

SARDAR PATEL UNIVERSITY
MCA - (SEMESTER - 1) Examinations - 2021
PS01CMCA32: COMPUTER NETWORKS
Tuesday, 23rd February, 2021

Time: 10:00 am to 12:00 pm

Max. Marks: 70

Q-1

- (A) Choose the most appropriate option for each question:

(B) Do as directed.

- (B) Do as directed.

 - i. A bridge is a network device that connects multiple homogenous LANs. True / False
 - ii. In Gigabit Ethernet, speed is 100 Mbps. True / False
 - iii. OSI Reference model has seven layers. True / False
 - iv. The size of IPv4 address is 4 bytes. True / False
 - v. TCP provides a connection oriented services. True / False
 - vi. IP protocol is working at _____ layer.
 - vii. When too many packets are present in (apart of) the subnet, performance degrades. This situation is called _____.
 - viii. IP address range in decimal for class A is between _____ and _____.
 - ix. _____ layer of OSI reference model is responsible for raw bit transmission.
 - x. AMPS stands for _____.
 - xi. Which guided media provide the highest bandwidth?

(Contd...2/

- xii. What do you mean by Authentication?
- xiii. Which topology requires maximum cable?
- xiv. Write the full form of VPN.
- xv. PSTN stands for _____.
- xvi. What is the full form of MEO?

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

[14]

- i. What is the meaning of 1000, Base and FX in 1000BaseFX?
- ii. Convert plain text "HELLO" into the cipher text with ceaser cipher technique using key = 3.
- iii. Write the difference between soft handoff and hard handoff.
- iv. Differentiate between parallel and serial transmission.
- v. Write the difference between TCP and UDP.
- vi. Differentiate between virtual circuit and datagram.
- vii. Discuss any two design issues for the layers.
- viii. Explain optimality principle in brief.
- ix. Write the difference between symmetric and asymmetric key algorithms.

Q-3 List guided transmission media. Explain any two in detail.

[8]

OR

Q-3 List LAN topologies. Explain any two topologies in detail.

[8]

Q-4 Explain OSI reference model in detail.

[8]

Q-4 Write a short note on IP.

[8]

Q-5 List routing algorithms. Explain shortest path routing with an example.

[8]

OR

Q-5 Explain fragmentation in detail.

[8]

Q-6 Explain satellite communication in detail.

[8]

OR

Q-6 Convert the following cipher text into plain text with transposition cipher using key is HONOR.

"GEEMFUCEELPPANOEEENHGHLPECTIACOAGRTRMRNDNYTDTOPSCTOX"

D.B.S

SARDAR PATEL UNIVERSITY

MASTER OF COMPUTER APPLICATIONS (MCA)

SEMESTER - I

PS01CMCA31 (PYTHON PROGRAMMING)

22ND FEBRUARY, 2021

Time : 10:00 a.m. to 12:00 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 (8) in your answer book.

(i) _____ is a valid extension for Python program file.

- [A] .p [B] .phtml [C] .python [D] None of these

(ii) _____ is used to define a block of code in Python language.

- [A] () [B] {} [C] [] [D] None of these

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

```
a=5
b=6
if (a==b)
    print("Equal")
else:
    print("Unequal")
```

- [A] Equal [B] Unequal [C] Syntax Error [D] None of these

(iv) Which of one of following is false about set?

- [A] Unordered [B] indexed [C] A and B both [D] None of these

(v) Which one of following is not a valid data type in Python?

- [A] Integer [B] String [C] Float [D] None of these

(vi) dict values can be initialized between _____.

- [A] () [B] {} [C] [] [D] None of these

(vii) _____ is a function used to close a file using Python.

- [A] close() [B] destroy() [C] fclose() [D] None of these

(viii) _____ is single line comment symbol in Python.

- [A] # [B] -- [C] @ [D] None of these

[B] Do as directed:

i. Give any one application area of Python?

ii. Python is interpreted scripting language. [True / False]

iii. What is use of int()?

iv. What is use of float()?

v. What is use of type()?

vi. What is instance of a class?

vii. _____ is not default visibility mode (access modifier) in class.

viii. What is use of import?

(16)

- ✓ ix. Explain use of index() in tuple.
- ✓ x. What is output of following code?
var1 = "vallabh vidyanagar"
print(type(var1))
- ✓ xi. Explain list() constructor.
- xii. What is use of tkinter?
- ✓ xiii. Explain fetchall().
- ✓ xiv. How to read multiple input values using input()?
- ✓ xv. Explain ANY ONE operation mode of file handling.
- xvi. What is full form of GUI?

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

(14)

- ✓ i. List various advantages of Python.
- ✓ ii. What is use of input() and print().
- ✓ iii. Discuss multiline string assignment in Python taking suitable example.
- ✓ iv. Distinguish between Set and Tuple.
- ✓ v. Explain if... else... ladder taking suitable example.
- ✓ vi. Give an example of while() loop.
- ✓ vii. Define: Parent class and Child class.
- ✓ viii. What is user-defined function? Give an example of passing user input.
- ✓ ix. Explain swapcase().

Q-3 Write down and explain various data types taking suitable examples. (8)

OR

Q-3 Explain **for** loop and **range()** taking suitable examples. (8)

Q-4 What is list? Write down methods supported with list and explain **ANY THREE** of them by taking suitable examples. (8)

OR

Q-4 Explain mapping type dict in detail taking suitable examples. (8)

Q-5 Explain try, except, else and finally keywords. (8)

OR

Q-5 List various types of Inheritance and explain **ANY THREE** of them taking suitable examples. (8)

Q-6 Explain: open(), write(), read() and close(). (8)

OR

Q-6 How to connect with MySQL database? Explain it taking suitable example. Also discuss use cursor() and execute() taking appropriate examples. (8)

SARDAR PATEL UNIVERSITY
Master of Computer Application (M.C.A.) I- Semester Examination
PS01CMCA35 Computer Fundamentals
26th February, 2021

Time: 10:00 a.m. to 12:00 p.m.

Total Marks: 70**1.(A) Select 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) Cache (B) CPU (C) ALU (D) None of these.
- (ii) 2's complement of the binary number 0111 is _____.
 (A) 1001 (B) 1010 (C) 1000 (D) None of these.
- (iii) The time required to position read/write head on appropriate track or cylinder is known as
 (A) rotational latency (B) seek time (C) track time (D) None of these.
- (iv) Every cell of the main memory is uniquely identified by a number called
 (A) an instruction pointer (B) a cell address
 (C) a Program Counter (D) None of these.
- (v) _____ is considered a raw observation from the domain.
 (A) Data (B) Structure (C) Data Structure (D) None of these
- (vi) Which of the following is/are advantage(s) of using data structure:
 (A) Saving time (B) Saving effort (C) Saving space (D) All of these
- (vii) _____ is a logic circuit with many inputs but only one output.
 (A) Truth table (B) Gate (C) Algebra (D) None of these
- (viii) A full adder can add _____ bits at a time.
 (A) One (B) Two (C) Three (D) None of these
- 1.(B) Do as directed.**
- (i) Which part of the CPU performs arithmetic and logical operations ?
- (ii) Write the full form of ASCII.
- (iii) What is the size of the exponent part of the IEEE single-precision format for representing floating-point numbers ?
- (iv) In a Hamming code, the parity bit positions are powers of _____.
 (v) Write the full form of RISC.
- (vi) Which register holds the address of the instruction to be executed next ?
- (vii) Write the full form of CD-ROM.
- (viii) What is 1's complement of 101010 ?
- (ix) List two operations of data structures.
- (x) Define primitive data structure.
- (xi) What does head node contain in a linked list?
- (xii) Consider 7 buckets are available to store data. What is the position of number 12, if the hashing function key%7 is used?
- (xiii) How many rows should be there in a truth table for three binary symbols?

16

- (xv) What is the minimum number of inputs that a NOT gate can take?
 (xvi) Which logic gate is called "Any or All Gate"?
- (xvii) A flip-flop is a device that with two stable states, it remains in one till it is triggered to the other. It remembers a bit. (State True or False).
- 2.** Answer the following questions in brief (ANY SEVEN) : 14
 (i) List the steps involved in instruction execution by a CPU.
 (ii) Specify two-two examples of input and output devices.
 (iii) Construct a Hamming code for the character 'D' (ASCII: 68) considering even parity.
 (iv) What is cache? What is the meaning of a hit ratio ?
 (v) What do you mean by a trap ? List any three common conditions that can cause traps.
 (vi) Define a two dimension array of your choice.
 (vii) List all the operations possible on the stack data structure.
 (viii) Create a singly linked list of 5 integers called A.
 (ix) Draw logic circuit of $X = A' + B + CD$.
- ✓ **3.** Draw the block diagram of a simple computer. Write the main functions of various components shown in the diagram. 8
OR
 (i) Write a short note on Pipeline machines. 4
 (ii) Write a short note on Array processors. 4
- ✓ **4.** Write a short note on Hard Disks. 8
OR
 (i) List various addressing modes. Explain any two of them. 4
 (ii) Write in brief about the design criteria for instruction formats. 4
- ✓ **5.** Draw diagram of various types of data structures and explain each data structure in one to two lines. 8
OR
 (i) Explain the Push() and Pop() operations on the stack data structure by giving their outlines. 4
 (ii) Explain working of binary search in detail by taking suitable example. 4
 ✓ Define basic gates (i) OR gate, (ii) AND gate and (iii) NOT gate with their logic circuits and truth tables. 8
- 6.** (i) Draw the logic circuit of Decimal to Binary Encoder. 4
 (ii) Draw the logic circuit of RS latch. Also give truth table and explain its working. 4
-

[6]

SARDAR PATEL UNIVERSITY
MASTER OF COMPUTER APPLICATIONS
SEMESTER - I

PS01CMCA34 – Operating Systems

Thursday 25th February, 2021

Time: 10:00 am to 12:00 pm

Max. Marks: 70

Q-1

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

1. The Linux file system is -

A) A forest	B) A tree
C) A leaf node	D) A root
2. Which key combination is used to terminate the currently running process?

A) CTRL+S	B) CTRL+T
C) CTRL+C	D) None of these
3. Which of the following is not a type of options to a Linux command?

A) Short options	B) Long options
C) Medium options	D) None of these
4. Which of the following is not a CPU mode?

A) User mode	B) Register mode
C) Kernel mode	D) None of these
5. What is the appropriate place to mount an external file system?

A) Empty directory	B) Root directory
C) Full directory	D) Empty file
6. What is the full form of PCB?

A) Program Control Box	B) Process Control Box
C) Program Control Block	D) Process Control Block
7. _____ points to the next instruction to be executed.

A) Program Control	B) Program Counter
C) Base register	D) Limit register
8. In a paging scheme, physical memory is divided into _____.

A) Pages	B) Segments
C) Frames	D) None of these

B. Fill in the blanks from the given options: [16]

SEARCH	ready	grep	del	sh
page table	compile-time	*	user	thread
base register	bash	DIRECTORY	I/O-bound	rm
fixed-sized partitions	filter	cp	deldir	.
virtual memory	PATH	CPU-bound	run time	ksh
limit register	kernel	segmentation	copy	rmdir
running	dispatcher			

1. _____ built-in shell variable holds the list of directories that are searched for commands.
2. _____ is the default text mode shell on Ubuntu Linux systems.
3. _____ meta character represents "previous element 0 or more times" in regular expressions.

4. grep Linux command is used to filter out records (lines) matching a pattern from the data.
5. cp Linux command is used to copy files.
6. rmdir Linux command is used to delete an empty directory.
7. _____ is a mode in which operating system code executes.
8. A process in waiting state can only move to _____ state.
9. Kernel is the basic unit of CPU utilization.
10. _____ gives control of CPU to the process selected by the CPU scheduler.
11. _____ allows executing a process whose size is larger than the physical memory.
12. _____ process has a larger CPU burst time than I/O burst time.
13. _____ memory management scheme suffers from internal fragmentation.
14. _____ holds the size of the process.
15. _____ data structure is used to find the location of a page in the memory.
16. In _____ type of address binding, the program needs to be recompiled if the address for loading changes.

Q-2 Answer the following questions (Any Seven):

[14]

1. What is a system call? List any two types of system calls.
2. Describe in brief virtual machines.
3. Differentiate between absolute path and relative path.
4. Show how to perform input and output from a shell script with an example each.
5. List multithreading models.
6. What is file system mounting? What is a mount point?
7. Differentiate between internal and external fragmentation.
8. What is demand paging? What are advantages of demand paging.
9. What is a filter in Unix terminology? Give an example.

Q-3 What do you mean by operating system? Explain the services provided by operating systems.

[8]

OR

Q-3 Write a note on the following structures of operating systems.

[8]

- i. Microkernels
- ii. Modules

Q-4 Explain the priority-based CPU scheduling algorithm with its advantages and disadvantages. [8]
Draw the Gantt Chart and calculate the average waiting time for the following set of processes when using the non-preemptive priority-based CPU scheduling algorithm. Please note that smaller number indicates higher priority.

Process	CPU Burst Time (ms)	Priority
P1	12	2
P2	5	4
P3	8	1
P4	3	3

OR

Q-4 What do you mean by CPU scheduling? Explain short-term, long-term and medium-term schedulers. [8]

Q-5 Write a note on segmentation. Also explain the method of mapping logical addresses onto physical addresses. [8]

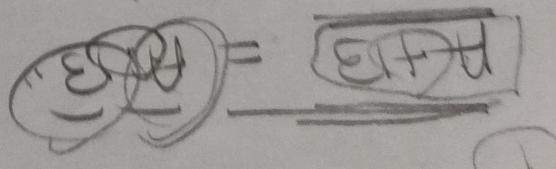
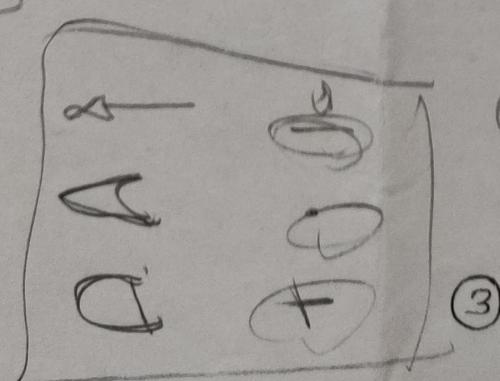
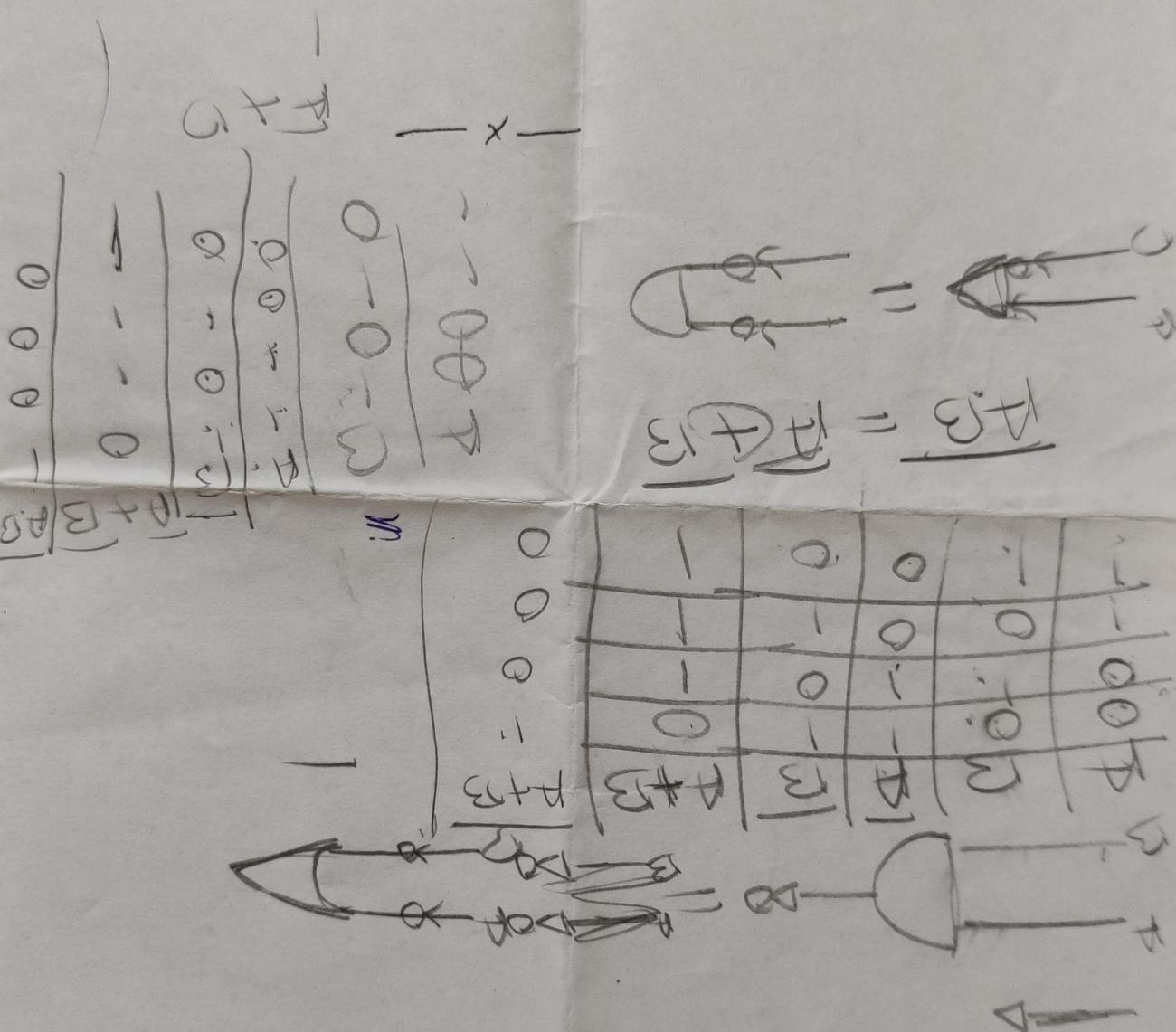
OR

Q-5 Explain the concept of virtual memory. Execute the FIFO page replacement algorithm for the given reference string assuming 3 frames of physical memory per process. [8]
3, 1, 7, 4, 3, 7, 3, 4, 2, 6

Q-6 Explain different control structures in the bash shell with examples. [8]

OR

Q-6 Explain I/O redirection with examples. [8]



[S]

PS01CMCA33: DATABASE MANAGEMENT SYSTEMS

Wednesday, 24th February, 2021

Time: 10:00 am to 12:00 noon

Max. Marks: 70

Q-1

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

[8]

(B) Do as directed.

[16]

- Gender of a person is a composite attribute. True / False
 - Relationship between entities employee and skill is One to One. True / False
 - Function must return a value. True / False.
 - PL/SQL supports error handling mechanism. True / False
 - Sequence is used to generate unique primary keys automatically. True / False
 - ⑥ DECLARE is a reserved word. True / False
 - _____ command is used to retrieve the records from a table.
 - _____ constraint is used to uniquely identify each row in a table.
 - To display the message in new line _____ function is used in PL/SQL
 - _____ command is used to remove the records from a table.

11. _____ function is used to find the remainder after division operation.
12. An error occurs during execution of program is called _____.
13. Full form of DBMS.
14. Full form of SQL.
15. Full form of PL/SQL.
16. Write down the name of implicit cursor.

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

[14]

1. Give one example of one to many relationship.
2. Give an example of stored attribute and derived attribute.
3. List any four Codd rules.
4. Difference between Char and Varchar data type.
5. Difference between SQL and PL/SQL.
6. Difference between primary key and foreign key
7. Write a PL/SQL block structure.
8. List features of PL/SQL.
9. Define : Trigger & Package

Q-3 Explain various notations for ER diagram with an example.

[8]

OR

Q-3 Consider the following table.

[8]

Product_Master (Product_Id, Product_Name, Price, Purchase_Date)

Write down the answers of following queries.

1. To display all product detail in the order of product name.
2. Remove all products whose name start with 'A'.
3. Change price of the product to 100, whose name is equal to 'Mouse'.
4. Display the product details of the product having the highest price.

Q-4 Explain following in-built functions with an example.

[8]

SUM, COUNT, MIN, LENGTH, UPPER, LPAD, INITCAP, TO_CHAR

OR

Q-4 Explain SELECT & UPDATE command with an example.

[8]

Q-5 Explain various looping structure in PI/SQL with an example.

[8]

OR

Q-5 List types of join. Explain any two with an example.

[8]

Q-6 Explain exception handling in detail with an example.

[8]

OR

Q-6 Explain procedure and function with an example.

[8]
