the concept of loop testing.
3. Define quality attributes. Explain correctness, reliability, integrity, interoperability. Discuss how these are related to testing?
4. What do you understand by object oriented testing? Discuss the various methods for class testing.
5. Demonstrate the various black box test cases using Equivalence class partitioning and boundary values analysis to test a module for ATM system.

SECTION-B

6. Explain configuration management for web engineering.
7. Explain software reviews. Which phase conducts the formal technical review step.
8. What are software quality assurance metrics? Explain in detail that how it is related to milestone and deliverable? Describe SQA activities. Explain its ISO 9000 standards in detail.
9. Write short notes on the list given below:
 - i) SPICE
 - ii) Risk projection
 - iii) Change control
 - iv) ISO 9126.



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MCA - May - 2022

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MCA (Sem.-3)
THEORY OF COMPUTATION
Subject Code : PGCA-1927
M.Code. : 90800
Date of Examination : 05-08-22



Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

I. Write short notes on :

- a. Explain CNF.
- b. Write about Intractable problems.
- c. Explain Church-Turing thesis.
- d. Discuss about minimization of FA.
- e. Describe lexical analysis.
- f. What is non-computational problem?
- g. Explain Mealy machine.
- h. What is the halting problem?
- i. Explain NPDA in short.
- j. What is non-regular language?

SECTION-B

2. Differentiate DFA and N DFA. Construct a finite automata accepting the following set and write the language :
- $\{W \in \{a, b\}^* : \text{number of a's is a multiple of 3 and number of b's is even.}\}$**
3. Explain regular expression. Write a regular expression for all words over $\{a, b\}$ that have
- At least one 'a' and one 'b'
 - 'a' appears in integer multiple of 3(three) if it appears.
 - With exactly two 'a's OR two 'b's.
4. State Pumping lemma and prove that the language $L = \{a^n b^k c^{n+k} : n \geq 0, k \geq 0\}$ is not regular.
5. Convert the following CFG into Greibach normal form :
- $A_1 \rightarrow A_2 A_3, \quad A_2 \rightarrow A_3 A_1, \quad A_2 \rightarrow b, \quad A_3 \rightarrow A_1 A_2, \quad A_3 \rightarrow a$

SECTION-C

6. Design a Turing Machine (single tap double track) for computing the following function :
- $$F(x, y) = \begin{cases} x & \text{if } x > y \\ y & \text{if } x < y \\ 2 * x & \text{if } x = y \end{cases}$$
7. Explain PDA. Consider grammar G whose production rules are :
- $$\begin{aligned} S &\rightarrow 0B|1A \\ A &\rightarrow 0|0S|1AA \\ B &\rightarrow 1|1S|0BB. \end{aligned}$$
8. What was the Chomsky's classification of grammars (write general form of productions only, with an example of each class)?
9. Write short notes on the list given below :
- PCP
 - Recursive and RE language.

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MCA (Sem.-3)
ARTIFICIAL INTELLIGENCE & SOFT COMPUTING

Subject Code : PGCA1926

M.Code : 90799

Date of Examination : 03-08-22

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1. Write short notes on :

- a) Define Intelligence.
- b) What is Soft Computing?
- c) Differentiate between Horn Clauses and Definite Clauses.
- d) How do you represent "*All dogs have tails*"?
- e) Define Parsing.
- f) What is Resolution? Briefly explain the resolution principle.
- g) What is grammar? Is it possible to extract meaning of a sentence without using grammatical facts?
- h) Define Defuzzification.
- i) What do you mean by Multilevel Optimization?
- j) Define Unsupervised Learning Networks.

SECTION-B

- 2) Discuss 8-Queens problem in detail. How many solutions does 8 queen problem have?
- 3) Differentiate between Forward and Backward Chaining in detail.
- 4) What do you mean by Heuristic Search? Discuss Greedy best-search in detail by taking suitable example.
- 5) What is semantic analysis and pragmatics? Discuss with examples.

SECTION-C

- 6) Differentiate between Hard and soft Computing. Discuss major application areas of Soft Computing.
- 7) Differentiate between single layer and multilayer perceptron. Discuss back propagation network Architecture.
- 8) What are the basic components of a fuzzy logic system? Explain each of them in detail.
- 9) Explain in detail about various operators of GA and also explain GA evaluation procedure.

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Total No. of Questions : 09

Total No. of Pages : 02

MCA (Sem.-3)
ADVANCED COMPUTER NETWORKING

Subject Code : PGCA-1925

M.Code : 90798

Date of Examination : 01-08-22

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1) Write short notes on :

- a) What are the issues in seamless mobility in mobile networks?
- b) What do you mean by frequency reuse in cellular networks?
- c) What is the need of a routing algorithm?
- d) Define attenuation and distortion in data communication.
- e) What are the benefits of a layered architecture in computer networks?
- f) What is static channel allocation at MAC layer?
- g) List various design issues at network layer.
- h) What is IPv4 address?
- i) What are the causes of interference in wireless systems?
- j) What is FTP?

SECTION-B

- 2) Explain the OSI model in detail and discuss functionality of each layer with an example.
- 3) What do you mean by sliding window protocol? Illustrate the difference between Stop & Wait ARQ protocol and Go-back-N ARQ protocol at data link layer with an example.
- 4) Discuss various types of transmission media used for data communication in computer networks.
- 5) What are the causes of congestion in a computer network? Explain various congestion control techniques with suitable example.

SECTION-C

- 6) List and explain the features provided in IEEE 802.11 standard. Discuss the suitability of each feature with respect to mobile networks.
- 7) Discuss the evolution of wireless communication systems. What are the new functionalities supported by 5G as compared to 4G technology?
- 8) Explain the working of any routing protocol used in adhoc networks. Use suitable example for illustration of the routing protocol.
- 9) Write short notes on :
 - a. Cellular Network
 - b. Handoff strategies in wireless systems.

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Total No. of Questions : 09



Total No. of Pages : 02

MCA (Sem.-3)

DATA MINING AND BUSINESS INTELLIGENCE

Subject Code : PGCA-1972

M.Code : 90803

Date of Examination : 10-08-22

Time : 3 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION - B & C. have FOUR questions each.
3. Attempt any FIVE questions from SECTION B & C carrying TEN marks each.
4. Select atleast TWO questions from SECTION - B & C.

SECTION-A

1) Write short notes on :

- a) What is the difference between a database and data warehouse?
- b) Draw a star scheme by taking a suitable example.
- c) Briefly describe the concept of data compression.
- d) Mention the broader steps of data pre-processing.
- e) Identify the relationship between OLAP and OLTP.
- f) What is spatial mining and web mining?
- g) Name few applications of data mining for business intelligence.
- h) What is linear and non-linear regression method for prediction?
- i) Which properties are important for frequent itemset mining?
- j) What is CART? List down its advantages.

SECTION-B

- 2) Describe the BI process and technology along with its roles and responsibilities.
- 3) Explain the steps of data preprocessing and describe the ways to handle missing or noisy data.
- 4) Explain the dimensional analysis approaches: Drill-down and Roll-up, slice and dice or rotation.
- 5) Discuss the importance of dimensionality reduction. Explain the technique of Principal Component Analysis (PCA) in detail.

SECTION-C

- 6) Trace the results of using the Apriori algorithm on the grocery store example with support threshold, $s = 33.34\%$ and confidence threshold, $c = 60\%$. Show the candidate and frequent itemsets for each database scan. Enumerate all the final frequent itemsets.

Transaction ID	Items
T1	HotDogs, Buns, Ketchup
T2	HotDogs, Buns
T3	HotDogs, Coke, Chips
T4	Chips, Coke
T5	Chips, Ketchup
T6	HotDogs, Coke, Chips

- 7) How is data mining beneficial for market segmentation and for retail industry? Justify.
- 8) Explain in detail the Hadoop architecture and working of Map and Reduce phases.
- 9) Write short notes on the following :
 - a) K-means clustering
 - b) Logistic regression.

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Roll No.

Total No. of Pages : 01

Total No. of Questions : 08



MCA (Sem.-3)

THEORY OF COMPUTATION

Subject Code : PGCA1927

M.Code : 90800

Date of Examination : 04-02-22

Time : 2 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE question(s), each question carries 14 marks.
1. State and prove Principle of Mathematical Induction.
2. a) Prove that $\epsilon + RR^* = R^* = \epsilon + R^*R$ b) Prove that $(P + Q)^* = P^*Q^*$
3. What are Context Free Grammars? How are they different from context free language? Discuss various normal forms for context free grammars in brief.
4. a) State the principle of pumping lemma. Also discuss its various applications.
b) Reduce the given CFG $S \rightarrow aSb/aAb$ and $A \rightarrow bS/aAAb$ to Chomsky Normal Form (CNF).
5. a) Differentiate between recursively enumerable and recursive languages.
b) What are Context Sensitive languages? Explain
6. a) Design a Turing Machine that can add two unary strings.
b) Design a Turing Machine which can find transpose of a binary string.
7. a) Prove the following property of regular expressions: $R + R = R$.
b) State whether the following statement is true or not. Justify your answer as well :
If L and M are regular languages then $L + M$, LM and L^* are also regular.
8. Prove that the class of languages accepted by finite automata is closed under :
a) Union. b) Complementation. c) Intersection.

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Total No. of Questions : 08

Total No. of Pages : 01



MCA (Sem.-3)
SOFTWARE PROJECT MANAGEMENT

Subject Code : PGCA-1930

M.Code : 90801

Date of Examination : 08-02-22

Time : 2 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE question(s), each question carries 14 marks.

1. Describe The Oldman Hackman Job characteristics model in detail.
2. Explain the following in detail :
 - a) Cash Flow Analysis
 - b) Cost Benefit Evaluation
 - c) Cost Benefit Analysis
3. What do you understand by software processes? Discuss in detail various process models.
4. Discuss in detail PERT and Monte Carlo Simulation technique.
5. Explain the term Contract Management. Describe various types of Contracts in detail. Also discuss typical terms of Contracts.
6. Explain the following in detail :
 - a) Capers Jones Estimating rule of thumb
 - b) Critical Path Analysis
 - c) Decision Making
7. Explain COCOMO II in detail. Explain with example.
8. Describe Cost Monitoring Review Technique in detail.

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Total No. of Pages : 01

Total No. of Questions : 08

MCA (Sem.-3)

MOBILE APPLICATIONS DEVELOPMENT

Subject Code : PGCA1933

M.Code : 90805

Date of Examination : 17-02-22

Time : 2 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE question(s), each question carries 14 marks.
1. Describe the characteristics, framework and tools of mobile development.
2. Define interface and layouts. Explain the designing of user interface in mobile applications.
3. Explain in detail service life cycle.
4. Discuss the process of handling data in mobile apps. Explain different types of database used in mobile.
5. Discuss the directory structure of an Android Project.
6. What are open platforms? Explain the working and use of mobile operating systems.
7. Make an application to illustrate the use Seekbar and Progressbar.
8. Explain the architecture of iOS and advanced iphone styling.

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Roll No.

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MCA (Sem.-3)

ARTIFICIAL INETELLIGENCE AND SOFT COMPUTING

Subject Code : PGCA1926

M.Code : 90799

Date of Examination : 02-02-22

Time : 2 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE question(s), each question carries 14 marks.

1. a) Define intelligence. What is the intelligent behavior of a machine?
b) What are weak methods? Identify the main difficulties that led to the disillusion with AI in the early 1970s.
2. a) Describe the forward chaining inference process. Give an example.
b) List problems for which the forward chaining inference technique is appropriate. Why is backward chaining used for diagnostic problems?
3. Provide a definition of the word "heuristic." In what ways can heuristics be useful in search? Name three ways in which you use heuristics in your everyday life.
4. How does an artificial neural network model the brain? Describe two major classes of learning paradigms: supervised learning and unsupervised (self-organised) learning. What are the features that distinguish these two paradigms from each other?
5. a) What is Soft Computing? What is the difference between Hard and Soft computing?
b) Briefly discuss the applications of Soft Computing.
6. What are a fuzzy set and a membership function? What is the difference between a crisp set and a fuzzy set? Determine possible fuzzy sets on the universe of discourse for man weights.
7. What are the main steps of a genetic algorithm? Draw a flowchart that implements these steps. What are termination criteria used in genetic algorithms?
8. Explain what is meant by Natural Language Processing. Explain the role of each of the following in Natural Language Processing: morphology, syntax, semantics, pragmatics, and grammar.

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Total No. of Pages : 02

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MCA (Sem.-3)

ADVANCED COMPUTER NETWORKING

Subject Code : PGCA-1925

M.Code : 90798

Date of Examination : 31-01-22

Time : 2 Hrs.

Max. Marks : 70

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE question(s), each question carries 14 marks.

1. a) Briefly discuss protocols associated with layers of TCP/IP protocol suite.
b) Discuss the benefits of using ATM technology.
2. a) What is packet switching? Explain X.25 equipments.
b) Write a short note on SNMP (Standard Network Management Protocol).
3. Explain various topologies and transmission media for backbone N/W.
4. Compare IPV4 and IPV6 with their header formats. Giving the details of class based addressing scheme of IPV4 and IPV6.
5. Explain CSMA-CA/CD. In CSMA/CA and CSMA/CD, why the Communication mode for these two access methods are classified as Broadcast based?
6. What is dynamic routing? Create WAN (wide area network) using three routers and assign appropriate IP addresses to each router port. Also show the router configuration command for setting up of any one dynamic routing protocol.
7. Explain the WWW in detail :
 - a) Hypertext & Hypermedia
 - b) Browser Architecture
 - c) Categories of Web Documents
 - d) HTML
 - e) CGI Java.
8. Explain evolution, examples of wireless communication systems, 2G Cellular networks, evolution for 2.5G TDMA Standards, IS-95B for 2_5c CDMA.

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Dec. 2020

Roll No.

Total No. of Pages : 02

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MCA (E-I) (2015 to 2018) (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) What is assembler? Explain working of single and two pass assembler.
- 2) What are Macro-processors? Give its features and data structure used in it.

SECTION-B

- 3) Explain absolute and bootstrap loader. Explain features of word processor.
- 4) Explain in detail the structure of text editor?

SECTION-C

- 5) What is the need of code optimization? What are the different techniques of code optimization? Explain with suitable example.
- 6) Discuss top-down parsing scheme with help of example. What is the role of lexical and syntax analysis?

SECTION-D

- 7) What are distributed Operating Systems? Explain its characteristics. How they are different from network and mobile OS?
- 8) What is Process Management? Explain all types of schedulers.

SECTION-E

Write briefly :

- 9) JIT Compilers.
- 10) Define RISC.
- 11) Language processor.
- 12) Bootstrap Loader.
- 13) Relocation.
- 14) Overlays.
- 15) Define NDFA.
- 16) Platform Independent.
- 17) Define YACC.
- 18) Define USB.

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Dec-2020

Roll No.

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Total No. of Pages : 02

Total No. of Questions : 18

MCA (E-I) (2015 to 2018) (Sem.-3)
EMBEDDED SYSTEM
Subject Code : MCA-305C
M.Code : 74079

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 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. Discuss the overall design process of embedded system.
2. a) Briefly discuss the various challenges associated with the design of embedded systems.
b) Give overview of development and testing tools.

SECTION-B

3. Discuss the PIN diagram of 8-bit 40 Pin PIC micro-controller 16F877A.
4. a) What is a timer? How does a counter performs Timer function and time-capture functions?
b) Briefly discuss various addressing modes.

SECTION-C

5. a) Discuss the instruction set used in PIC16F877A.
b) Discuss different types of interrupts.
6. Write short notes on the following :
a) Memory-Mapped I/O
b) Assembler directives

SECTION-D

7. Explain the use of embedded systems in networking and telecom applications.
8. Write short notes on the use of embedded systems in following :
 - a) Digital signal processing applications
 - b) Multimedia applications.

SECTION-E

Write briefly :

9. What is the difference between requirements and specifications?
10. Name any two embedded system development environments.
11. What is the difference between microcontroller and microprocessor?
12. What is the difference between timer and counter?
13. What is the use of time comparator?
14. What do you mean by A/D convertor?
15. Name the components of embedded system hardware.
16. What do you mean by release time and response time of real time tasks?
17. Why embedded system is called as real-time system?
18. What do you mean by serial port?

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Total No. of Pages : 02

Total No. of Questions : 18

MCA (2015 to 2018) (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) a) Describe client-server model.
b) Discuss the activities of database environment management.
- 2) What is database package? Compare various database packages with market.

SECTION-B

- 3) What is database replication? What are the problems faced during this? Explain in detail.
- 4) a) Write notes on :
 - a. Data Compression
 - b. Business Policy Implementation
- b) Write a note on Data Compression and Business Policy Implementation

SECTION-C

- 5) What is RAID technology? How it is implemented? Explain its levels in detail.
- 6) Explain all steps how to create, modify and delete user roles. Also discuss roles of user.

SECTION-D

- 7) What is an Index? How it helps in improving database performance? Explain with example.
- 8) What is performance tuning in databases? Discuss its methodology.

SECTION-E

Write briefly :

- 9) Log Switch
- 10) RAID
- 11) Instance Vs. Schema
- 12) Stored Procedures
- 13) Tablespace
- 14) Partial Backup
- 15
 - a) Auditing
 - b) On-line redo log
- 16) Data Encryption
- 17) Sub Query
- 18) Nested Function

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Roll No.

Total No. of Pages : 02

Total No. of Questions : 18

MCA (E-I) (2015 to 2018) (Sem.-3)
THEORY OF COMPUTATION
 Subject Code : MCA-305B
 M.Code : 74078

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 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

- Q1 a) Discuss one-one onto function by taking suitable example.
- b) Prove that $\sum (n-1) = \frac{n(n-1)}{2}$ using mathematical induction.
- Q2 Design an automaton accepting all the strings ending with bb. Where $\{a, b\} \in \Sigma$.

SECTION-B

- Q3 a) Construct a DFA for the regular expression $(0+10)^* 101(0+10)^*$.
- b) Design a DFA accepting language $L = \{a^n b b \mid n \geq 1 \& \{a, b\} \in \Sigma\}$
- Q4 Construct a CFG for $L = \{a^n b^m c^p \mid n + m = p, p > 1 \& \{a, b, c\} \in \Sigma\}$

SECTION-C

- Q5 Explain the following :
- a) Ambiguity in CFG
 - b) DPDA
- Q6 Show that language $L = \{a^n b^n c^n \mid n \geq 0 \& \{a, b, c\} \in \Sigma\}$ is not context free

SECTION-D

- Q7 Design a Turing Machine which recognizes palindromes over $\{0,1\}$.
- Q8 Explain the following :
- Multitape Turing Machine
 - Chomsky Hierarchy

SECTION-E

Write briefly :

- Q9 State pumping lemma for regular languages.
- Q10 Discuss the concept given by Arden's theorem.
- Q11 What is meant by regular expression?
- Q12 Define a Derivation Tree for a CFG.
- Q13 What are two normal forms for a CFG?
- Q14 Define Acceptance of PDA by Empty Stack.
- Q15 What is halting problem of Turing Machine?
- Q16 Compare PDA and TM.
- Q17 Write two properties of recursively enumerable languages.
- Q18 Define NP complete problem.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

Dec-2020

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Total No. of Pages : 02

Total No. of Questions : 18

MCA (2015 to 2018) (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

- 1) Discuss some computer security threats and how they can be prevented?
- 2) What is message authentication in cryptography? How hash functions are used in message authentication?

SECTION-B

- 3) Discuss advantages and disadvantages of token based authentication system?
- 4) Explain the need for database security? What are database access controls in dbms?

SECTION-C

- 5) What are the type of malicious software? How they harm the network system?
- 6) What are software related security issues? Write the steps to handle security issues?

SECTION-D

- 7) Explain the common criteria for Information technology security evaluation?
- 8) What is security risk assessment and how it works?

SECTION-E

- 9) Discuss the importance of digital signatures?
- 10) Write in short about Iris Biometric system?
- 11) Define relational databases?
- 12) What is social engineering attack?
- 13) Give example of flooding attack?
- 14) What is safe programming coding?
- 15) Discuss Keylogger system?
- 16) Write a short note on windows security?
- 17) What are trusted systems?
- 18) What are worms in Information Security?

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Dec. 2020

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Total No. of Pages : 02

Total No. of Questions : 18

MCA (2015 to 2018) (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 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) What is meaning of access control of variables and functions in java? Explain the different access control mechanisms in java with the help of a suitable program.
- 2) Why is the need of JVM in execution of any java program? Discuss the structure of any Java program.

SECTION-B

- 3) What are packages? How packages are created and accessed in java and also briefly discuss the naming conventions used in packages?
- 4) What are different types of exceptions in java? Explain the exception handling mechanism in particular to handling multiple exceptions with the help of a suitable program.

SECTION-C

- 5) Define applet. How applet is different from application? Write a java program to create an applet which will have a line, an Oval & a Rectangle using different graphics class functions.
- 6) What is JDBC? Write a pseudo code program in java for connecting front end application with the backend database.

SECTION-D

- 7) What are java sockets? Discuss the different methods of creating connection and connectionless sockets in java with the help of suitable program.
- 8) What are servlets? Discuss Servlet life cycle along with compilation and deployment of servlet with the help of a simple program.

SECTION-E

- 9) What are advantages of Java programming over C++?
- 10) What is byte code?
- 11) Give one example of type casting in java.
- 12) Define Runnable Interface.
- 13) What are characteristics of static members in java?
- 14) Define Generic Servlet.
- 15) Why do we use JSP?
- 16) Which function is used for rotation transformation in JAVA?
- 17) Define Event Handling.
- 18) Which tag in HTML is used to pass the parameters in applet?

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Total No. of Pages : 02

Total No. of Questions : 18

MCA (2015 to 2018) (Sem.-3)
SOFTWARE ENGINEERING & PROJECT MANAGEMENT
Subject Code : MCA-303
M.Code : 74075

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 software engineering? Discuss the evolution of software engineering?
- 2) Discuss the importance of Software quality? How software quality can be measured?

SECTION-B

- 3) Explain the following :
 - a) Use of CASE Tools
 - b) Change control process
- 4) What is SRS? What are the characteristics of good SRS Document? Explain

SECTION-C

- 5) What are the different type of Metrics? Explain their role in software project planning?
- 6) Discuss the role of Abstraction refinement and Modularity in software. Also discuss the heuristics for effective Modularity?

SECTION-D

- 7) What is the use of PERT chart in project scheduling? Explain.
- 8) Compare and contrast the following :
 - a) Verification and validation
 - b) White box and black box testing

SECTION-E

- 9) What are the merits and demerits of PERT Chart?
- 10) What is the need of data design?
- 11) What is the role of feasibility study in software engineering?
- 12) Write a note on web engineering?
- 13) What is functional cohesion?
- 14) What is methodology?
- 15) What is the significance of spiral model?
- 16) List various features of software project planning?
- 17) Write any two features of object oriented design ?
- 18) What are the limitations of waterfall Model?

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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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Nov./Dec. = 2019
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 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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Nov./Dec. = 2019
Semester = 3rd

Roll No.

Total No. of Questions : 09

Total No. of Pages : 02

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 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.
- 2) 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-stealth.
- 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.

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 = 2019
Semester = 3rd

Roll No.

Total No. of Questions : 09

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.

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 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.
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 the 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-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?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on a page of Answer Sheet will lead to UMC against the Student.

May - June = 2019
Sem - 3rd

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

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

Max. Marks : 60

Time : 3 Hrs.

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

SECTION-B

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

SECTION-C

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

SECTION-D

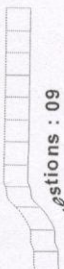
7. What do you mean by Performance Optimization of a database? How can maximum performance be achieved? Explain with the help of examples.
8. Describe the process of Database Mirroring. When and why is it needed?

SECTION-E

9. 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.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

2019 = May - June
3rd - Sem.



Roll No. _____

Total No. of Pages : 02

Total No. of Questions : 09

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

Max. Marks : 60

Time : 3 Hrs.

TO CANDIDATES :

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

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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.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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May-June-2018
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 :

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.
3. 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?

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

May - June = 2019
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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May - June = 2019
Sem - 3rd

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 :

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. 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

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

SECTION-C

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

SECTION-D

7. 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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