SEAT NO. : _____ NO. OF PAGES : 2

[1]

SARDAR PATEL UNIVERSITY

MASTER OF COMPUTER APPLICATIONS (MCA)

SEMESTER – I

PS01CMCA51 (PYTHON PROGRAMMING)

9TH JANUARY, 2023

Time : 10:00 a.m. to 1:00 p.m. **Marks : 70**

Note : Answers of all the questions (including multiple choice questions) should be written in the provided answer book only.

Q-1 Pick up the most appropriate answer from the given alternatives and write it in your answer book. **(8)**

(i) In Python, the _____ function is used to display a specified message on the screen.

[A] print() [B] display() [C] output() [D] run()

(ii) What will be the output of the following Python code?

```
>>> x = 5
>>> y = 4
>>> print(x % y)
```

[A] 4 [B] 5 [C] 1 [D] 1.25

(iii) What will be the value of **x** after the execution of the following statement?

```
x = '21' + '12'
```

[A] 33 [B] 21 [C] 2112 [D] 1221

(iv) What will be the output of the following Python code?

```
>>> v1 = [7, 8, 9, 10]
>>> type(v1)
```

[A] string [B] list [C] dictionary [D] set

(v) What will be the output of the following Python code?

```
>>> v1 = {1,11,(1,1),'1','a',1,(1,1)}
>>> len(v1)
```

[A] 7 [B] 6 [C] 5 [D] 9

(vi) Which one of the followings is not a Python keyword?

[A] except [B] catch [C] try [D] finally

(vii) _____ is the standard GUI library for Python.

[A] GUILib [B] tkinter [C] pyGUI [D] tkPy

(viii) Consider the following statements:

I : Python is a case-sensitive language.

II : Python does not support database programming.

Which one of the following is correct?

[A] Only statement-I is True

[B] Only statement-II is True

[C] Both statements (I and II) are True

[D] Both statements (I and II) are False

(Contd../2)

(P.T.O.)

Q-2 Attempt the following: (**ANY SEVEN**) **(14)**

i. List various data types in python.
ii. Explain input() function in brief.
iii. Difference : List and Tuple.
iv. Explain range() with an example.
v. Define: Exception. Give names of any two inbuilt exceptions.
vi. Define: Class and Object.
vii. Write down the meaning of "r", "w", "a", "w+" in file opening.
viii. Write the purpose of del and pass keywords.
ix. Full form of IDLE, GUI.

Q-3 (a) Explain Key Characteristics and Advantages of python. **(6)**

(b) List various operators with an example. **(6)**

OR

(b) List various control structure. Explain any two with an example. **(6)**

Q-4 (a) What is string? Explain any five methods of string with an example. **(6)**

(b) What is list? Explain any five methods of list with an example. **(6)**

OR

(b) What is tuple? Explain any five methods of tuple with an example. **(6)**

Q-5 (a) What is Set? Explain any three methods of set with an example. **(6)**

(b) What is Dictionary? Why is it used? Explain any two methods of dictionary with an example. **(6)**

OR

(b) Explain Exception handling with an example. **(6)**

Q-6 (a) What is File? Explain any three file handling functions with an example. Write a Python program to create a new text file (test.txt) and write some data in test.txt. **(6)**

(b) Explain database programming using Python. **(6)**

OR

(b) Explain modules and packages in detail. **(6)**

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Total No. of printed pages : 2

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SARDAR PATEL UNIVERSITY

Master of Computer Applications (M.C.A.) (Semester-I) Examination

PS01CMCA52 Computer Networks

Date : 10th January, 2023

Time: 10:00 a.m. to 1:00 p.m. **Total Marks: 70**

1. **Select the most appropriate option for each of the following questions :** **8**

(i) Which of the following is not a guided medium ?

(A) Twisted Pair cable (B) Coaxial cable
(C) Fiber Optic cable (D) Radiowaves

(ii) Which of the following topology requires central controller?

(A) Star (B) Mesh (C) Bus (D) Ring

(iii) The full form of MAN is _____.

(A) Metropolitan Area Network (B) Metro Area Network
(C) Metropolitan Area Node (D) Medium Area Network

(iv) _____ is a situation in which network performance degrades due to large number of packets in a subnet.

(A) Communication (B) Tunneling (C) Congestion (D) None of these

(v) Which routing algorithm generates vast number of duplicate packets ?

(A) Shortest path (B) Flooding (C) Link state (D) None of these

(vi) In _____ fragmentation technique, recombination occurs only at the destination host.

(A) transparent (B) non-transparent (C) semi- transparent (D) None of these.

(vii) In cryptography, the _____ represents output of the encryption process.

(A) plaintext (B) cyclic text (C) ciphertext (D) None of these.

(viii) The _____ satellites appear to remain motionless in the sky.

(A) LEO (B) Geostationary (C) MEO (D) None of these

2. **Answer the following questions in brief (ANY SEVEN) :** **14**

(i) Give the examples of various unguided transmission media.
(ii) Differentiate : half-duplex and full-duplex transmission modes.
(iii) Write the functions performed by an amplifier and a router.
(iv) Write the differences between circuit switching and packet switching.
(v) Distinguish between static and dynamic routing algorithms.
(vi) Explain the meaning of network congestion.
(vii) What do you mean by multiplexing ?
(viii) What is the function of a firewall ?
(ix) What do you mean by Virtual Private Networks ?

3.(A)	Define the term computer network. Write its advantages and disadvantages.	6
(B)	List out different network topologies. Compare any two of them giving its advantages and disadvantages.	6
	OR	
(B)	What is multiplexing? Discuss FDM and TDM.	6
4.(A)	Name the layers of OSI reference model. Explain any two of them.	6
(B)	Write a short note on IP addresses.	6
	OR	
(B)	Write a short note on a TCP Segment Header.	6
5.(A)	What do you mean by internetworking ? How networks differ ? List and explain various issues that arise when we form an internetwork.	6
(B)	Describe the distance vector routing algorithm.	6
	OR	
(B)	Write a short note on Tunneling.	6
6.(A)	Write a short note on satellite communication.	6
(B)	Write a short note on substitution cipher with examples.	6
	OR	
(B)	What do you mean by fragmentation. Differentiate : non-transparent and transparent fragmentation in detail.	6

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[1]

SARDAR PATEL UNIVERSITY
MCA (SEMESTER - 1)
PS01CMCA53: DATABASE MANAGEMENT SYSTEMS
Wednesday, 11th January, 2023

Time: 10:00 am to 1:00 pm **Max. Marks: 70**

Q-1

(A) Choose the most appropriate option for each question: [8]

1. _____ exception is generated, when SELECT statement with INTO clause return more than one record.
   (A) INVALID_NUMBER (B) VALUE_ERROR
   (C) TOO_MANY_ROWS (D) None of these
2. _____ function is used to padding the left side of a string with a specific set of characters.
   (A) LEFTPAD (B) LTRIM
   (C) LPAD (D) LEFTTRIM
3. Which command is use to remove the records from the table?
   (A) CUT (B) REMOVE
   (C) DISCARD (D) DELETE
4. _____ constraint is used to ensure that a given column of a table is never assigned the null value.
   (A) No Null (B) Not Empty
   (C) No Empty (D) Not Null
5. Employee Id is a _____,
   (A) Simple Attribute (B) Composite Attribute
   (C) Derived Attribute (D) None of these
6. Relationship between entities Employees and Skills is _____.
   (A) One to One (B) One to Many
   (C) Many to Many (D) None of these
7. Which of the following function is used to find the remainder after division?
   (A) REM (B) REMAINDER
   (C) MOD (D) MODULO
8. _____ table is used to list all tables in user schema.
   (A) Tables (B) Tab
   (C) Table (D) Tabs

Q-2 Answer the following questions (ANY SEVEN): [14]

1. List benefits of DBMS.
2. What is the importance of trigger?
3. Write a PL/SQL block structure.
4. Explain ROUND function in brief.
5. Define: View & Index
6. Difference between Primary key & Foreign key
7. List any two Codd rules.
8. List DDL statements.
9. Give one example of derived attribute & multivalued attribute.

[P T O]

Q-3

(A) List various notations used in ER diagram with an example. [6]

(B) What is normalization? Explain 1st and 2nd normal form with an appropriate example. [6]

OR

(B) Explain Data Independence and Data Protection in detail. [6]

Q-4

(A) Explain SELECT statement syntax with an example. [6]

(B) Explain UPDATE & DELETE statement syntax with an example. [6]

OR

(B) Explain SUBSTR( ), INSTR( ) and TO_CHAR( ) functions with an example. [6]

Q-5

(A) Explain various looping structures with an example. [6]

(B) List types of joins. Explain any two with an example. [6]

OR

(B) Explain Subqueries and Set operations with an example. [6]

Q-6

(A) List cursor attributes. Explain cursor in detail with an examples. [6]

(B) Explain procedure and function with an example. [6]

OR

(B) Explain triggers with an examples. [6]

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[2]

SARDAR PATEL UNIVERSITY

Master of Computer Applications (Semester 1) Examination - 2023

PS01CMCA54- Operating Systems

Date: 12/01/2023 (Thursday)

Time: 10:00 a.m. to 01:00 p.m. Total: 70 Marks

NOTE:

1. Figure to the right indicates full marks of the questions.

Q-1 Choose the most appropriate option for each question. **[8]**

i. Operating system in Embedded Systems are designed to run without _____
   A) Hardware B) Output
   C) Input D) User Intervention

ii. Which of the following cannot generate Interrupts?
   A) Software B) Hardware
   C) ISR D) None of these

iii. Which of the following is not a characteristic of Primary Memory?
   A) Fast B) Temporary Storage
   C) Non-Volatile D) Low Capacity Storage

iv. Magnetic tape is the prime example of _____ storage.
   A) Primary B) Secondary
   C) Tertiary D) None of these

v. Termination of a process can be due to
   A) Killed by another process B) Normal exit
   C) Fatal error D) All of the mentioned above

vi. The interface to access the services of the operating system is provided by_____
   A) API B) System calls
   C) Assembly instructions D) Library

vii. What a virtual-memory miss is called?
   A) Hit miss B) Page miss
   C) Page fault D) Page hit

viii. Any program, no matter how small, occupies an entire partition. known as
   A) Internal Fragmentation B) Fragmentation
   C) External fragmentation D) Prior fragmentation

Q-2 Answer the following questions (Any Seven). **[14]**

a. What is Starving?
b. Define Throughput Time.
c. Define Threads.
d. Explain real time operating system.
e. What is multitasking?
f. How does Optimal Page Replacement algorithm works?
g. What is kernel?
h. State any two conditions which can lead to a deadlock situation in a system?
i. What is a monitor?

(P.T.O.)

Q-3 Answer the following questions.

a. Explain different functions of OS. [6]

b. What is Process Scheduling? Justify the statement "The short term scheduler is executed more frequently than long term scheduler". [6]

OR

b. Explain interrupt system in detail. List different types of interrupts. [6]

Q-4 Answer the following questions.

a. What is dead lock? Explain deadlock avoidance and prevention techniques. [6]

b. Differentiate between logical address and physical address. [6]

OR

b. Find average waiting time of following processes using Round-Robin scheduling algorithm.(Time Quantum=3 ms) [6]

Process	Burst Time (in ms)	Arrival Time (in ms)
P1	8	0
P2	2	5
P3	7	1
P4	3	6
P5	5	8

Q-5 Answer the following questions.

a. Distinguish between Long Term, Short Term and Medium Term Schedulers. [6]

b. Discuss various benefits and limitations of Virtual Machine. [6]

OR

b. Explain directory structure of Unix. [6]

Q-6 Answer the following questions.

a. Explain 'cat', 'sort' and 'grep' commands with proper example. [6]

b. Explain I/O redirection in linux. [6]

OR

b. Explain in detail Memory management Techniques. [6]

SEAT No._____

Total No. of printed pages : 2

[I]

SARDAR PATEL UNIVERSITY

Master of Computer Applications (M.C.A.) (Semester-I) Examination

PS01CMCA55 Computer Fundamentals

Date : 13th January, 2023

Time: 10:00 a.m. to 1:00 p.m. **Total Marks: 70**

1. **Select the most appropriate option for each of the following questions :** 8

(i) Which of the following components of a computer is used to fetch, decode and execute instructions?

(A) Microprocessor (B) RDRAM (C) Cache memory (D) None of these.

(ii) The IEEE double-precision floating-point representation uses ___ bits in the exponent part.

(A) 8 (B) 11 (C) 16 (D) None of these.

(iii) Which of the following is a primary memory ?

(A) CD (B) Hard disk (C) Mixture of RAM and ROM (D) None of these.

(iv) The binary number 110001 = (_____) in octal.

(A) 31 (B) 41 (C) 51 (D) 61.

(v) _____ is a logic circuit with many inputs but only one output.

(A) Gate (B) Door (C) Windows (D) None of these

(vi) ____ is a logic circuit that remembers a state/digit.

(A) Gate (B) Flip-flop (C) Register (D) Counter

(vii) _____ is a data structure that works on LIFO mechanism.

(A) Tree (B) Queue (C) Stack (D) Array

(viii) _____ is a major difference between binary tree and a b-tree.

(A) Limited branches (B) Unlimited branches

(C) Only two or less nodes (D) Sorted order

2. **Answer the following questions in brief (ANY SEVEN) :** 14

(i) List the steps involved in instruction execution by a CPU.

(ii) Construct a Hamming code for the character 'C' (ASCII: 67) considering even parity.

(iii) Specify two-two examples of input and output devices.

(iv) What do you mean by cache ? Write the principle of locality.

(v) Differentiate : traps and interrupts.

(vi) Draw logic circuit of (i) A+B+CD (ii) AB+ABC

(vii) Draw the logic circuit for the XOR gate.

(viii) Draw an example of a tree data structure with proper labels.

(ix) Write names of two searching techniques.

3.(A)	Draw the block diagram of a simple computer. Write the main functions of various components shown in the diagram.	**6**
(B)	Write a short note on hard disks.	**6**
	OR	
(B)	Write a short note on pipeline machines.	**6**
4.(A)	Draw and explain the triangle of memory hierarchies. Write a short note on cache memory.	**6**
(B)	List various addressing modes. Explain any two modes giving suitable examples.	**6**
	OR	
(B)	Explain the design criteria for instruction formats.	**6**
5.(A)	State and explain the De Morgan's Laws.	**6**
(B)	Explain the AND, OR, NOT gates with truth table in detail.	**6**
	OR	
(B)	Draw the logic circuit of 8-to-1 multiplexer and explain its working in detail.	**6**
6.(A)	Explain (i) one dimensional and (ii) two dimensional array data structure with examples and applications.	**6**
(B)	Write a short note on a linked list.	**6**
	OR	
(B)	Explain hashing techniques in detail with suitable examples.	**6**

SARDAR PATEL UNIVERSITY

MCA SEM - I External Examination 2023

Sub: Practical (PS01CMCA56)

Practicals based on PS01CMCA53 & PS01CMCA54

Date: 17th January 2023 Time: 3 Hrs Marks: 70

Q-1 Oracle Section

[A] **Create following tables and insert necessary records in it.** [26]

Flight (Flight_no, Start_Station, End_Station, Journey_date, Fare)
Primary Key: Flight_No, Journey_date

Passenger (P_id, P_name, P_gender, P_age) **Primary Key:** P_id

Flight_Booking(Flight_no, Journey_date, P_id, Seat_no)
Primary Key: Flight_No, Journey_date , P_id
Foreign Key: Flight_No, Journey_date , P_id

- **Insert necessary records in all tables.**
- **Write the queries of following:**
  1. Display all passengers' id, name and age.
  2. Display the flight_no, Journey_date and fare of flights from Ahmedabad to Mumbai.
  3. List the Male passengers whose name starts with "B".
  4. Display names of passengers who have booked for flight_no = 1 on 3rd January 2023.
  5. Display flight number wise total number of seats booked on 5th January 2022.
  6. Change the name = 'AMIT' and age = 45 for passenger with P_id = 3.

[B] **Write a PL/SQL block** to accept two numbers from the user and display sum of odd and even numbers between entered numbers. [5]

E.g. Enter No1 :: 10 Enter No2 :: 20
Sum of Odd Numbers : 75
Sum of Odd Numbers : 60

[C] **Write a PL/SQL block** to accept flight no. & journey date from the user and display all passengers of that flight as following format. [5]

Passenger Id	Passenger Name	Gender	Age
1	Rakesh	M	35
2	Riya	F	25

Note: Store following contents in Oracle_nnn.txt, where nnn stands for seat number.

1. Syntax of all table creation & records in all tables.
2. Queries / Code of 1) **to 6)** with output.
3. PL/SQL block code with output.

Q-2 Linux Section [24]

1) Write a bash file (named as q1ext.sh) to check whether a number is even or odd.

2) Write a bash file (named as q2ext.sh) to read two numbers from the user and perform plus, minus, multiplication and division on them. To perform these operation get the choice from the user.

Q-3 Viva-Voce [10]

SARDAR PATEL UNIVERSITY

MASTER OF COMPUTER APPLICATIONS (MCA)

SEMESTER – I

PS01CMCA57 (Practical based on PS01CMCA51) External Examination

18th January, 2022

Time: 2½ Hours **Marks: 70**

Q-1 Write a Python program (Filename : **q1nnn.py**, where nnn indicate your seat number) which reads the total number of lines (say n). Generate and print pattern (as shown below) using the value of n. **[15]**

Input : n = 1
Output :
```
A
```

n = 3
```
A
A B
A B C
A B
A
```

n = 4
```
A
A B
A B C
A B C D
A B C
A B
A
```

Q-2 Write a Python program (Filename : **q2nnn.py**, where nnn indicate your seat number), which reads a string (consisting of only lower case letters and blank space characters) and display each word (words are separated by one or more blank space characters only) in an ascending order. **[20]**

Input : this is a string
Output :
```
a
is
string
this
```

Input : one plus one equals two
```
equals
one
one
plus
two
```

Q-3 Books are assigned a 13-digit International Standard Book Number (ISBN). The last digit (i.e. 13th digit) is calculated using from the first 12 digits. The 13th digit is calculated from the first 12 digits are as follows: **[25]**

> "From left to right, each digit is multiplied by 1 or 3, alternately. So the first digit is multiplied by 1, the second by 3, the third by 1, and so on. Find the sum of all these products. Find sum modulo 10. This result is then subtracted from 10, leaving a number from 1 to 10. Since 10 is 2 digits, it is represented by 0 instead."

For example, if 12-digits are 978-0-306-40615, then

$$\begin{aligned}\text{Sum} &= 9\times1 + 7\times3 + 8\times1 + 0\times3 + 3\times1 + 0\times3 + 6\times1 + 4\times3 + 0\times1 + 6\times3 + 1\times1 + 5\times3 \\ &= 9 + 21 + 8 + 0 + 3 + 0 + 6 + 12 + 0 + 18 + 1 + 15 \\ &= 93\end{aligned}$$

93 mod 10 = 3.
Subtract 3 from 10 i. e. 10-3=7.
Hence the last digit is 7. The final 13-digit ISBN number is 978-0-306-40615-7.

Write a program (Filename : **q3nnn.py**, where nnn indicate last three digits of your PID) that reads the 12-digited ISBN number (format 999-9-999-99999). Find the 13th digit using the above mentioned process. Display the final 13-digited ISBN number as output.

Input : N = 978-0-306-40615
Output : ISBN = 978-0-306-40615-7

Input : N = 978-0-306-40715
Output : ISBN = 978-0-306-40715-4

Input : N = 778-3-121-48401
Output : ISBN = 778-3-121-48401-2

Input : N = 111-1-111-11111
Output : ISBN = 111-1-111-11111-6

Q-4 **Viva-voce** **[10]**

*** The End ***