Roll No. : .....

Total No. of Pages : 3

MCA–T105

M.C.A. 1st Semester Examination, 2022

PYTHON PROGRAMMING

Time Allowed : 1½ Hours

Maximum Marks : 80

Part–A **[Marks : 30]**

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

Part–B **[Marks : 50]**

Note :– Answer any *two* questions (**250** words each). All questions carry equal marks.

Part–A

1. (i) Discuss built-in data types in Python ?

   (ii) What are lists and tuples ? State any two differences between Tuple and List.

(iii) What do you mean by Verbose ?

(iv) What are generators in Python ?

(v) What is string in Python in simple words ? Are all Python strings Unicode ? Justify the answer.

(vi) What is iterator in Python ? Give examples.

(vii) What do you mean by Closures ? Explain.

(viii) What is meant by instance variable ? How do you call an instance variable in Python ?

(ix) What is a stream object in Python ?

(x) What is the purpose of refactoring ? How do you use refactor in Python ?

Part–B

2. What are the common built-in data types in Python ? Discuss all of them.

3. Write a Python program to sum all the items in a list.

4. Lists are heterogeneous in python. Support the statement with a suitable example.

5. Write a python program to find best of two test average marks out of *three* test marks accepted.

6. What are classes and objects ? Explain encapsulation, polymorphism and inheritance in object oriented programming. How do you create a class in Python ?

7. Write a Python program to find the sum of digits in a given number using while loop.

8. Write a python program to append a list to the second list.

9. Explain the following string methods with example :

   (a) Split

   (b) Strip

   (c) Count

   (d) Upper

   (e) Lower

Roll No. : .....

Total No. of Pages : 3

MCA–T102

M.C.A. (1st Semester) Examination, 2021–22

OPERATING SYSTEM

Time Allowed : 1½ Hours

Maximum Marks : 80

Part–A **[Marks : 30]**

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

Part–B **[Marks : 50]**

Note :– Answer any *two* questions (**250** words each). All questions carry equal marks.

Part–A

1. (i) Write the functions of Operating System.

   (ii) Define Real-time Operating System.

   (iii) What is Cooperating process ?

(iv) Explain the Client-Server Systems.

(v) What is CPU Scheduling ?

(vi) What is Semaphore ?

(vii) What is Deadlock ?

(viii) What is Swapping ?

(ix) Explain the Virtual Memory.

(x) What is File System Structure ?

Part–B

2. Explain the Distributed Systems.

3. Explain the Operating System Structure.

4. Explain the Operations on processes.

5. Explain the Operating System Services.

6. Explain the CPU Scheduling.

7. Describe the Deadlock Characterization.

8. Discuss the Contiguous Memory Allocation.

Discuss the Demand Paging.

Explain the File System Access Methods.

Discuss the Directory Implementation.

Roll No. : ..... Total No. of Pages : 2

MCA–B101

M.C.A. (Ist Semester) Examination, 2021-22

DATA STRUCTURE

Time Allowed : 1½ Hours

Maximum Marks : 80

Part–A **[Marks : 30]**

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

Part–B **[Marks : 50]**

Note :– Answer any *two* questions (**250** words each). All questions carry equal marks.

Part–A

1. (i) Define Data Abstraction.

   (ii) What is meant by an Algorithm ?

   (iii) Define Reclamation.

   (iv) What is Recursion ?

(v) Define the height of a Tree.

(vi) Define threaded Tree.

(vii) What is meant by Graph ?

(viii) Define Graph Traversals.

(ix) Differentiate Stack and Queue.

(x) Define Circular Lists. 3×10=

Part–B

2. Discuss the Singly and Doubly Linked List with examples.

3. Write short notes on the following :

(i) Basic time analysis of an algorithm

(ii) Row major and column major ordering address calculation

(iii) Pointers and their uses. 10+1(

4. Write short notes on the following :

(i) Dynamic Storage Management

(ii) Polish Expressions

(iii) Reclamation and Compaction-Boundary Tag Method 8+

Discuss the Queues, their manipulations and uses. 25

(a) Discuss the Tree Traversal Algorithms

(b) Discuss the conversion of General tree to Binary tree with examples. 15+10

Write short notes on the following :

(i) Threaded Tree and advantages

(ii) Decision Trees and Game Trees 10+15

Discuss the Graph Traversal Algorithms with examples. 25

Write short notes on the following :

(i) String Matching Algorithms

(ii) Applications of Graphs

(iii) Boyer-Moore Strategies 12+5+8

Roll No. : ..... Total No. of Pages : 3

MCA–T–104

M.C.A. (Ist Semester) Examination, 2021–22

MANAGEMENT INFORMATION SYSTEM AND E-COMMERCE

Time Allowed : 1½ Hours

Maximum Marks : 80

Part–A **[Marks : 30]**

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

Part–B **[Marks : 50]**

Note :– Answer any *two* questions (**250** words each). All questions carry equal marks.

Part–A

1. Answer the following questions :

   (i) What is Management Information System ?

(ii) What are types of Business Information Systems ?

(iii) What are different attributes of Information ?

(iv) What is decision support system and its components ?

(v) What is e-Commerce and how it works ?

(vi) What does B2B mean in business ?

(vii) What is Uniform Resource Locator ?

(viii) What is e-cash and how it works ?

(ix) What are the commercial uses of Internet ?

(x) What means Internet service provider ?

Part–B

2. Define role of MIS.

3. How information system supports business process ?

4. What is relationship between decision-making and management ?

on What is Simon model of decision-making ?

What is Internet ? Explain its evolution and development.

. What is advertising model in e-Commerce ?

. What are the *five* top search engines ?

. Explain various types of e-Banking.

Roll No. : ..... Total No. of Pages : 3

MCA–T103

M.C.A. (Ist Semester) Examination, 2021–22

DATABASE MANAGEMENT SYSTEM

Time Allowed : 1½ Hours

Maximum Marks : 80

Part–A **[Marks : 30]**

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

Part–B **[Marks : 50]**

Note :– Answer any *two* questions (**250** words each). All questions carry equal marks.

Part–A

1. (i) What is DBMS ?

   (ii) Discuss different views of Data.

   (iii) Differentiate between Specialization and Generalization.

(iv) Define Tuple and Domain.

(v) Define Cursor in SQL.

(vi) Define B –tree and B +tree.

(vii) Define Index in SQL.

(viii) What is meant by Concurrent Execution ?

(ix) Define Time Stamping Protocols.

(x) Define Shadow Paging. 3×10=3

Part–B

2. (a) Differentiate between Database Systems V/s File System.

(b) Discuss the mapping constraints and keys. 12+13

3. Write short notes on the following :

(i) Database System Structure

(ii) Data Models

(iii) Aggregation 5+15+5

4. Discuss the various Normalizations with examples. 25

5. (a) Discuss the characteristics, advantages and types of SQL Commands.

(b) Discuss the referential integrity and triggers in SQL. 18+7

(a) Discuss the Query Processing and Optimization.

(b) Explain Static and Dynamic Hashing. 13+12

7. Write short notes on the following :

(i) Comparison of ordered indexing and hashing.

(ii) Index, Sorting and Join Operations. 13+12

8. (a) Explain Concurrency Control and Locking Techniques for Concurrency Control.

(b) Discuss the Atomicity and Durability. 15+10

9. Write short notes on the following :

(i) Recovery System

(ii) Validation-based Protocols

(iii) RAID 10+10+5

Roll No. : ..... Total No. of Pages : 3

MCA–T101

M.C.A. (Ist Semester) Examination, 2021–22

PRINCIPLES OF PROGRAMMING LANGUAGES

Time Allowed : 1½ Hours

Maximum Marks : 80

Part–A **[Marks : 30]**

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

Part–B **[Marks : 50]**

Note :– Answer any *two* questions (**250** words each). All questions carry equal marks.

Part–A

1. (i) Give time and space complexity of bubble sort.

   (ii) Give time and space complexity of insertion sort.

(iii) Define Binding.

(iv) Define Scope Rules.

(v) Give use of extern storage class.

(vi) Give *two* applications of multi-dimensional array.

(vii) Where pointer to pointer concept is used ?

(viii) What is Heap Storage ?

(ix) Define Macro.

(x) Define ordered list.

Part–B

2. Compare linear search and binary search.

3. Write algorithm for insertion sort.

4. Discuss structured data types.

5. Give features of procedure oriented programming language.

6. Write a program to show use of recursion.

How are array passed to function ? Discuss.

Discuss the following :

(a) Pointer arithmetic

(b) Structure of pointers

9. Explain self-referential structure using suitable example.

Roll No. : ..... Total No. of Pages : 3

MCA–B101

M.C.A. (Ist Semester) Examination, 2021–22

DATA STRUCTURE

Time Allowed : 1½ Hours

Maximum Marks : 80

Part–A **[Marks : 30]**

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

Part–B **[Marks : 50]**

Note :– Answer any *two* questions (**250** words each). All questions carry equal marks.

Part–A

1. (i) Define Data Abstraction.

   (ii) What is meant by an Algorithm ?

   (iii) Define Reclamation.

   (iv) What is Recursion ?

(v) Define the height of a Tree.

(vi) Define threaded Tree.

(vii) What is meant by Graph ?

(viii) Define Graph Traversals.

(ix) Differentiate Stack and Queue.

(x) Define Circular Lists. 3×10=30

Part–B

2. Discuss the Singly and Doubly Linked List with examples. 25

3. Write short notes on the following :

(i) Basic time analysis of an algorithm

(ii) Row major and column major ordering address calculation

(iii) Pointers and their uses. 10+10+5

4. Write short notes on the following :

(i) Dynamic Storage Management

(ii) Polish Expressions

(iii) Reclamation and Compaction-Boundary Tag Method

8+8+9

5. Discuss the Queues, their manipulations and uses. 25

6. (a) Discuss the Tree Traversal Algorithms

   (b) Discuss the conversion of General tree to Binary tree with examples. 15+10

7. Write short notes on the following :

   (i) Threaded Tree and advantages

   (ii) Decision Trees and Game Trees 10+15

8. Discuss the Graph Traversal Algorithms with examples. 25

9. Write short notes on the following :

   (i) String Matching Algorithms

   (ii) Applications of Graphs

   (iii) Boyer-Moore Strategies 12+5+8

Roll No. : ..... Total No. of Pages : 3

MCA–T–104

M.C.A. (1st Semester) Examination, 2021–22

MANAGEMENT INFORMATION SYSTEM AND E-COMMERCE

Time Allowed : 1½ Hours

Maximum Marks : 80

Part–A **[Marks : 30]**

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

Part–B **[Marks : 50]**

Note :– Answer any *two* questions (**250** words each). All questions carry equal marks.

Part–A

1. Answer the following questions :

   (i) What is Management Information System ?

(ii) What are types of Business Information Systems ?

(iii) What are different attributes of Information ?

(iv) What is decision support system and its components ?

(v) What is e-Commerce and how it works ?

(vi) What does B2B mean in business ?

(vii) What is Uniform Resource Locator ?

(viii) What is e-cash and how it works ?

(ix) What are the commercial uses of Internet ?

(x) What means Internet service provider ?

Part–B

2. Define role of MIS.

3. How information system supports business process ?

4. What is relationship between decision-making and management ?

5. What is Simon model of decision-making ?

6. What is Internet ? Explain its evolution and development.

7. What is advertising model in e-Commerce ?

8. What are the *five* top search engines ?

9. Explain various types of e-Banking.

MCA–T103

M.C.A. (Ist Semester) Examination, 2021-22

DATABASE MANAGEMENT SYSTEM

Time Allowed : 1½ Hours

Maximum Marks : 80

Part–A **[Marks : 30]**

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

Part–B **[Marks : 50]**

Note :– Answer any *two* questions (**250** words each). All questions carry equal marks.

Part–A

1. (i) What is DBMS ?

   (ii) Discuss different views of Data.

   (iii) Differentiate between Specialization and Generalization.

(iv) Define Tuple and Domain.

(v) Define Cursor in SQL.

(vi) Define B –tree and B +tree.

(vii) Define Index in SQL.

(viii) What is meant by Concurrent Execution ?

(ix) Define Time Stamping Protocols.

(x) Define Shadow Paging. 3×10=30

Part–B

2. (a) Differentiate between Database Systems V/s File System. 8

(b) Discuss the mapping constraints and keys. 12+13

3. Write short notes on the following :

(i) Database System Structure

(ii) Data Models

(iii) Aggregation 5+15+5

4. Discuss the various Normalizations with examples. 25

5. (a) Discuss the characteristics, advantages and types of SQL Commands.

(b) Discuss the referential integrity and triggers in SQL. 18+7

6. (a) Discuss the Query Processing and Optimization.

(b) Explain Static and Dynamic Hashing. 13+12

7. Write short notes on the following :

(i) Comparison of ordered indexing and hashing.

(ii) Index, Sorting and Join Operations. 13+12

8. (a) Explain Concurrency Control and Locking Techniques for Concurrency Control.

(b) Discuss the Atomicity and Durability. 15+10

9. Write short notes on the following :

(i) Recovery System

(ii) Validation-based Protocols

(iii) RAID 10+10+5

MCA–T102

M.C.A. (Ist Semester) Examination, 2021–22

OPERATING SYSTEM

Time Allowed : 1½ Hours

Maximum Marks : 80

Part–A **[Marks : 30]**

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

Part–B **[Marks : 50]**

Note :– Answer any *two* questions (**250** words each). All questions carry equal marks.

Part–A

1. (i) Write the functions of Operating System.

   (ii) Define Real-time Operating System.

   (iii) What is Cooperating process ?

(iv) Explain the Client-Server Systems.

(v) What is CPU Scheduling ?

(vi) What is Semaphore ?

(vii) What is Deadlock ?

(viii) What is Swapping ?

(ix) Explain the Virtual Memory.

(x) What is File System Structure ?

Part–B

2. Explain the Distributed Systems.

3. Explain the Operating System Structure.

4. Explain the Operations on processes.

5. Explain the Operating System Services.

6. Explain the CPU Scheduling.

7. Describe the Deadlock Characterization.

8. Discuss the Contiguous Memory Allocation.

9. Discuss the Demand Paging.

10. Explain the File System Access Methods.

11. Discuss the Directory Implementation.

Roll No. : ..... Total No. of Pages : 3

MCA–T105

M.C.A. Ist Semester Examination, 2022

PYTHON PROGRAMMING

Time Allowed : 1½ Hours

Maximum Marks : 80

Part–A **[Marks : 30]**

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

Part–B **[Marks : 50]**

Note :– Answer any *two* questions (**250** words each). All questions carry equal marks.

Part–A

1. (i) Discuss built-in data types in Python ?

   (ii) What are lists and tuples ? State any two differences between Tuple and List.

(iii) What do you mean by Verbose ?

(iv) What are generators in Python ?

(v) What is string in Python in simple words ? Are all Python strings Unicode ? Justify the answer.

(vi) What is iterator in Python ? Give examples.

(vii) What do you mean by Closures ? Explain.

(viii) What is meant by instance variable ? How do you call an instance variable in Python ?

(ix) What is a stream object in Python ?

(x) What is the purpose of refactoring ? How do you use refactor in Python ?

Part–B

2. What are the common built-in data types in Python ? Discuss all of them.

3. Write a Python program to sum all the items in a list.

Lists are heterogeneous in python. Support the statement with a suitable example.

Write a python program to find best of two test average marks out of *three* test marks accepted.

6. What are classes and objects ? Explain encapsulation, polymorphism and inheritance in object oriented programming. How do you create a class in Python ?

7. Write a Python program to find the sum of digits in a given number using while loop.

8. Write a python program to append a list to the second list.

9. Explain the following string methods with example :

   (a) Split

   (b) Strip

   (c) Count

   (d) Upper

   (e) Lower

Roll No. : ..... Total No. of Pages : 3

MCA–T101

M.C.A. (Ist Semester) Examination, 2021–22

PRINCIPLES OF PROGRAMMING LANGUAGES

Time Allowed : 1½ Hours

Maximum Marks : 80

Part–A **[Marks : 30]**

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

Part–B **[Marks : 50]**

Note :– Answer any *two* questions (**250** words each). All questions carry equal marks.

Part–A

1. (i) Give time and space complexity of bubble sort.

   (ii) Give time and space complexity of insertion sort.

(iii) Define Binding.

(iv) Define Scope Rules.

(v) Give use of extern storage class.

(vi) Give *two* applications of multi-dimensional array.

(vii) Where pointer to pointer concept is used ?

(viii) What is Heap Storage ?

(ix) Define Macro.

(x) Define ordered list.

Part–B

2. Compare linear search and binary search.

3. Write algorithm for insertion sort.

4. Discuss structured data types.

5. Give features of procedure oriented programming language.

6. Write a program to show use of recursion.

How are array passed to function ? Discuss.

Discuss the following :

(a) Pointer arithmetic

(b) Structure of pointers

9. Explain self-referential structure using suitable example.