

Uttar Pradesh Rajarshi Tandon Open University

School of Computer and information Science, Assignment Session 2022-23

Course Code: MCA-113	Course Title : Web Technology	Maximum Marks : 30
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Section ‘A’

Long answer questions

Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. What is HTML file and ASP file? List the advantages and limitation of HTML. State the benefits and drawback of ASP.
2. What is IIS? Explain different features of IIS.
3. Why HTTP is called state less protocol? Enlist various methods for state management and also give advantages and disadvantages of each method

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Explain Architecture of WWW in detail.
5. Write short note on the “Fundamental ASP Objects”.
6. What is JavaScript? How to develop JavaScript? Explain with example
7. State the difference between JavaScript and Java.
8. Explain AJAX briefly
9. What is client side scripting? Explain with suitable example

Course Code: MCA-114	Course Title : Operating system	Maximum Marks : 30
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Section 'A'

Long answer questions

Maximum

marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Define Operating Systems and discuss its role from different perspectives. List out different services of Operating Systems and explain each service
2. What is a process? Draw and explain process state diagram
3. What is paging and swapping? Explain the paging hardware?

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. What is demand paging? Explain
5. What are protection goals and principles
6. What do you mean by address binding? Explain with the necessary steps, the binding of instructions and data to memory addresses
7. Explain the resource allocation graph
8. Explain the methods for deadlock prevention
9. What are threads

Course Code: MCA-115	Course Title : JAVA PROGRAMMING	Maximum Marks : 30
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Section 'A'

Long answer questions

Maximum

marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. What is JDBC ? Explain how JDBC connectivity is established ? Give an example of preparing and executing SQL statements using JDBC.
2. What is Java beans ? Explain its features. Also, illustrate the difference between a Java bean and an instance of a normal Java class.
3. What is Inheritance ? Explain its advantages. Also explain with example how a subclass is derived from a super class in Java.

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. What is the use of class path ? How it helps in the execution of a java program ?
5. What is File class ? Explain its use with an example program
6. Explain advantage of exception
7. Explain two uses of "final" keyword with the help of example
8. Discuss servlet life cycle.
9. What is multithreading ? Explain how does it help Java in its performance ?

Course Code: MCA-116	Course Title : Multimedia Technology	Maximum Marks : 30
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Section 'A'

Long answer questions

Maximum

marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. What is multimedia? Explain the applications of multimedia in business. Explain the five elements of Multimedia Systems.
2. What is digital video? Explain the use of digital video in developing multimedia applications.
3. Explain about the three Video Signal Formats. Write a short note on MIDI function.

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. What is Hypertext and Hypermedia
5. What is Sound? Explain the characteristics of Sound.
6. What is Sound Card? Explain the basic components of sound card.
7. Explain various types of DVD
8. What do you mean by Animation?
9. Explain properties of Magnetic Storage Devices.

Course Code: MCA-117	Course Title : Microprocessor and its Application	Maximum Marks : 30
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Section ‘A’

Long answer questions

Maximum

marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Explain different parts of microprocessor in detail
2. Explain the timing of the instruction cycle of 8085 microprocessor, Discuss with example the iterative branching instructions of 8085?
3. What are the various flags available in 8085 microprocessor? What are general purpose registers? Name the various general purpose registers. Explain the pin diagram of 8085 microprocessor

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. How do you classify the memory in a computer system.
5. What is ROM? Explain its various types.
6. What are the rules for adding two binary numbers? Illustrate with an example.
7. Explain the timing of the instruction cycle of 8085 microprocessor,
8. Define machine language?
9. Define timing diagram.

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School of Science, Assignment Session 2022-23

Course Code: MCA-119	Course Title : Database Management System	Maximum Marks : 30
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Section 'A'

Long answer questions

Maximum

marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Draw and explain the detailed system architecture of DBMS. What are the advantages of DBMS?
2. Explain in detail about various key constraints used in database system. Explain the importance of Null values in Relational Model
3. Discuss the ACID properties of a database transaction with appropriate examples. Draw transaction state diagram and describe each state that a transaction goes through during its execution.

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. What is DBA? Mention the functionalities of DBA
5. How are views created and dropped? Explain, how the views are implemented and updated
6. Discuss 3-tier architecture with necessary diagram and suggest an example application
7. Explain in detail about internal hashing Techniques.
8. Discuss in detail about cluster and Multilevel indexes.
9. State BCNF. How does it differ from 3NF?

Course Code: MCA-120	Course Title : Theory of Computation	Maximum Marks : 30
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Section 'A'

Long answer questions

Maximum

marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Define regular language and regular expressions. Find regular expression for the Language of all string that do not end with 01.
2. Find context free grammar generating following language $\{a^i b^j c^k \mid i = j \text{ or } i = k\}$ 2. Show that CFG $S \rightarrow a|Sa|bSS|SSb|SbS$ is ambiguous
3. Write short notes on the following:
 - a. The Primitive Recursive Functions.
 - b. The Sets P, NP, P Space and NP Space

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Write TM to accepting Palindrome
5. Discuss about Top Down Parsing And Bottom Up Parsing
6. Differentiate the NP Hard and NP Complete Problems
7. What is Halting Problem. ?
8. Discuss about Chomsky Normal Form(CNF).
9. Define Pumping Lemma for Regular Languages

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School of Science, Assignment Session 2022-23

Course Code: MCA-121	Course Title : System Analysis and Design	Maximum Marks : 30
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Section 'A'

Long answer questions

Maximum

marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Draw a Data Flow Diagram (DFD) **till** second level depicting various processes, data flow and data repositories for a "Library Management System". Follow the conventions.
2. Define a Structure Chart. Draw a Structure Chart for a Payroll Processing System. Also, explain the symbols used in the chart.
3. Define modularity. Describe the ways and means to achieve modularity. Explain with the help of an example.

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Write the importance of quality in software development.
5. Define CASE tools. Explain their role
6. With the help of an example, explain a sequence diagram

Write short notes on the following :

7. Participatory Design
8. Test Design Document
9. Coupling

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School of Science, Assignment Session 2022-23

Course Code: MCA-122	Course Title : Python Programming	Maximum Marks : 30
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Section 'A'

Long answer questions

Maximum

marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Explain the different string formats available in Python with examples. Discuss the int(), float(), str(), chr() and complex() type conversion functions with examples.
2. Write Python program to sort words in a sentence in decreasing order of their length. Display the sorted words along with their length
3. Discuss the following methods associated with the file object
 - a) read()
 - b) readline()
 - c) readlines()
 - d) tell()
 - e) seek()
 - f) write()

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Describe the different access modes of the files with an example
5. Write Python program to calculate the Arc Length of an Angle by assigning values to the radius and angle data attributes of the class Arc Length.
6. Write Python Program to simulate a Bank Account with support for deposit Money, withdraw Money and show Balance Operations.
7. Discuss inheritance in Python programming language.
8. Write a Python program to demonstrate the use of super() function.
9. **Write a** Program to demonstrate the Overriding of the Base Class method in the Derived Class.

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School of Science, Assignment Session 2022-23

Course Code: MCA-123	Course Title : Client Server Technology	Maximum Marks : 30
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Section ‘A’

Long answer questions

Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. What is HTML file and ASP file? List the advantages and limitation of HTML. State the benefits and drawback of ASP.
2. What is IIS? Explain different features of IIS.
3. Why HTTP is called state less protocol? Enlist various methods for state management and also give advantages and disadvantages of each method

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Word

4. Explain Architecture of WWW in detail.
5. Write short note on the “Fundamental ASP Objects”.
6. What is JavaScript? How to develop JavaScript? Explain with example
7. State the difference between JavaScript and Java.
8. Explain AJAX briefly
9. What is client side scripting? Explain with suitable example

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2022-23

Course Code: MCA-125	Course Title : Design and Analysis of Algorithm	Maximum Marks : 30
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Section 'A'

Long answer questions

Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. What is meant by Divide – and – Conquer approach? Write Divide – And – Conquer recursive Merge sort algorithm and derive the time complexity of this algorithm. Write the General method of Divide – And – Conquer approach.
2. What is a Hamiltonian Cycle? Explain how to find Hamiltonian path and cycle using backtracking algorithm
3. Explain the properties of an algorithm with an example. Give the algorithm for matrix multiplication and find the time complexity of the algorithm using step – count method. Differentiate between Bigoh and omega notation with example

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. State the Greedy Knapsack Problem.
5. Distinguish between Prim's and Kruskal's Spanning tree algorithm
6. Draw all possible binary search trees for the identifier set (do, if, stop).
7. Define Chromatic number & Give the state space tree for 4 – coloring problem.
8. Distinguish between Dynamic Programming and Greedy method.
9. What is a Backtracking and give the 4 – Queens's solution.

Uttar Pradesh Rajarshi Tandon Open University

School of Science, Assignment Session 2022-23

Course Code: MCA-126	Course Title : Computer Graphics	Maximum Marks : 30
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Section 'A'

Long answer questions

Maximum

marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Explain the following transformation with the matrix representations. Give suitable diagram for illustration.
Translation
Scaling.
Rotation.
2. Define the following.
Window
Viewing transformation
Point clipping
3. Write a short note on working of raster scan display system and random scan display system

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Explain working of Video controller.
5. Explain Shadow mask and beam penetration method.
6. Explain flat-panel display in detail.
7. Explain DDA line drawing algorithm with its drawbacks. .
8. Explain midpoint Circle algorithm.
9. Explain midpoint ellipse algorithm.

Course Code: MCA-127	Course Title : Soft Computing	Maximum Marks : 30
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Section 'A'

Long answer questions

Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. Outline the differences between hard computing and soft computing . Draw and explain artificial neural network architecture.
2. Define Fuzzy logic with example. Write comparison between fuzzy logic and crisp logic. Compare classical and fuzzy sets.
3. What is the role of fitness function in genetic algorithm. Explain the genetic operators and fitness functions in respect of evolutionary computing.

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Draw and explain Mathematical Models of Neurons.
5. Define and explain concept of Fuzzy subsets and membership Function.
6. Describe limitations of fuzzy systems.
7. What are the Problem Characteristics of Artificial Intelligence?
8. Describe briefly the applications of AI.
9. Differentiate the DFS and BFS with merits and demerits

Course Code: MCA-128	Course Title : Unix and Shell Programming	Maximum Marks : 30
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Section 'A'

Long answer questions

Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

- 1) Explain the architecture of UNIX operating system with a neat diagram.
- 2) Explain internal and external commands with example.
- 3) What are the different modes of vt editor ? Explain with a diagram

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

- 4) Explain the three standard files with respect to UNIX operating system.
- 5) Explain the mechanism of process creation using system calls in UNIX
- 6) Explain grep command with all options.
- 7) Briefly explain the different ways of addressing used in sed with example.
- 8) What is AWK? Explain any three built-in functions in AWK.
- 9) Explain with an example 'while' and 'for' loop in shell programming

Course Code: MCA-EA	Course Title : Information and Network Security	Maximum Marks : 30
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Section 'A'

Long answer questions

Maximum

marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. What is cryptanalysis? What is encryption and decryption? Draw block diagram that shows encryption and decryption.
2. Explain one time pad and why it is secure? Describe two types of cryptographic algorithms.
3. What is the difference between authentication, integrity, confidentiality and nonrepudiation? What are the issues in information security and network security? How they can be solved?

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Explain the types of attacks.
5. Describe various security approaches.
6. What is digital certification? How it can be achieved?
7. What are the security aspects attached to Electronic money.
8. Explain the need and types of firewall.
9. What is virtual private network?

Course Code : MCA-EB	Course Title : Data Mining	Maximum Marks : 30
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Section 'A'

Long answer questions

Maximum

marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. What are the different characteristics of a Data Warehouse?
2. Explain Hierarchical Clustering methods.
3. Explain Classification Algorithms.

Section – B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words

4. Explain the role of Meta data in a data warehouse.
5. Define multidimensional and multilevel association mining.
6. What do you mean by Web mining.?
7. What is Supervised learning?
8. Define Snowflake Schema
9. Discuss K-Means Clustering.

