Dr. D. Y. Patil Unitech Society's
Dr. D.Y. PATIL INSTITUTE OF MANAGEMENT & RESEARCH, PUNE
Sant Tukaram Nagar, Pimpri, Pune-411018, Maharashtra, India.
(Approved by All India Council for Technical Education & Recognized by the Savitribai Phule Pune University)

Unit Test Examination, Feb 2023

MCA-I (Sem-I)

IT11: Java Programming

Time: 1 Hrs 30 min **Total Marks: 30**

Instructions: 1) All questions are compulsory

Q1 a)Differentiate between Iterator and ListIterator in Java. 10Marks

b)What is the difference between ArrayList and LinkedList?

Q2 Write a GUI program using components to find sum and difference of two numbers. Use two text fields for giving input and a label for output. The program should display sum if user presses mouse and difference if user release mouse 10 Marks

Q3 Create a simple servlet that reads and displays data from HTML form. Assume form with two fields' username and password. 10 Marks

OR

Write a simple JSP file to display "DYPIMR" five times.

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Internal Examination, Dec 2022(Feb 2023)
MCA-I (Sem-I) (2020 Pattern)
IT 11: Java Programming

Time:2½Hours] *Max.Marks:50*

Instructions:

1) All Questions are compulsory.

Q1 1) Find the output of the following program. 10

```
public class Solution{
    public static void main(String[] args){
        byte x = 127;
        x++;
        x++;
        System.out.print(x);  } }
```

a) -127 b)127 c)129 d) 2

2) The \u0021 article referred to as a

a. Unicode escape sequence
b. b.Octal escape
c. c. Hexadecimal
d. d. Line feed

3) An interface with no fields or methods is known as a _____.

a. Runnable Interface

b. Marker Interface

c. Abstract Interface

d.CharSequence Interface

4) Which option is false about the *final* keyword?

a. A *final* method cannot be overridden in its subclasses.

b. A *final* class cannot be extended.

c. A *final* class cannot extend other classes.

d. A *final* method can be inherited.

5) Which of the given methods are of Object class?

a.notify(), wait(long msecs), and synchronized()

b.wait(long msecs), interrupt(), and notifyAll()

c.notify(), notifyAll(), and wait()

d. sleep(long msecs), wait(), and notify()

6) Which of the following is a mutable class in java?

a. java.lang.String b. java.lang.Byte c. java.lang.Short d. java.lang.StringBuilder

7) What is meant by the classes and objects that dependents on each other?

a.Tight Coupling b.Cohesion c. Loose Coupling d.None of the above

8) int values[ ] = {1,2,3,4,5,6,7,8,9,10};
for(int i=0;i< Y; ++i)
System.out.println(values[i]);

Find the value of value[i]?

a. 10
b. 11
c. 15
d. None of the above

9) How many threads can be executed at a time?

a. Only one thread
b. Multiple threads
c. Only main (main() method) thread
d. Two threads

10) Which of the following modifiers can be used for a variable so that it can be accessed by any thread or a part of a program?

a. global
b. transient
c. volatile

d. default

11) In character stream I/O, a single read/write operation performs _____.

a. Two bytes read/write at a time.
b. Eight bytes read/write at a time.
c. One byte read/write at a time.
d. Five bytes read/ write at a time.

12) Which methods are used to bind the objects on HttpSession instance and get the objects?

a. setAttribute
b. getAttribute
c. Both setAttribute and getAttribute
d. None of the above

13) Which of the following methods are provided to enable the servlet to process the client's request.
i) getCookies()
ii) getRequest()
iii) getSession()
iv) getHeader()
A) i, ii, and iii only
B) i, iii, and iv only
C) ii, iii, and iv only
D) All i, ii, iii, and iv only

14) … method obtains a byte-based output stream that enables binary data to be sent to the client.
A) sendRedirect
B) getOutput()
C) getOutputStream()
D) getWirter

15) Which of these packages contain all the collection classes?
a) java.lang
b) java.util
c) java.net
d) java.awt

16) What are the major components of the JDBC?

a. DriverManager, Driver, Connection, Statement, and ResultSet
b. DriverManager, Driver, Connection, and Statement
c. DriverManager, Statement, and ResultSet
d. DriverManager, Connection, Statement, and ResultSet

17) Which of the following method is used to perform DML statements in JDBC?

a. executeResult()
b. executeQuery()
c. executeUpdate()

d. execute()

18) Which of the following method is static and synchronized in JDBC API?

a. getConnection()
b. prepareCall()
c. executeUpdate()
d. executeQuery()

18) What is not the use of "this" keyword in Java?
a) Referring to the instance variable when a local variable has the same name
b) Passing itself to the method of the same class
c) Passing itself to another method
d) Calling another constructor in constructor chaining

19) What is the extension of compiled java classes?
a) .txt
b) .js
c) .class
d) .java

20) Which of these are selection statements in Java?
a) break
b) continue
c) for()
d) if()

Q2 a) Differentiate between ArrayList and LinkedList. 10
b) Explain Buffer Reader and Buffer Writer.

OR

a) Discuss Garbage Collection with an example
b) Explain Event Delegation Model.

Q 3 a) How does HashMap work in Java? 10
b) Write any two methods from Character Stream classes.

OR

a) Explain adapter class and give example
b) How will you convert a string array to an ArrayList?

Q 4 a) Write a Servlet program for Hostel admission registration. Assume suitable table structure. 10
b) Explain Servlet life cycle.

OR

a) Explain JSP with an example.
b) Design UI to read em_ name,emp_id, salary using AWT/SWING and display his/ her all information by fetching it from data base.(use servlet and jdbc)

Q 5 a) Write a program to create a sequential file that could store details about five products. 10
Details include product code, cost, and number of items available and are provided through the keyboard

b) Write a program to create two threads, one thread will print odd numbers and second

thread will print even numbers between 1 to 10 numbers

OR

a) What is the importance of thread synchronization in multithreading? Give some examples of resource corruption when multiple thread conflict. How do you Synchronize Conflicting threads?

b) Describe the java throwable class hierarchy and the types of exceptions. Can you claim multiple exceptions in a method declaration? Illustrate by means of an example.

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Unit Test Examination, Feb 2023

MCA-I (Sem-I)

IT12 Data Structure and Algorithms

Time: 1.30 hrs **Total Marks:** 30

Instructions: 1) Solve any three questions

2) Figure to right indicate full marks

1. a) Suppose the numbers 7, 5, 1, 8, 3, 6, 0, 9, 4, 2 are inserted in that order into an initially empty binary search tree. The binary search tree uses the usual ordering on natural numbers. What is the in-order traversal sequence of the resultant tree? 2 Marks

b) What is a priority queue and how does its behavior differ from an ordinary queue? 2 Marks

c) Consider the following arithmetic expression: 2 Marks

(4 - x) / ((y * 10) + 7)

i) Draw a binary expression tree to represent the expression.

ii) What expression results from performing a postorder traversal of the tree that prints the contents of each node in turn, in the order they are visited?

d) What is a Doubly linked list? Using suitable diagrams to illustrate you answer 2 Marks

2. Write short Notes of the following:-

a)Max Heap and Mean Heap 4 Marks

b)Collision resolution techniques 4 Marks

c)Circular Queue 2 Marks

3. a) Write an algorithm to delete a node from a Singly linked list whose value is zero 4 Marks

b) Construct AVL tree for the following data: 4 Marks

40, 20, 10, 50, 90, 30, 60, 70, 95

c) Write an algorithm for the post order traversal of Binary Search Tree 2 Marks

4. a) Draw a Binary Search Tree for the following data: 5 Marks

27, 92, 30, 64, 94, 17, 56, 49, 76, 3, ~~56~~

Write Preorder and Postorder for the same

b) A = 3, 2, 9, 6, 11, 13, 7, 12 5 Marks

h(k) = 2k + 3, m = 10

Use Division method and Quadratic probing to store these values

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Internal Examination, Dec 2022(Feb 2023)
MCA-I (Sem-I) (2020 Pattern)
IT-12: Data Structure and Algorithms

Time: 2 ½ hour **Marks: 50**

Instructions to the candidate:

1. **All Questions are compulsory**
2. **From Q2 to Q5 having internal choices**
3. **Figure to right indicate full marks**

Q 1) **Multiple Choice Questions** **[20 x ½ = 10]**

a) Which method is used for retrieving the top element from the stack
   i) POP() ii) DEQUE() iii)PUSH() iv) Peek()

b) Which of the following algorithms is used to find the shortest path between two nodes in a graph?
   ii) Breadth-first search ii) Depth-first search
   iii) Dijkstra's algorithm iv) Kruskal's algorithm

c) Which of the following algorithms is used to find the optimal solution to a problem by making the best possible choice at each step?
   ii) Dynamic programming, ii) Backtracking
   iii) Greedy algorithm iv) Divide and conquer

d) Which of the following is an advantage of using a dynamic programming algorithm?
   i) It can be used to solve problems that have overlapping subproblems
   ii) It is faster than other algorithms for most problems
   iii) It requires less memory than other algorithms
   iv) It is easier to implement than other algorithms

e) Which of the following is a data structure that allows elements to be inserted and removed from both ends?
   i) Queue ii) Stack iii) Linked list iv) Deque

f) Which of the following data structures is used to implement the undo-redo functionality in a text editor?
   i) Stack ii) Queue iii) Linked list iv) Binary search tree

g) Which of the following data structures is used in recursion?
   i) Stack ii) Arrays iii) LinkedList iv)Queues

h) Which of the following is a property of a red-black tree?
   i) The height of the left and right subtrees of any node can differ by at most 1.
   ii) The left child of a node is always smaller than the node, and the right child is always larger.
   iii) The maximum depth of any node is at most twice the minimum depth.
   iv) The root of the tree is always black.

i) Which of the following is the general approach of divide and conquer algo
   i) Combine solutions to subproblems to get a solution to the original p
   ii) Choose a random element and partition the array around it.
   iii) Traverse the problem space systematically until a solution is found.
   iv) Use a stack or queue to keep track of unexplored states.

j) Which of the following operations can be performed on a Max Heap in O(1) time
   i) Insertion ii) Deletion
   iii) Finding the maximum element iv) Finding the minimum element

k) Which of the following is a characteristic of a problem that can be solved using a greedy algorithm?
   i) The problem can be broken down into smaller subproblems that can be solved independently.
   ii) The optimal solution can be found using a dynamic programming approach.
   iii) The problem has only one feasible solution.
   iv) The optimal solution can be found by making a series of locally optimal choices.

l) What is the other name of dijkstra algorithm?
   i) Single source shortest path
   ii) Multiple source shortest path
   iii) Multiple destination
   iv) Single destination shortest path problem

m) Time complexity of DFS is (V-number of vertex, E-number of edges).
   i) O(V+E) ii) O(V) iii) O (E) iv) None

n) Which of the following is an example of a problem that can be solved using dynamic programming?
   i) Sorting a list of numbers in ascending order
   ii) Finding the shortest path between two nodes in a graph
   iii) Finding the maximum sum of a subarray in an array of integers
   iv) Checking if a string is a palindrome

o) What is the time complexity of dynamic programming?
   i) O(n) ii) O(log n)
   iii) O(n^2) iv)It depends on the specific problem and the implementation of the algorithm.

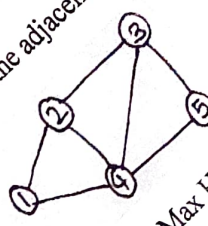
p) Which data structure is used to represent a hierarchical relationship between elements?
   i) Stack ii) Queue iii)Tree iv) Graph

q) Which of the following sorting algorithms has a worst-case time complexity of O(n^2)?
   i) QuickSort ii) MergeSort iii) InsertionSort iv) HeapSort

r) Which of the following data structures is best for quickly finding the maximum or minimum element in a collection?
   i) Queue ii) Stack iii) Heap iv) Linked List

s) Which of the following data structures is not a linear data structure?
   i) Array ii) Stack iii) Linked List iv) Tree

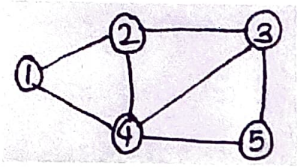
t) Which of the following is not a property of a greedy algorithm?
   i) Optimal substructure ii) Overlapping subproblems
   iii) Choice of the locally optimal solution iv) Greedy choice property



a) Construct a Binary Search Tree for the following data [5]

50, 40, 35, 58, 48, 42, 60, 30, 33, 25

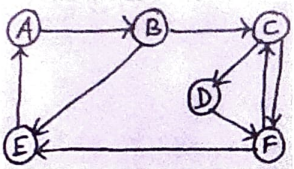
b) Write the adjacency Matrix for the following graph [3]



c) Explain Max Heap [2]

OR

a) Apply DFS for the following graph and show the steps [3]



b) Construct Binary Search Tree for the following data and determine the postorder, preorder and inorder for the same 48, 26, 33, 81, 25, 19, 48, 22, 7, 32. [5]

c) List any two properties of spanning tree [2]

Q 3) a) Apply rain terrace algorithm for the following data [4]

Input: Height = { 0, 1, 0, 2, 1, 0, 1, 3, 2, 1, 2, 1 }

Draw the figure and find solution.

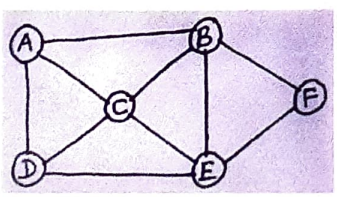
b) Given the two integers m and n, Find the number of possible unique paths that the robot can take to reach the bottom-right corner. m = 4, n = 5 [3]

c) What is open addressing? [3]

OR

a) What is Hamiltonian Cycle? [3]

b) Find the Hamiltonian Cycle in the following graph [4]



c) Write and algorithm to find the size of the Singly Linked list. [3]

Q 4) a) What is Jump Game Algorithm [4]

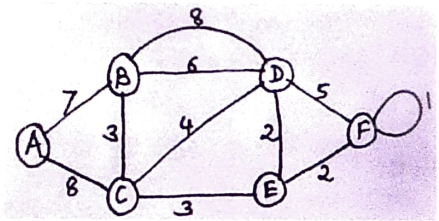
b) Sort the following data using Merge Sort algorithm [4]

38, 27, 43, 3, 9, 82, 10

c) Explain the need of circular Queue [2]

OR

a) Illustrate the stages, in finding the minimum cost spanning tree for given graph using Prim's algorithm. [4]



b) Explain Rules for Tower of Hanoi with a suitable example. [4]

c) What is the purpose of linked list? [2]

Q 5) a) Consider the instance of 0/1 knapsack problem n = 3, m = 20,

p (25,24, 15), w= (18, 15, 10) using dynamic programming. Determine the optimal profit and the solution vector. [7]

b) Write an algorithm to reverse the nodes of a linked list. [3]

OR

a) Find the longest common subsequence for following string using dynamic programming.
X= {A, B, C, D, B, A C, D, F}
Y = {C, B, A, F} [7]

b) Write an algorithm to insert a node at the beginning of a linked list [3]

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Unit Test, February 2023
MCA-I (Sem-I)

IT15: Network Technology

Time: 1:30 Hours **Total Mark: 30**

1. Explain Application layer in detail (5)

OR

Describe the function of Transport layer in detail

2. Let us assume the even parity hamming code for the below example 111001101 is transmitted and the received code is (110001101). Now apply hamming code and from the received code, let us detect and correct the error. (8)

OR

Assume that

(a) data is -100100 (b) Code generator is 1101

Apply CRC to the above example and check whether the given data is Erroneous or error free data

3. Define masking Explain types of classes IPV4 with example. Explain use of loop back address (10)

OR

What is routing protocol explain Intra domain Routing Protocol

4. Explain online and offline mailing protocol in detail (7)

OR

Explain MIME protocol. Explain how DHCP client and server are communicate with each

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Internal Examination Feb 2022 -23
MCA-I (Sem-I)

Network Technologies IT15

Time: 2.5 hrs **Total Marks: 50**

Instructions: *1) Figure to the right indicates marks for question/sub question.*

2) All Questions are compulsory

Q1 Write the correct option. 10

1.Routing is done on which layer

a. Data link Layer b. Network Layer c. Session d. Presentation

2.Which performs modulation and demodulation

a. Modem b. Fiber optic c. satellite d. coaxial cable

3. Dialogue control and token management are responsibilities of

A. Network layer B. Session Layer

C. Transport Layer D. None of above

4. A central computer surrounded by one or more computers is called

a. ring network b.bus network c. star network d. all of above

5.Name of the topology in which there are bidirectional links between each possible nodes

a. Ring b. Mesh c. Star d. Tree

6. Communication mode which supports data in both directions at the same time is called

a. simplex b. Full duplex c. Half duplex d. Multiplex

7. Frequency range 300 kHz to 3 MHz is used for

a.AM radio transmission b.FM radio transmission

C.TV radio transmission d. None of above

8. Sink means

a. sending unit b. receiving unit c. broadcasting d. none of above

9.At data link layer error detection is achieved by

a. Cyclic Redundancy Code b. Hamming codes c. Bit stuffing d. Equalization

10. Loss in signal power as light travels down the fiber is called

a. Interruption b. Propagation c. Scattering d. Attenuation

11. What is public IP address?

a. Leased from an ISP that allows or enables direct Internet communication

b. Used to connect with internal LAN infra

C.IP which is used only on server where we host websites

D. None of above

12. Default network mask for CLASS C is

a.255.0.0.0 b. 255.255.0.0 c.255.255.255.0 d.255.255.255.255

13. To test the IP stack on your local host, which IP address will you ping

a. 127.0.0.0 b.1.0.0.127 c.127.0.0.1 d.255.255.255.0

14. We add 'r' redundant bits to each block to make the length 'n' = 'k'+ r. The resulting 'n' - bit blocks are called_____

a) Data words b) Block words c) Code words d) None of the mentioned

15. TCP/IP reference model contains how many layers

a. 3 b.4 c.6 d.7

16. Which protocol deals with emails

A.FTP b. SMTP c. LPD d. X window

17. Which method is used to establish a connection between server and client.

a) accept () b) open () c) getLocalHost d) OpenConnection

18. Original Message before transmission is called as_____.

a) Cipher text b) Plain text c) Secret-text d) None of the mentioned

19. error detection is function of

1. Data link layer 2. Transport layer 3. None of above 4.Both of above

20. FTP uses___ Parallel TCP connections to transfer a file.

a 1 b) 2 c) 3 d) 4

Q2 Find out the error in code using CRC method 10
Data bit (M)- 1010000 Divisor -1001

OR

(7,4) bit humming code is received as 1010111 determine the correct code for even Parity

Q3 a) What is the default mask for following IP host addresses (solve with proper procedure). 10
i) 127. 19.20 ii) 228. 84.55.66. iii) 141. 18. 56. 08
b) Compare IPv4 and IPv6.

OR

For given class C IP address 192. 168. 23. 2 and subnet mask 255. 255.255 .192 calculate i) Total number of subnet. ii) Total no. of host IPs/subnet. iii) First and last valid IP for each subnet.

Q4 a. Explain DNS Protocol in Detail 10
b. Function of Data link Layer

OR

c. What is HTTP? Explain HTTP transaction in detail
d. Explain BGP protocol

Q5 Write Short Note on following (Any-2) 10

Asymmetric Algorithm

Berkeley Sockets

VOIP

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Unit Test, February 2023
MCA-I (Sem-I)

IT-13 : Object oriented Software Engineering

Time:1:30Hrs **Total Marks: 30**

Instructions: **1) Attempt All Questions**

2) Internal Choice is given for each

Q1 Draw the use case diagram or a class diagram for a car rental agency which as multiple offices/branches. The customers visits the agency for enquiry and takes a test ride then selects the car by signing the terms and conditions form. The customers also book the car through telephone, email and SMS. The agency checks the availability of the car and gives the status to the customer. The customer can also avail the driver facility if required by paying additional charges. The billing is done based on the type of vehicle and distance travelled. 10

Q 2 Draw a Sequence Diagram for balance enquiry through ATM 10

OR

Draw a user Interface for Feedback of One day CET orientation Programme conducted by a reputed Institute

Q 3 Write Short Notes on (Any 2) 10

1) Spiral Model 2) Prototype Model

3) Waterfall Model 4) Rational Unified Process

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Internal Examination
Academic Year 2022-23 (February 2023)

MCA-I (Sem-I)

IT-13 Object oriented Software Engineering

Time: 2:30 Hrs. **Total Marks: 50**

Q.1 Multiple Choice Questions: Write Only the Correct Option in your paper (10)

1) Which of the following is not the phase of SDLC

a. Analyze current system b. Define the latest technology

b. Design a new system d. Develop and implement new system

2) Which of the following is not defined in a good Software Requirement Specification (SRS) document?

a. Functional Requirement b .Non-Functional Requirement

b. Goals of implementation d. Algorithm for software implementation

3) Which of the following property does not correspond to a good Software Requirements Specification (SRS) ?

a. Verifiable b) Ambiguous

c) Complete d) None

4) In Agile model SDLC is carried out in the form of _____.

a) Sprints b) Documents

c) Modules d) Phases

5) Which is not an Agile methodology?

a) Scrum b) Extreme programming

c) PMBOK3 d) Crystal

6) Agilty refers to_____.

a) Allotment b) Analysis

b) Activeness d) Advancement

7) Identify the disadvantage of Spiral Model.

a. Doesn't work well for smaller projects b. High amount of risk analysis

c. Strong approval and documentation control d) none of the above

8) What characteristic of SRS is being depicted in "The product should have a good human interface".

a) Consistent b) Correct c) Non-verifiable d) Ambiguous

9) Providing keyboard shortcuts mostly addresses ____.

a) Efficiency b) Learnability c) Attitude d) Utility

10) Which two models doesn't allow defining all requirements early in the cycle?

a) Prototype & RAD b) Spiral & Prototype c) Waterfall & RAD d) Waterfall & Spiral

Q.2 Prepare SRS in IEEE format for the following system. 'Swami Sweets' has decided to automate billing system. Shop has several serving counters. Following functionalities will be considered. RFID card will be used for entering details of purchasing at respective counter. Bill is prepared at cash counter after reading RFID card entries. Bill amount is accepted using cash, card or gpay mode.

OR

Q.2 Cool Cloth Stores have several different sales Counters. Every Counter is provided with a PC .When customer selects cloth at a counter the entry is made on a respective PC. At the end a bill is prepared at the cash counter taking all entries made for the customer at various counters. Bill amount is accepted either by cash or credit card, as a consultant Prepare SRS for above case. (12)

Q.3 A university has decided to conduct an online entrance test for PhD: Candidate has to submit the application by selecting appropriate streams. University declares the exam center depending on no of candidates enrolled. An exam schedule is prepared by university & displayed on website. Candidate appears for exam & fills the option form for research center. Website provides subject wise guide with vacancies. Result is declared & selected students are called for interview. Draw Class Diagram **or** Activity Diagram. (10)

Q.4 Draw Sequence Diagram for withdrawal of an amount from ATM Machine.

OR

Q.4Draw Collaboration Diagram for withdrawal of an amount from ATM Machine. (10)

Q.5 Write Short Notes (Any 2) (8)

1) Agile Process Model 2)RAD Model

2) Role of System Analyst 4)Features of GUI

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Unit Test, February 2023
MCA-I (Sem-I)

IT-14: Operating Systems Concepts

Time: 1:30Hrs **Total Marks: 30**

Instructions: **1) All Questions are compulsory.**

2) Figure to right indicates full marks.

3) Draw the neat diagram whenever necessary.

Q1) Explain Preemptive and Non-Preemptive SJF scheduling algorithms in detail.

OR

How many page faults occur for FIFO, LRU and Optimal page replacement algorithms for the following reference string with 3-page frames? State which algorithm gives you the minimum no of page faults. 10

1 2 3 2 1 5 2 1 6 2 5 6 3 1 3 6 1 2 4 3

Q2) Consider a system that contains five processes P1, P2, P3, P4, P5 and the three resource types A, B and C. Following are the resources types: A has 20, B has 10 and the resource type C has 14 instances. 10

Process	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P1	0	2	0	14	10	3	6	6	4
P2	4	0	0	6	4	4			
P3	6	0	4	18	0	4			
P4	4	2	2	4	4	4			
P5	0	0	4	8	6	6			

Answer the following questions using the **Banker's algorithm:**

1. What is the reference of the Need matrix?
2. Determine if the system is safe or not.

Q3) **Write Short Note on (Any 2)** 10

1. Process States
2. Demand Paging
3. MUTEX
4. Trashing

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Internal Examination, Feb (2023)
MCA-I (Sem-I)
IT 14: Operating Systems Concepts

Time: 2.5 Hrs **Total Marks: 50**

Instructions: *All questions are compulsory.*

Q.1) **Attempt the following Multiple-Choice Questions. Select one best option from the choices given.** 10

1. **Memory management technique in which system stores and retrieves data from secondary storage for use in main memory is called _____.**

a) Paging b) Fragmentation c) Mapping d) None of the mentioned

2. **What is operating system?**

a) collection of programs that manages hardware resources
b) system service provider to the application programs
c) link to interface the hardware and application programs
d) All of the mentioned

3. **Banker's algorithm is used?**

a) To avoid deadlock b) To deadlock recovery c)To solve the deadlock d) None of these

4. **A problem encountered in multitasking when a process is perpetually denied necessary resources is called:**

a) Deadlock b) Starvation c) Aging d) Inversion

5. **Which one of the following is a synchronization tool?**

a) Thread b) Pipec) Semaphore d) Socket

6. **The shell script is___**

a) File containing a series of commands b) File containing special symbols c) group of commands d) group of functions

7. **In real time operating system _____**

a) all processes have the same priority b) a task must be serviced by its deadline period
c) process scheduling can be done only once d) kernel is not required

8. **Which of the following operating system do you choose to implement a client-server network?**

a) MS-DOS b) Windows c) Windows 98 d) Windows 2000

9. **A page fault occurs when**

a) the Deadlock happens b) the Segmentation starts c) the page is found in the memory d) the page is not found in the memory

10. **Virtual memory is normally implemented by _____**

a) demand paging b) buses c) virtualization d) all of the mentioned

11. **In distributed system, each processor has its own _____**

a) local memory b) clock c) both local memory and clock d) none of the mentioned

12. **To perform a set of instructions repeatedly, which commands are used?**

a) for b) for, while, until c) until d) while

13. **TurnAround time is:**

a) The total waiting time for a process to finish execution b)The total time spent in the ready queue c) The total time spent in the running queued) The total time from the completion till the submission of a process

14. Which of the following are real-time systems?

a) An on-line railway reservation system b) A process control system c) Aircraft control system d)Both (B) and (C)

15. Which control panel applet gives the information of computer?

a) System and security b) Hardware and sound c) Programs d) Appearance and personalization

16.Optimal Page Replacement Algorithm is also called as-----

a) LIFO b) NRU c) Clairvoyant replacement algorithm d) Page buffering

17.We have to make it executable first by using ___, to run a script

a) chmod +w b) chmod +r c) chmod +x d) chmod +rwx

18. Which of the following activities are managed by disk management ____?

a) Free space management b) Storage allocation c) Disk scheduling d) All of the above

19. Process synchronization can be done on which of the following levels

a) Hardware b) Software c) Hardware and Software d) None of these

20. A process refers to 5 pages, A, B, C, D, E in the order: A, B, C, D, A, B, E, A, B, C, D, E. If the page replacement algorithm is FIFO, the number of page transfers with an empty internal store of 3 frames is:

a) 8 b)10 c)9 d) 7

Q.2) A) What is Paging? Explain with Example 6

B) Explain process States with neat diagram. 4

Q.3) A) Differentiate Between Multiprocessor system & Multicore system 6

B) What is Mobile operating system? Explain types of Mobile OS. 4

Q.4) A) Evaluate Round Robin CPU Scheduling algorithm for given Problem. Calculate Average WT and Average TAT.Time slice =3 ms. 6+4

Process	P1	P2	P3	P4
Burst Time	10	5	18	6
Arrival Time	5	3	0	4

B) What is RTOS? Explain its components.

OR

A)Evaluate SJF(Preemptive) CPU Scheduling algorithm for given Problem. Calculate Average WT and Average TAT.

Process	P1	P2	P3	P4
Burst Time	6	8	7	3
Arrival Time	1	1	2	3

6+4

B)Explain Scheduling Criteria

Q.5) A) Describe any 6 commands of Linux. 6

B) Write a shell script for Factorial of a number. 4

OR

What is the syntax for different types of loops available in shell scripting? 6

B) Write Short note on- SAMBA 4