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MCA-T 206-2

MCA (II Semester) Examination, 2023

CLOUD COMPUTING

Time Allowed : Three hours

Maximum Marks : 80

Part-A

[Marks : 20]

Note: Answer **all** questions (50 words each). All questions carry **equal** marks

Part-B

[Marks : 40]

Note: Answer **five** questions (250 words each), selecting **one** from each Unit. All questions carry **equal** marks.

Part-C

[Marks : 20]

Note: Answer **any two** questions (300 words each). All questions carry **equal** marks.

Part-A

1. (i) Define virtualization. Discuss in brief different type of virtualization.
- (ii) List major cloud vendors and discuss in brief their prominent offerings.
- (iii) How Social network mining is achieved in cloud environment. Explain with example.

(iv) Discuss about S3 services in detail.

(v) What is basic difference in elastic load balancing vs Auto Scaling.

(vi) What is basic difference in federated cloud vs intercloud?

(vii) What is iSCSI protocol used?

(viii) List and elaborate any five big data processing techniques.

(ix) What is checkpointing?

(x) What is SLO?

Part-B

Unit-I

2. How storage virtualization is achieved in practice?
3. How bare metal hypervisor is different from hosted hypervisor?

Unit-II

4. Differentiate between Macie and Sage Make Service.
5. Draw a detailed comparative among the prominent cloud service providers with special focus on feature like established, availability zones, pricing, compute power, storage facility and some key tools.

Unit-III

6. How BC and DR is achieved by organizations leveraging cloud environment?

7. What are risks in migration to cloud?

Unit-IV

8. What is SLA? Why it is necessary to Cloud Service Provider?

9. Which is better protocol among FC and FCoE? Justify your answer.

Unit-V

10. Give soem metrics used in measuring reliability and performance of cloud system.

11. Discuss issues in formation of consensus.

Part-C

12. Draw and discuss cloud computing architecture in detail.

13. Discuss in detail and draw a comparative among Macie and Sage Maker Service.

14. How server consolidation achieves green cloud design objectives?
15. What is HIVE? Draw its architecture and discuss all components.
16. Discuss in detail about BA with respect to Agreements and consensus.

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MCA-T203

MCA (II Sem.) Examination, 2023

SOFTWARE ENGINEERING

Time Allowed : Three Hours

Maximum Marks : 80

Part-A

[Marks : 20]

Note: Answer all questions (50 words each). All questions carry equal marks.

Part-B

[Marks : 40]

Note: Answer any five questions (250 words each), selecting one from each unit. All questions carry equal marks.

Part-C

[Marks : 20]

Note: Answer any two questions (300 words each). All questions carry equal marks.

Part-A

1. (i) Define Software Engineering.
- (ii) Define prototyping.
- (iii) Define metrics and indicators.
- (iv) Why is Software metrics important?

- (v) Define quality control.
- (vi) Define baselines in SCM.
- (vii) Define control hierarchy.
- (viii) Define information hiding.
- (ix) Define testing.
- (x) Define restructuring.

Part-B

Unit-I

- 2. Differentiate between Software engineering and knowledge engineering.
- 3. What are the 4P's of project management spectrum?

Unit-II

- 4. Explain COCOMO model.
- 5. What is the main objective of Software Project Planning?

Unit-III

- 6. What is Software quality assurance in software testing?
- 7. Explain Software Requirement Specification.

Unit-IV

- 8. What are the design concepts and design principles?
- 9. Explain Structural Partitioning.

Unit-V

- 10. Explain Regression testing.
- 11. Explain a taxonomy of Case tools.

Part-C

- 12. Explain :
 - (a) Waterfall Model
 - (b) Spiral Model
- 13. Explain risk Mitigation, Monitoring and Management.
- 14. What are the five stages of the configuration management process?
- 15. How do you apply the principles of cohesion and coupling to improve your design quality?
- 16. Explain system testing.

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MCA-T204

M.C.A. (Semester-II) Examination, 2023

COMPUTER NETWORKS

Time Allowed : Three Hours

Maximum Marks : 80

PART-A

[Marks : 20]

Note: Answer **all** questions (50 words each). All questions carry equal marks.

PART-B

[Marks : 40]

Note: Answer **five** questions (250 words each), selecting one from each unit. All questions carry **equal** marks.

PART-C

[Marks : 20]

Note: Answer **any two** questions (300 words each). All questions carry **equal** marks.

PART-A

1. (i) Define Packet.
- (ii) Define Circuit.

- (iii) Define Bandwidth.
- (iv) Define Frequency.
- (v) What do you mean by Noisy Channel?
- (vi) Define Frame.
- (vii) What is Internet working?
- (viii) What is Address Mapping?
- (ix) Define Congestion.
- (x) Define Firewall.

PART-B

UNIT-I

- 2. Discuss various issues of Layer designing.
- 3. Differentiate Packet Switching and Circuit Switching.

UNIT-II

- 4. Differentiate Wired and Wireless Transmission.
- 5. Write short note on Satellite Communication.

UNIT-III

- 6. Differentiate Asynchronous and Synchronous transmission.

- 7. Write short notes on the following :

- (a) CRC
- (b) Sliding Window

UNIT-IV

- 8. Write short notes on the following :

- (a) FDDI
- (b) ATM

- 9. Explain CSMA/CD.

UNIT-V

- 10. Write short notes on the following :

- (a) FTP
- (b) SNMP

- 11. Explain TCP Protocols.

PART-C

- 12. Explain in detail the concept of Reference model.
- 13. Compare Twisted pair, Coaxial cable and Fibre optic.
- 14. Explain Distance Vector Routing with suitable example.

15. Explain the following :

(a) HDLC

(b) Stop and Wait ARQ

16. Explain Congestion Control Algorithm.

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MCA-T 205

MCA (II Semester) Examination, 2023

COMPUTER ARCHITECTURE

Time Allowed : Three hours

Maximum Marks : 80

Part-A

[Marks : 20]

Note: Answer **all** questions (**50** words each). All questions carry **equal** marks

Part-B

[Marks : 40]

Note: Answer **five** questions (**250** words each), selecting **one** from each Unit. All questions carry **equal** marks.

Part-C

[Marks : 20]

Note: Answer **any two** questions (**300** words each). All questions carry **equal** marks.

Part-A

1. Answer the following :

(i) Define a Computer.

(ii) How is data represented in computers?

(iii) What is the difference between the sequential and combinational ALUs.

Unit-III

(iv) Explain the integer representation.

(v) What do you understand by control design?

(vi) What are the functions of CU?

(vii) What do you understand by serial access memory?

(viii) What are the advantages and limitations of ROM?

(ix) What is the difference in the working of a monitor and a touch screen?

(x) Characterize multiprocessor systems.

Part-B

Unit-I

2. Explain the types of instructions.

3. What are the basic components of the CPU of a computer system? Describe the roles of each of the components in the functioning of computer system.

Unit-II

4. Explain with example the overflow rule of the addition of numbers.

5. Explain the basic concept of pipelining.

6. Write a detailed note on Super-scalar processing.

7. With the help of a block diagram depict the micro programmed control unit of a basic computer.

Unit-IV

8. Explain the working of hard disk with the help of a diagram.

9. Explain the working of read-write memory.

Unit-V

10. Describe the I/O module structure.

11. Explain the three I/O techniques.

Part-C

12. Compare RISC and CISC architecture. Describe pipelining in CPU Design.

13. Describe floating point representation and operations with suitable examples.

14. Describe microprogrammed control and compare it with pipeline control.

15. Depict the memory Hierarchy. Compare associative mapping with direct mapping.
16. What are the mechanisms to handle I/O operation? Explain in detail.

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MCA-T202

MCA (II Semester) Examination, 2023

JAVA PROGRAMMING

Time Allowed : Three Hours

Maximum Marks : 80

Part-A

[Marks : 20]

Note: Answer all questions (50 words each). All questions carry equal marks.

Part-B

[Marks : 40]

Note: Answer any five questions (250 words each), selecting one from each unit. All questions carry equal marks.

Part-C

[Marks : 20]

Note: Answer any two questions (300 words each). All questions carry equal marks.

Part-A

1. (i) What do you mean by Abstraction?
- (ii) What is the use of Constructor?
- (iii) Define Abstract Class.
- (iv) Define Interface.
- (v) What do you mean by Result Set?
- (vi) Define Connection Class.
- (vii) Define Servlet.
- (viii) What is APJ?
- (ix) Give two features of JSP.
- (x) Define Cookies.

Part-B

Unit-I

2. Differentiate Constructor and Destructor.
3. Explain Polymorphism with examples.

Unit-II

4. Explain how multiple inheritance is possible in Java.
5. Explain Synchronization with suitable example.

Unit-III

6. Discuss 2 Tier and 3 Tier J2EE Architecture.
7. Explain various types of Statement Object.

Unit-IV

8. Discuss life cycle of Servlet.
9. Discuss features of Servlet.

Unit-V

10. Discuss features of MVC.
11. Explain JSD directives.

PART-C

12. Explain Inheritance with example.
13. Explain how packages are created and used.
14. Discuss features of JDBC.
15. Develop a Servlet that handles an HTTP Post request.
16. Explain JSP application Design with MVC.

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MCAT201

MCA (II Semester) Examination, 2023 DESIGN AND ANALYSIS OF ALGORITHM

Time Allowed : Three Hours

Maximum Marks : 80

Part-A

[Marks : 20]

Note: Answer all questions (50 words each). All questions carry equal marks.

Part-B

[Marks : 40]

Note: Answer any five questions (250 words each), selecting one question from each unit. All questions carry equal marks.

Part-C

[Marks : 20]

Note: Answer any two questions (300 words each). All questions carry equal marks.

Part-A

1. (i) What criteria are used to make the Algorithm work better?
- (ii) Write names of different order notations used in analyzing an algorithm?

- (iii) List out the advantages and disadvantages of divide and conquer approach.
- (iv) Write recurrence relation for all cases of Quick sort.
- (v) Write the difference between backtracking and branch and bound.
- (vi) What exactly is Dynamic Programming?
- (vii) Write all the operations that can be performed over sets.
- (viii) Discuss UNION operations?
- (ix) What are finite automata?
- (x) Define problem classes P and NP?

Part-B

Unit-I

- 2. What do you understand by prior analysis? Discuss in brief about Big Oh and Omega notations?
- 3. Write an algorithm for binary search and find its worst case time complexity.

Unit-II

- 4. Define minimum cost spanning tree. Write Prim's algorithm to find minimum cost spanning tree.

- 5. Write the control abstraction for divide and conquer technique.

Unit-III

- 6. Define state space of the problem with suitable example.
- 7. Write the principle of optimality. Also explain why dynamic programming is preferred over divide and conquer.

Unit-IV

- 8. Find the time complexity for the Strassen's matrix multiplication.
- 9. Write UNION FIND algorithm.

Unit-V

- 10. Differentiate decision problem and optimization problem.
- 11. Give differences between NFA and DFA.

Part-C

- 12. Write an algorithm to find maximum element from the given array and do analysis of it.
- 13. Solve the following instance of greedy knapsack problem where $n = 4$, $m=12$, $P=(40, 42, 25, 12)$ and $W = (4,7,5,3)$.

14. Solve the given instance of sum of subset problem $S = \{3, 5, 6, 7\}$ and $C=15$. Also construct state space tree for them.
15. Apply Strassen's matrix multiplication method to multiply the given two matrices : $A = \begin{pmatrix} 4 & 2 \\ 3 & 1 \end{pmatrix}$ and $B = \begin{pmatrix} 1 & 0 \\ 2 & 1 \end{pmatrix}$ Also discuss how this method is better than traditional matrix multiplication method.
16. Draw NFA and DFA for the following :
- (a) $abba^*a$
- (b) $(a/b)^+aab^*$

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