



Department of Computer Science & Engineering

Belawadi, Srirangapatna Tq, Mandya -571477

Faculty Allotment Sheet for Invigilation : IA: 3 EVEN Sem (2021-22)



#	Date Name	25/8/2022		26/8/2022		27/8/2022		Faculty Signature
		Session-1	Session-2	Session-1	Session-2	Session-1	Session-2	
1	Dr. Murali S	S	S	S	S	S	S	
2	Dr. Shivamurthy R C	S	S	S	S	S	S	
3	Dr. Lokesh M R	S				1		
4	Dr. Honnareju B	1		S				
5	Dr. Wahida Banu		1					
6	Prof. Deepthi N		1			S		
7	Prof. Nanda Kumar R B		S	1				
8	Prof. Hemanth S R			1	S			
9	Prof. Yashaaswini A R	IA Coordinator						
10	Prof. Santosh E		1				S	
11	Prof. Ranjith K C	IA Coordinator						
12	Prof. Kavya Priya M L	Deputed for 1st year Invigilation						
13	Prof. Bhavya M R		1			1		
14	Prof. Shashidhar S	1						
15	Prof. Akshatha M	Deputed for 1st year Invigilation						
16	Prof. Harish H K			1			1	
17	Prof. Yashwanth T R						1	
18	Prof. Mahesha K				1		1	
19	Prof. Priyanka N					1		
20	Prof. Seema C K				1			
21	Prof. Michelle Dsouza				1			
22	Prof. Sahana B R	1						
23	Prof. Ambika K B			1			1	
24	Prof. Meenakshi H	1			1	1		

Rajith
(IA Co-ordinator)

Session-1 : 9:30 am to 10:45 am

Session-2 : 2:30 pm to 3:45 pm

R. Sreedhar
(HOD)

Note: 1 - Test Duty S - Squad Duty

“Question Paper for Approval”



Department of Computer Science & Engineering Maharaja Institute of Technology Mysore 4th Semester Third Internal Question Paper 2021-2022 EVEN Semester



CO's addressed

CO-2 Apply suitable techniques for management of different resources.

CO-3 Analyze and demonstrate different process, memory, storage management algorithms and file system commands.

Subject Name: **Operating System**

Test Date: **26/08/2022**

Subject code: **18CS43**

Max Marks: **30**

Note: Answer any one full question from each PART.

Q. No	PART A	Marks	CO	BLT
1a	How do you define paging? Illustrate the paging hardware with neat block diagram.	08	02	03
1b	How do you define segmentation? Illustrate the basic methods of segmentation with example?	07	03	02
OR				
2a	How Many page faults would occur for FIFO, Optimal and LRU page replacement algorithms assuming 3 frames and 4 frames for the following page reference stream 1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5?	08	02	03
2b	How do you define demand paging? Illustrate the steps involved in handling a page fault with neat block diagram.	07	03	02
PART B				
3a	Demonstrate how access matrix model of implementing protection in operating system.	08	02	03
3b	List and explain different attributes of file and explain different type's files in detail.	07	03	02
OR				
4a	Demonstrate the various Disk Scheduling algorithms with example.	08	02	03
4b	List and explain various types of directory structures.	07	03	02

Signature of In-charge Staffs

Dr. Honnaraju B	Prof. Priyanka N	Prof. Akshatha M Course Co-coordinator

Scrutinized by Evaluation Committee

Question Paper approved for Printing

1.

2.

3.

(To be verified by at-least 3 members)

HOD



MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE
 Belawadi, Srirangapatna Tq, Mandya-571477
 Department of Computer Science & Engineering
FOURTH SEMESTER FIRST INTERNAL July-2022



Subject: Operating System
 Subject Code: 18CS43

DATE: 14/07/2022
 Max. Marks: 30
 Duration: 75 Mins

SCHEME AND SOLUTION

NOTE: Answer any ONE FULL questions from each Module				
CO's	Q. No.	MODULE 1		Marks
CO1	1	a	List and explain the services provided by OS for the user and efficient operation of system. Answer: Following are the six services provided by operating systems to the convenience of the users. 1. User interface: Almost all operating systems have a user interface (UI). This interface can take several forms. One is a command-line interface (CLI) and other is a graphical user interface (GUI) is used. 2. Program Execution: The purpose of computer systems is to allow the user to execute programs. So the operating system provides an environment where the user can conveniently run programs. 3. I/O Operations: Each program requires an input and produces output. This involves the use of I/O. So the operating systems are providing I/O makes it convenient for the users to run programs. 4. File System Manipulation: The output of a program may need to be written into new files or input taken from some files. The operating system provides this service. Finally, some programs include permissions management to allow or deny access to files or directories based on file ownership. 5. Communications: The processes need to communicate with each other to exchange information during execution. It may be between processes running on the same computer or running on the different computers. Communications can be occur in two ways: (i) shared memory or (ii) message passing 6. Error Detection: An error is one part of the system may cause malfunctioning of the complete system. To avoid such a situation operating system constantly monitors the system for detecting the errors. This relieves the user of the worry of errors propagating to various part of the system and causing malfunctioning. Following are the three services provided by operating systems for ensuring the efficient operation of the system itself. 1. Resource allocation: When multiple users are logged on the system or multiple jobs are running at the same time, resources must be allocated to each of them. Many different types of resources are managed by the operating system. 2. Accounting: The operating systems keep track of which users use how many and which kinds of computer resources. This record keeping may be used for accounting (so that users can be billed) or simply for accumulating usage statistics. 3. Protection: Protection involves ensuring that all access to system resources is controlled. Security of the system from outsiders is also important. Such security starts with each user having to authenticate him to the system, usually by means of a password, to be allowed access to the resources. Solution: List different services Briefly explain the services 2 Marks 5 Marks SCHEME [2 + 5 = 7]	7
		b	Discuss the different methods of Interprocess Communication in detail. Answer: Concurrent execution of cooperating processes requires mechanisms that allow processes to communicate with one another and to synchronize their actions. Cooperating processes require an interprocess communication (IPC) mechanism that will allow them to exchange data and information. There are two fundamental models of interprocess communication: (1) shared memory and	8

(2) message passing.

In the shared-memory model, a region of memory that is shared by cooperating processes is established. Processes can then exchange information by reading and writing data to the shared region.

In the message-passing model, communication takes place by means of messages exchanged between the cooperating processes. The two communications models are contrasted in Figure below.

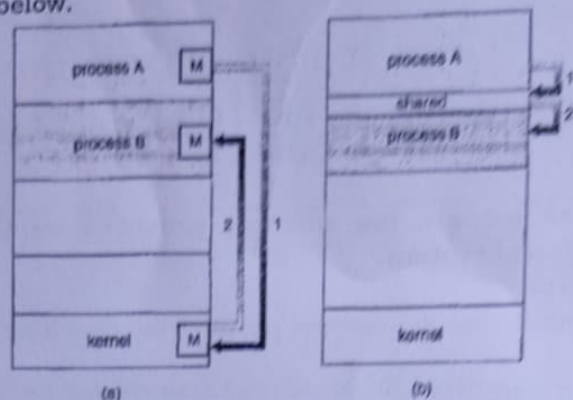


Figure: Communications models. (a) Message passing. (b) Shared memory.

Shared-Memory Systems

Interprocess communication using shared memory requires communicating processes to establish a region of shared memory. Typically, a shared-memory region resides in the address space of the process creating the shared-memory segment.

Other processes that wish to communicate using this shared-memory segment must attach it to their address space.

Shared memory requires that two or more processes agree to remove this restriction. They can then exchange information by reading and writing data in the shared areas.

Two types of buffers can be used. The unbounded buffer places no practical limit on the size of the buffer. The consumer may have to wait for new items, but the producer can always produce new items.

The bounded buffer assumes a fixed buffer size. In this case, the consumer must wait if the buffer is empty, and the producer must wait if the buffer is full.

Message-Passing Systems

Message passing provides a mechanism to allow processes to communicate and to synchronize their actions without sharing the same address space and is particularly useful in a distributed environment, where the communicating processes may reside on different computers connected by a network.

A message-passing facility provides at least two operations: send (message) and receive (message). Messages sent by a process can be of either fixed or variable size. If only fixed-sized messages can be sent, the system-level implementation is straightforward. This restriction, however, makes the task of programming more difficult.

If processes P and Q want to communicate, they must send messages to and receive messages from each other; a communication link must exist between them.

Here are several methods for logically implementing a link and the send() / receive() operations:

- Direct or indirect communication
- Synchronous or asynchronous communication
- Automatic or explicit buffering

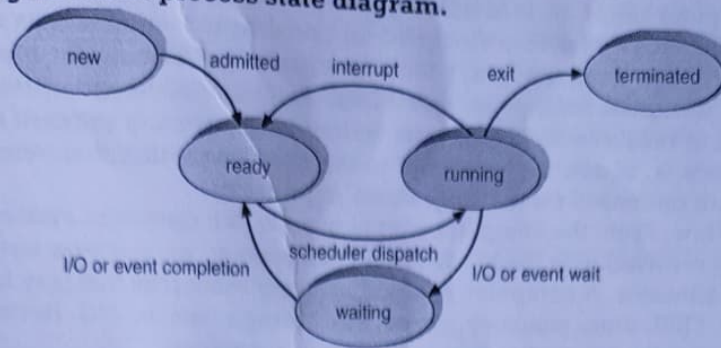
Solution:

Explain inter process communication with diagram 4*4 = 8 Marks
SCHEME [8 = 8]

OR

CO1	2	a	Explain process states and process control block with a neat sketch. Answer: As a process executes, it changes state. The state of a process is defined in part by the current activity of that process. Each process may be in one of the following states: • New State: The process is being created. • Running State: A process is said to be running if it has the CPU, that is, process actually using the CPU at that particular instant. • Blocked (or waiting) State: A process is said to be blocked if it is waiting for some event to happen such that as an I/O completion before it can proceed. Note that a process is unable to run until some external event happens. • Ready State: A process is said to be ready if it needs a CPU to execute. A ready	7
				4

- state process is runnable but temporarily stopped running to let another process run.
- **Terminated state:** The process has finished execution.
- Below figure shows process state diagram.



Process Control Block (PCB)

Each process is represented in the operating system by a process control block (PCB)-also called a task control block. A PCB is shown in Figure below. It contains many pieces of information associated with a specific process, including these:

pointer	process state
process number	
program counter	
registers	
memory limits	
list of open files	
⋮	

Figure: Process control block (PCB).

- Process state
- Program counter
- CPU registers
- CPU scheduling information
- Memory-management information
- Accounting information
- I/O status information

Process state: The state may be new, ready, running, waiting, halted, and so on.

Program counter: The counter indicates the address of the next instruction to be executed for this process.

CPU registers: The registers vary in number and type, depending on the computer architecture. They include accumulators, index registers, stack pointers, and general-purpose registers, plus any condition-code information.

CPU-scheduling information: This information includes a process priority, pointers to scheduling queues, and any other scheduling parameters.

Memory-management information: This information may include such information as the value of the base and limit registers, the page tables, or the segment tables, depending on the memory system used by the operating system.

Accounting information: This information includes the amount of CPU and real time used, time limits, account numbers, job or process numbers, and so on.

Status information: The information includes the list of I/O devices allocated to this process, a list of open files, and so on.

Solution:

Write process state diagram and PCB diagram

3 Marks

Explain process states and PCB

4 Marks

SCHEME [3 + 4 = 7]

Operating systems can be explored from two viewpoints: the user and the system.

User View: The user's view of the computer varies according to the interface being used. Most computer users sit in front of a PC, consisting of a monitor, keyboard, mouse, and system unit. Such a system is designed for one user to monopolize its resources. The goal is to maximize the work (or play) that the user is performing. In this case, the operating system is designed mostly for ease of use, with some attention paid to performance and none paid to resource utilization-how various hardware and software resources are shared. Performance is, of course, important to the user; but rather than resource utilization, such systems are optimized for the single-user experience.

System View: From the computer's point of view, the operation system is the program most intimately involved with the hardware. In this context, we can view an operating system as a resource allocator. A computer system has many resources that may be required to solve a problem: CPU time, memory space, file-storage space, I/O devices, and so on. The operating system acts as the manager of these resources.

A control program manages the execution of user programs to prevent errors and improper use of the computer. It is especially concerned with the operation and control of I/O devices.

DUAL-MODE Operation:

The Dual-Mode taken by most computer systems is to provide hardware support that allows us to differentiate among various modes of execution.

At the very least, we need two separate modes of operation: user mode and kernel mode (also called supervisor mode, system mode, or privileged mode).

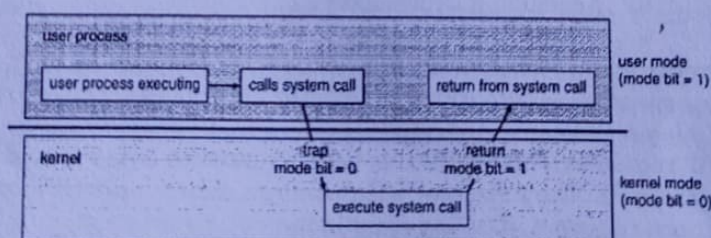
A bit, called the mode bit is added to the hardware of the computer to indicate the current mode: kernel (0) or user (1). With the mode bit, we are able to distinguish between a task that is executed on behalf of the operating system and one that is executed on behalf of the user.

When the computer system is executing on behalf of a user application, the system is in user mode. However, when a user application requests a service from the operating system (via a system call), it must transition from user to kernel mode to fulfill the request.

This is shown in Figure below. As we shall see, this architectural enhancement is useful for many other aspects of system operation as well.

At system boot time, the hardware starts in kernel mode. The operating system is then loaded and starts user applications in user mode. Whenever a trap or interrupt occurs, the hardware switches from user mode to kernel mode (that is, changes the state of the mode bit to 0). Thus, whenever the operating system gains control of the computer, it is in kernel mode. The system always switches to user mode (by setting the mode bit to 1) before passing control to a user program.

The dual mode of operation provides us with the means for protecting the operating system from errant users-and errant users from one another.



Solution:

Explain the role of operating system

4 Marks

Explain dual mode operation

4 Marks

SCHEME [4 + 4 = 8]

PART B

CO2 3 a Illustrate with example the Peterson's solution for critical section problem and prove that the mutual exclusion property is preserved. 7

Answer:

A classic software-based solution to the critical-section problem known as Peterson's solution.

Peterson's solution is restricted to two processes that alternate execution between their critical sections and remainder sections. The processes are numbered P_0 and P_1 .

For convenience, when presenting P_i , we use P_j to denote the other process; that is, j equals $1 - i$. Peterson's solution requires two data items to be shared between the two processes:


```
int turn;
boolean flag[2];
```

The variable turn indicates whose turn it is to enter its critical section. That is, if turn == i, then process P_i is allowed to execute in its critical section. The flag array is used to indicate if a process is ready to enter its critical section.

For example, if flag [i] is true, this value indicates that P_i is ready to enter its critical section. With an explanation of these data structures complete, we are now ready to describe the algorithm shown in Figure below.

```
do {
```

```
    flag[i] = TRUE;
    turn = j;
    while (flag[j] && turn == j);
```

```
    critical section
```

```
    flag[i] = FALSE;
```

```
    remainder section
```

```
} while (TRUE);
```

Figure: The structure of process P_i in Peterson's solution.

To enter the critical section, process P_i first sets flag [i] to be true and then sets turn to the value j, thereby asserting that if the other process wishes to enter the critical section it can do so. If both processes try to enter at the same time, turn will be set to both i and j at roughly the same time. Only one of these assignments will last; the other will occur, but will be overwritten immediately.

To prove property **Mutual exclusion is preserved**, we note that each P_i enters its critical section only if either flag [j] == false or turn == i.

Also note that, if both processes can be executing in their critical sections at the same time, then flag [i] == flag [j] == true. These two observations imply that P₀ and P₁ could not have successfully executed their while statements at about the same time, since the value of turn can be either 0 or 1, but cannot be both.

Solution:

Explain Peterson's solution 7 Marks

SCHEME [7 = 7]

CO2

b Consider the following set of processes with CPU burst time (in ms).

Process	Arrival Time	Burst Time
P1	0	6
P2	1	3
P3	2	1
P4	3	4

Compute the waiting time and average turnaround time for the above process using FCFS, SRT and RR (time quantum = 2m) scheduling algorithm.

Answer:

FCFS:

P1	P2	P3	P4
6	3	1	4

0 6 9 10 14

Average waiting time : 4.75

Turnaround time : 8.25

SRT:

P1	P2	P3	P2	P4	P1
1	1	1	2	4	5

0 1 2 3 5 9 14

Average waiting time : 2.75

Turnaround time : 6.25

RR:

P1	P2	P3	P4	P1	P2	P4	P1	
2	2	1	2	2	1	2	2	
0	2	4	5	7	9	10	12	14

Average waiting time : 4.45

Turnaround time : 8.25

Solution:

Draw Gaunt chart (FCFS, SRT and RR)

2 Marks

Compute Waiting time (FCFS, SRT and RR)

3 Marks

Compute turnaround time (FCFS, SRT and RR)

3 Marks

SCHEME [2 + 3 + 3 = 8]

OR

CO1

4

a

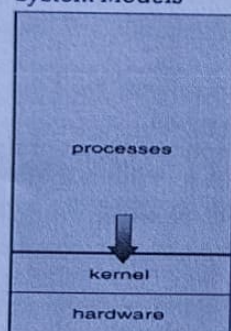
With a neat diagram, explain the concept of virtual machines.

5

Answer:

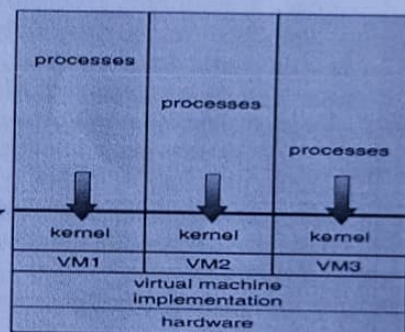
- ☐ A virtual machine takes the layered approach to its logical conclusion. It treats hardware and the operating system kernel as though they were all hardware.
- ☐ A virtual machine provides an interface *identical* to the underlying bare hardware.
- ☐ The operating system creates the illusion of multiple processes, each executing on its own processor with its own (virtual) memory.
- ☐ The resources of the physical computer are shared to create the virtual machines.
 - ✦ CPU scheduling can create the appearance that users have their own processor.
 - ✦ Spooling and a file system can provide virtual card readers and virtual line printers.
 - ✦ A normal user time-sharing terminal serves as the virtual machine operator's console.

☐ **System Models**



Non-virtual Machine

programming interface



Virtual Machine

Advantages/Disadvantages of Virtual Machines

- ☐ The virtual-machine concept provides complete protection of system resources since each virtual
- ☐ Machine is isolated from all other virtual machines. This isolation, however, permits no direct sharing of resources.
- ☐ A virtual-machine system is a perfect vehicle for operating-systems research and development. System development is done on the virtual machine, instead of on a physical machine and so does not disrupt normal system operation.
- ☐ The virtual machine concept is difficult to implement due to the effort required to provide an *exact* duplicate to the underlying machine.

Solution:

Explain virtual machine with neat diagram.

7 Marks

SCHEME [7 = 7]

CO2

b

Is CPU scheduling necessary? Discuss the five different scheduling criteria's used in the computing scheduling mechanism.

8

Answer:

Whenever the CPU becomes idle, the operating system must select one of the processes in the ready queue to be executed. The selection process is carried out by the short-term scheduler (or CPU scheduler). The scheduler selects a process from the processes in memory that are ready to execute and allocates the CPU to that process. So, CPU scheduling is very necessary service of operating system.

2

Many criteria have been suggested for comparing CPU scheduling algorithms. The criteria include the following:

- 6
- **CPU utilization.** We want to keep the CPU as busy as possible. Conceptually, CPU utilization can range from 0 to 100 percent.
 - **Throughput.** If the CPU is busy executing processes, then work is being done. One measure of work is the number of processes that are completed per time unit, called *throughput*.
 - **Turnaround time.** From the point of view of a particular process, the important criterion is how long it takes to execute that process. The interval from the time of submission of a process to the time of completion is the *turnaround time*.
 - **Waiting time.** The CPU scheduling algorithm does not affect the amount of time during which a process executes or does I/O; it affects only the amount of time that a process spends waiting in the ready queue.
 - **Response time.** In an interactive system, turnaround time may not be the best criterion. Often, a process can produce some output fairly early and can continue computing new results while previous results are being output to the user. Thus, another measure is the time from the submission of a request until the first response is produced. This measure, called response time, is the time it takes to start responding, not the time it takes to output the response. The turnaround time is generally limited by the speed of the output device.

Solution:

Explain scheduling criteria's

6 Marks

Define the necessary of CPU Scheduling algorithm

2 Marks

SCHEME [6 + 2 = 8]

Honnaraju B

Dr. Honnaraju B

[Signature]

Prof. Priyanka N

[Signature]

**Prof. Akshatha M
(Course Coordinator)**



Ref: MFTM/ISE/Circular/2021-22/

Date: 12/07/2022

CIRCULAR

As per the directions from principal's office, THIRD series of Internal Assessment tests are to be carried out for 3rd semester students as per the below mentioned schedule. In this regard all the Course Coordinators are hereby informed to submit question papers of your respective course in the prescribed format to HoD for approval on or before 2:00pm, 15th JULY 2022.

General Instructions to faculty members

1. Syllabus completion for setting the question paper must be minimum 1.5 modules.
2. **Compulsorily each course instructor has to set a question paper with co-faculty coordination**, finally question papers to be submitted by course coordinator to HoD and IA Coordinator.
3. Make sure that the set question paper meets all the NBA requirements such as mentioning COs, BTLs, keywords and proper marks distribution.
4. Questions should be framed in such a way that minimum 50% of questions are indirect questions (Application level) and the students can answer those within the stipulated time period given. *For given problems, faculty should have complete solution to ensure that the data is sufficient.*
5. Subject handling faculty has to invigilate and collect answer scripts from student.
6. Faculties are informed to instruct the students to write their Name, USN on Booklet sheet.
7. Student's attendance to be marked on a given B form by respective faculty on the same day of IA without fail.
8. Non-teaching faculties are hereby informed to help teaching faculties whenever your service is needed in pursuit of completing the IA process.

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MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE
Belawadi, S. R. Patna Taluk, Mandya-571477
Department of Information Science and Engineering



THIRD INTERNALS
TIME-TABLE

6th semester

Date	16/07/2022	18/07/2022	18/07/2022	19/07/2022	19/07/2022
Timings	9.30—10.45 am	9.30—10.45 am	2.30—3.45 am	9.30—10.45 am	2.30—3.45 am
6 th Semester	OPEN ELECTIVE	WEB(18CS63)	DWDM(18CS641)	FS (18IS61)	ST (18IS62)

Signature :

[Signature]
H.O.D

<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>		<i>[Signature]</i>
Prof. VT	Prof. PD	Prof. SD	Prof. CC	Prof. PP	Prof. AV	Prof. RS
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
Prof. ABR	Prof. HA	Prof. BMS	Prof. CR	Prof. SMG	Prof. BND	Prof. SDP
<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>				
Prof. SS	Prof. DKB	Prof. AP				

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 Belawadi, S. R. Patna Taluk, Mandya-571477



Department of Information Science and Engineering
FACULTY INVIGILATION DUTY-2021-2022(EVEN) FIRST-

INTERNAL FOR 8TH AND 6TH SEMESTER

Date	Time	Room no	Signature
20/05/2022	9.30AM to 10.45AM		
	Prof. Chitra C	230	
	Prof. Siddaraj. M. G	325	
	Prof. Dharmaraj K B	OASIS LAB 3	
	2.30 TO 3.45PM		
	Prof. Ajay Kumar B R	OASIS LAB 3	
30/05/2022	Prof. Somashekar B M	325	
	Prof. Sharath H A	230	
	9.30AM to 10.45AM		
	Prof. Amith Pradhan	232	
	Prof. Sumaiya siddique	324	
	Prof. BhavyaShree H.D	325	
	Prof. Dharmaraj K B	229	
	2.30 TO 3.45PM		
	Prof. Saraswathi D	232	
	Prof. Amruth V	229	
31/05/2022	Prof. Puneeth P	325	
	Prof. Chitra C	324	
	9.30AM to 10.45AM		
	Prof. Chaitrashree R	324	
	Prof. Ramya S	325	
	Prof. Siddaraj. M. G	229	
	Prof. Sneha D P	232	
	2.30 TO 3.45PM		
	Prof. Amith Pradhan	229	
	Prof. Somashekar B M	232	
1/06/2022	Prof. Sharath H A	325	
	Prof. Sumaiya siddique	324	
	9.30AM to 10.45AM		
	Prof. Amith Pradhan	324	
	Prof. BhavyaShree H.D	229	
	Prof. Sneha D P	232	
	Prof. Saraswathi D	325	

INTERNAL CO-ORDINATOR

H.O.D.
 HEAD OF THE DEPARTMENT
 Information Science & Engineering
 Maharaja Institute of Technology
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26. 4MH1615040



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BELAWADI SIRIRANGAPATTANA TO, MANDYA (D)
DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING



III INTERNAL ASSESSMENT B-FORM-2021-2022 (6th SEM)

ROOM # 232

Sl No	USN	Name	WEB(18CS63)	Date: 18/7/22	Signature	DMDW(18641)	Date: 18/7/22	Signature
			Booklet No	Additional Sheet No		Booklet No	Additional Sheet No	
1	4MH20IS401	NINGARAJU N(LE)	001497			4MH19IS4009		
2	4MH20IS402	POOJA C C(LE)	001499			4MH19IS4008		
3	4MH19IS085	SACHITHA M V	001573			4MH19IS085	113386	
4	4MH19IS086	SAGAR K M	001574			4MH19IS086		
5	4MH19IS087	SAGARI T M	001581			4MH19IS087		
6	4MH19IS088	SAHANA H C	001439			4MH19IS088	113388	
7	4MH19IS089	SAHANAK	001575			4MH19IS089		
8	4MH19IS090	SANDEEP NAG H V	001576			4MH19IS090		
9	4MH19IS091	SANJANA K	001577			4MH19IS091		
10	4MH19IS092	SANJANA K S	001582			4MH19IS092		
11	4MH19IS093	SANJANA M S	001536			4MH19IS093		
12	4MH19IS094	SANJAY C M	001501			4MH19IS094		
13	4MH19IS095	SATHWIK M S	001498			4MH19IS095		
14	4MH19IS096	SHAMITHA K R				4MH19IS096		
15	4MH19IS097	SHASHANK SHREEDHAR	001580			4MH19IS097		
16	4MH19IS098	SHISHIR S	001686			4MH19IS098		
17	4MH19IS110	SUMUKH S	001568			4MH19IS110		
18	4MH19IS111	SURYA M N	001500			4MH19IS111		

20	4MH19IS113	SUSHMITHA MURTHY M N	001578	Sum	4MH19IS112	Sum
21	4MH19IS114	SYED ADNAN	001583	Sum	4MH19IS113	Sum
22	4MH19IS116	SYED HARIS	001502	Sum	4MH19IS114	Sum
23	4MH19IS117	VAISHNAV V V	001490	Sum	4MH19IS116	Sum
24	4MH19IS118	VARSHINI K P	001570	Sum	4MH19IS117	Sum
25	4MH19IS119	VIGNESH RAJ Y R	001494	Sum	4MH19IS118	Sum
26	4MH19IS120	VIAAYALAKSHMI K	001496	Sum	4MH19IS119	Sum
27	4MH19IS121	VISHAL GOWRAV H V	001579	Sum	4MH19IS120	Sum
28	4MH19IS122	VISHRUTH N R	001584	Sum	4MH19IS121	Sum
29	4MH19IS123	VISHWAS C P	001493	Sum	4MH19IS122	Sum
30	4MH19IS124	YASHASWINI H	001503	Sum	4MH19IS123	Sum
31	4MH19IS125	YASHASWINI M	001491	Sum	4MH19IS124	Sum
32	4MH19IS128	AMAR S	001585	Sum	4MH19IS125	Sum
33	4MH18IS097	KAVYASHREE M	001569	Sum	4MH18IS097	Sum
34	4MH18IS053	THEJASWINI S	001571	Sum	4MH18IS053	Sum
35	4MH18IS080	POOJA NAYAK	001495	Sum	4MH18IS080	Sum
36	4MH18IS080	SMARAN	001572	Sum	4MH18IS080	Sum
Total No of Students Present			28	Sum		35
Total No of Students Absent			0	Sum		0
Room Superintendent (Name with Signatures)		Arish Prashanth	Sum	Sum	Sum	Sum

18/7/22

18/7/22

HOB

Maharaja Education Trust (R), Mysuru.



MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE
BELAWADI, SRIRANGAPATNA TALUK, MANDYA-571477
DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING



FIRST INTERNAL TEST

SUB CODE	:	18CS34	TIME	:	2.30-3.45 pm
SUBJECT	:	COMPUTER ORGANIZATION	DATE	:	07-12-2021
SEM	:	III	MAX. MARKS	:	30

Answer Two full Questions from the following: (15 Marks Each)

Part-A		Marks	CO's
1a	With a neat block diagram discuss the basic operational concept of a computer	10	CO1
1b	With the help of a neat diagram distinguish byte addressability	5	CO1
2a	Explain the shift and rotate operation with examples	10	CO1
2b	Explain different Assembler directives with an example (at least 3)?	5	CO1
Part-B			
3a	choose the any two methods of handling multiple devices	9	CO1
3b	Differentiate between ISR(interrupt service routine) , subroutine and exceptions	6	CO1
OR			
4a	With a neat diagram .Explain registers in a DMA interface and use of DMA controller in a computer system.	9	CO1
4b	Discuss daisy chain interrupt technique	6	CO1

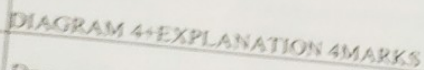
SIGNATURES

DR PUSHPA D	SARASWATHI D	DEC	NBA COORDINATOR	HOD

HEAD OF THE DEPARTMENT
Information Science & Engin
Maharaja Institute of Techno
Mysore

Q. NO.

2



5

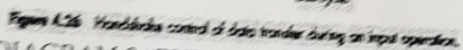
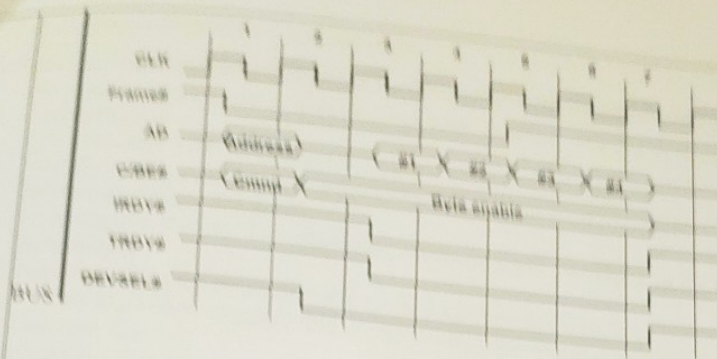


DIAGRAM 3-EXPLANATION 4MARKS

O
R

8

2



Name	Function
CLK	A 33-MHz or 66MHz clock
FRAME#	Sent by the initiator to indicate the duration of a transaction
AD	32 address/data lines, which may be optionally increased to 64
C/BE#	4 command/byte-enable lines (8 for 64-bit bus)
IRDY#, TRDY#	Initiator-ready and Target-ready signals
DEVSEL#	A response from the device indicating that it has recognized its Address and is ready for a data transfer transaction
IDSEL#	Initialization Device Select

- b. LIST the SCSI BUS signals with their functionalities
DIAGRAM 3+EXPLANATION 4MARKS

7

5

PART-B

a.

Explain the design of a 4-bit carry-look ahead adder

Marks
6

CO
2

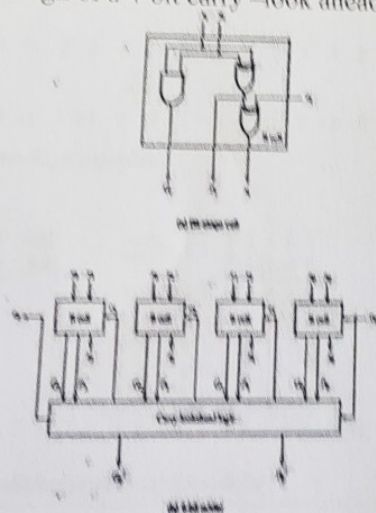


Figure 8.4 - 4-bit carry look-ahead adder

DIAGRAM 3+EXPLANATION 3MARKS

Explain Booths algorithm with recoding table ,multiply +15 and -6 using booths multiplication
 → generates a 2n-bit product
 → treats both positive & negative 2's-complement n-bit operands uniformly(Figure 6.9-6.12).
 · Attractive feature: This algorithm achieves some efficiency in the number of addition required when the multiplier has a few large blocks of 1s.
 · This algorithm suggests that we can reduce the number of operations required for multiplication by representing multiplier as a difference between 2 numbers.
 For e.g. multiplier(Q) 14(001110) can be represented as 010000 (16) -000010 (2)
 001110 (14)
 · Therefore, product $P=M*Q$ can be computed by adding 24 times the M to the 2's complement of 24 times the M

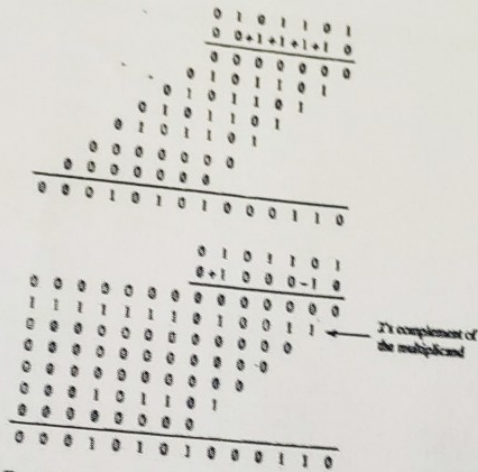


Figure 6.9 Normal and Booth multiplication schemes.

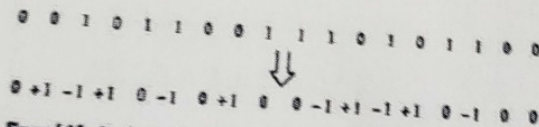


Figure 6.10 Booth recoding of a multiplier.

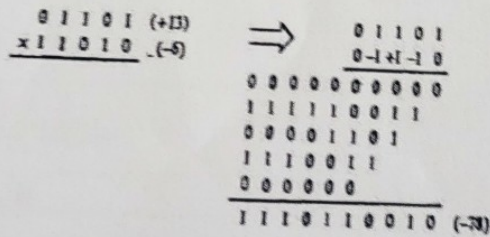


Figure 6.11 Booth multiplication with a negative multiplier.

Multiplier		Version of multiplicand selected by bit i
Bit i	Bit i-1	
0	0	$0 \times M$
0	1	$+1 \times M$
1	0	$-1 \times M$
1	1	$0 \times M$

Figure 6.12 Booth multiplier recoding table.

3. Convert the following pairs of decimal numbers to 5-bit signed 2's complement binary numbers and add them. State whether overflow has occurred.
 $7+2=9$

13. Explain the concept of carry-save addition for the multiplication operation $M \times Q = P$ for 4-bit operands with diagram and suitable example (sequential multiplier circuit) 1) DIAGRAM 4-EXPLANATION 3-MARKS

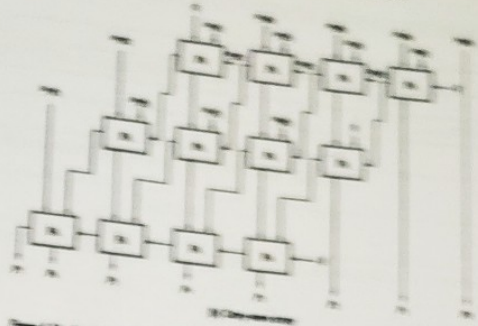


Figure 6.16: Schematic representation of the carry-save multiplier circuit.

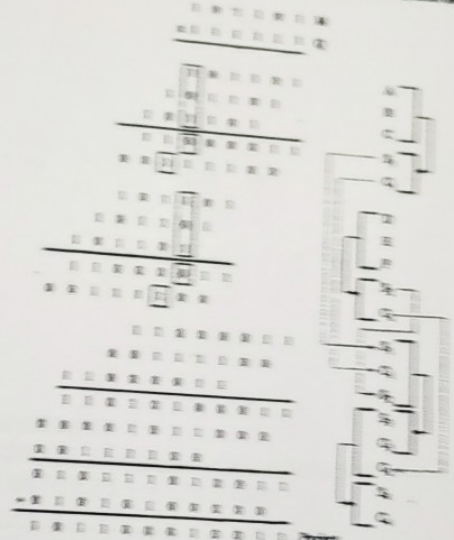


Figure 6.17: The multiplication example from Figure 6.17 (continued) carry-save addition.

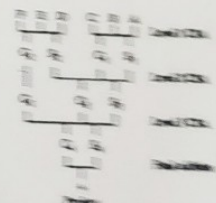


Figure 6.18: Schematic representation of the carry-save addition (continued) from Figure 6.17.

DR. PUSHPA D	SARASWATHI D	HOD

HEAD OF THE DEPARTMENT
 Information Technology
 K. J. Somaiya Institute of Technology
 Mumbai



**DEPARTMENT OF MECHANICAL ENGINEERING
MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE**

Process for IA QP setting, Evaluation & Effective Process

Implementation

- The department conducts three internal assessment tests per semester as per the calendar of events. All three tests are mandatorily to be considered for declaring the final internal assessment marks.
- The components of the internal assessment are tests and assignments or mini projects. Tests are conducted for 30 marks each and final average of tests is calculated as sum of marks scored in three tests divided by three expressed on a scale of 30. The assignments/ mini projects are evaluated for 10 marks. The final internal assessment on a scale of 40 is the sum of test average and assignment/ mini projects. The above mentioned is as per the guidelines of the university.
- The institute has prepared standard formats for IA test QP depending upon the type of the subject to have a better control to review the distribution of questions based on COs.
- While setting the questions, previous years' university exam questions are referred along with spread/coverage over the defined syllabus. Question paper is set as per the standard format. The assignments / mini projects are received from students and evaluated as per COs. The concerned course instructors prepare the question paper, the scheme of evaluation indicating the distribution of marks and also CO which is addressed.
- The Course coordinators shall seek the approval for the scheme of evaluation from the Head of the department and then notify the same on departmental notice boards as well in the institute's website. The Course Instructors evaluates the IA books within a week from the date of conduct of test. Then the scheme of evaluation of the IA questions is shared with students while distributing the IA books and also discussed to clarify doubts if any. the entire process is illustrated in figure Finally, the average of all three tests and assignments are summated for the award of internal assessment marks.



**DEPARTMENT OF MECHANICAL ENGINEERING
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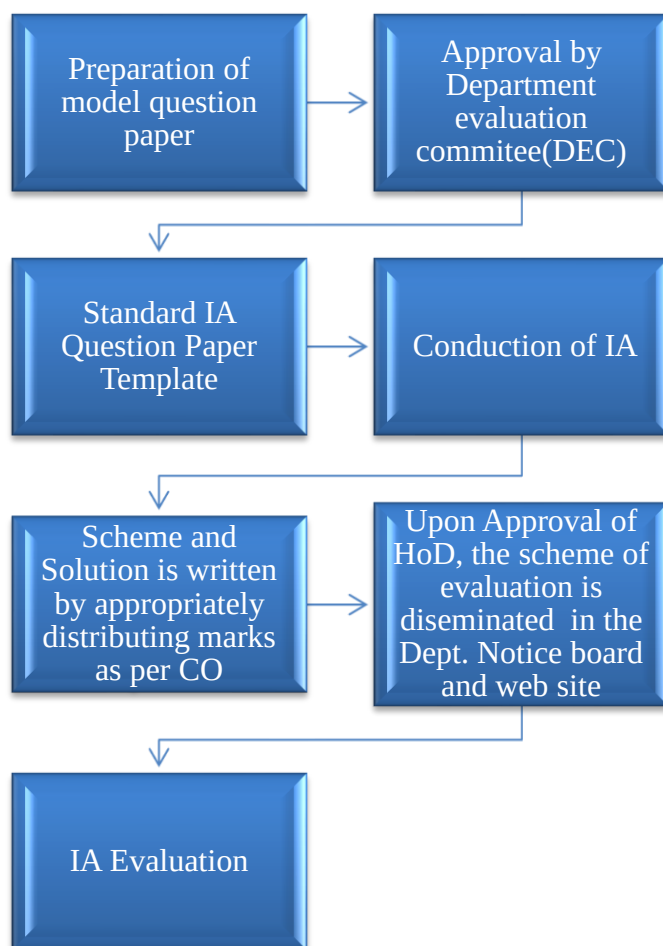


Figure: Internal Assessment Process

A. Process to ensure questions from outcomes perspective

The institute has prepared standard formats for IA test QP depending upon the type of the subject to have a better control to review the distribution of questions based on COs. Questions set are to be mapped to course outcomes at highest possible level in Blooms Taxonomy. Evaluation Committee checks the quality of model question papers with respect to learning levels and coverage of COs in the IA test. The Course coordinating team prepares the question paper as per the approved model question paper.

B. Evidence of CO coverage in Class test

The internal documentation is maintained where the CO mapping to individual questions is mentioned in the IA question paper itself and the sample CIE paper is as shown in figure. Evaluation Committee checks the quality of question papers and ensure coverage of all the COs in the IA tests.



DEPARTMENT OF MECHANICAL ENGINEERING
MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE

MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE DEPARTMENT OF MECHANICAL ENGINEERING				1st INTERNAL ASSESSMENT, 8th SEMESTER SUBJECT: OPERATIONS RESEARCH – 15ME81 TOTAL MARKS: 30, DURATION: 75 MIN. DATE: 18/03/2019
NOTE: Answer any TWO questions choosing one question from 1 and 2 and one question from 3 and 4.				
COs	BTL	Q. NO	QUESTION DESCRIPTION	Marks Allotted
2	1,3	1. a.	Define operations research and discuss its scope. Old machines can be bought at Rs. 2 lakhs each and new machines at Rs. 5 lakhs each. The old machines produce 3 components / week, while new machines produce 5 components / week, each component being worth Rs. 30000. A machine (new or old) costs Rs. 1 lakh/week to maintain. The company has only Rs. 80 lakhs to spend on the machines. How many of each kind should the company buy to get a profit of more than Rs. 6 lakhs/week? Assume that the company cannot house more than 20 machines. Construct the problem and solve it graphically.	8
1,2	3	b.	Solve using Simplex Method: $Max. Z = 2x_1 + 10x_2$ Subject to, $5x_1 + 2x_2 + x_3 \leq 15$ $2x_1 + x_2 + 7x_3 \leq 20$ $x_1 + 3x_2 + 2x_3 \leq 25$ $x_1, x_2, x_3 \geq 0$	7
2	1,3	2. a.	What are the phases of OR study? A small manufacturer makes two products A and B and sells them at a profit of Rs. 6 and Rs. 5 respectively. Two resources R1 and R2 are required to produce the products. Each unit of Product A requires 1 unit of R1 and 3 units of R2. Each unit of Product B requires 1 unit of R1 and 2 units of R2. Construct the problem as a linear programming problem to maximize the profit, given that there are only 5 units of R1 and 12 units of R2 available in the firm.	8
1,2	3	b.	Solve: $Min. 3x + 2y$ Subject to, $-2x + 3y \leq 9$ $-x + 5y \leq 20$ $x, y \geq 0$	7
2	3	3. a.	A farmer has 100 acres of farm land. He can sell all the tomatoes, green vegetables and radishes that he grows. The price he can obtain is Re. 1 for tomatoes, Rs. 0.75/kg of green vegetables, and Rs. 0.50/kg of radishes. The average yield/acre is 200kg of tomatoes, 3000 kg of green vegetables and 1000kg of radishes. Fertilizer is available at Rs. 0.50/kg and the required amount is 100kg for tomatoes and green vegetables and 50kg for radishes. The labor required is 5 man- days for tomato and radishes and 6-man days for green vegetables. A total of 400 man- days of labor is available @ Rs. 20/day. Construct this as an LPP to Maximize the farmer's total profit.	8
1,2	3	b.	Solve the following problem: $Max. Z = 2x_1 + 3x_2 + 4x_3$ Subject to, $-x_1 - 5x_2 - 9x_3 \leq 2$ $3x_1 - x_2 + x_3 \leq 10$ $2x_1 + 3x_2 - 7x_3 \leq 0$ $x_1, x_2, x_3 \geq 0$	7
2	1,3	4. a.	List the advantages, limitations and characteristics of Operations Research. A manufacturer of packing material produces two types of packing tins – round and flat. Major production facilities involved are cutting and joining. The cutting department can process 300 tins of round and 500 tins of flat per hour. The joining department can process 400 tins of round or 300 tins of flat per hour. If the profit contribution of round tins is Rs. 100 per tin and that of flat is Rs. 80 per tin, Construct the problem as an LPP.	8
1,2	3	b.	Solve: $Max. Z = 10.5x_1 + 9x_2 + 8x_3 + 960$ Subject to, $0.25x_1 + 0.2x_2 + 0.5x_3 \leq 400$ $0.3x_1 + 0.4x_2 + 0.15x_3 \leq 1000$ $0.25x_1 + 0.3x_2 + 0.25x_3 \leq 500$ $x_1, x_2, x_3 \geq 0$	7

Figure: Sample CIE question paper

C. Quality of assignment & its relevance to CO's

Assignment questions are given to the students to promote the problem-solving capability & find solutions to the real-life problems wherever applicable and shall submit the assignment within a stipulated time.

Assignments ensure the much-needed deeper understanding of the topics covered as they are required to refer to various sources to complete the assignment. Assignment questions are set such that it helps the student to glance through all the topics of each unit/module and they address specific Course Outcomes not covered through other assessment methods. It also enhances the self-learning capability of students. The template of a sample assignment is as shown in figure



**DEPARTMENT OF MECHANICAL ENGINEERING
MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE**



MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE
BELAWADI, SRIRANGAPATNA TALUK, MANDYA-571438
DEPARTMENT OF MECHANICAL ENGINEERING



SUBJECT: BASIC THERMODYNAMICS

Assignment 1

(Note: please write the questions before answering in the assignment)

NOTE: Please write the questions before answering in the assignment

Q. NO	QUESTION DESCRIPTION	CO'S	TOTAL	BTL																				
1	a Derive the SFEE for a control volume. b A piston and cylinder machine contains a fluid system, which passes through a complete cycle of four processes. During a cycle, the sum of all heat transfers -170 kJ. The system completes 100 cycles per min. Complete the following table showing the method for each item, and compute the net rate of work output in kW. <table border="1"> <thead> <tr> <th>Process</th> <th>Q (kJ/min)</th> <th>W (kJ/min)</th> <th>ΔU (kJ/min)</th> </tr> </thead> <tbody> <tr> <td>a-b</td> <td>0</td> <td>2,170</td> <td></td> </tr> <tr> <td>b-c</td> <td>21,000</td> <td>0</td> <td></td> </tr> <tr> <td>c-d</td> <td>-2,100</td> <td></td> <td>-36,600</td> </tr> <tr> <td>d-a</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Process	Q (kJ/min)	W (kJ/min)	ΔU (kJ/min)	a-b	0	2,170		b-c	21,000	0		c-d	-2,100		-36,600	d-a				2	2.5	1,2,3
Process	Q (kJ/min)	W (kJ/min)	ΔU (kJ/min)																					
a-b	0	2,170																						
b-c	21,000	0																						
c-d	-2,100		-36,600																					
d-a																								
2	a Explain PMM I and PMM II. b A heat engine is used to drive a heat pump. The heat transfer from the engine and heat pump are used to heat water circulating through the radiators of a building. The efficiency of the heat engine is 27 percent and coefficient of heat pump is 4. Evaluate the ratio of the heat transfer to the radiator circulating water to the heat transfer to the engine.	2	2.5	1,2,3																				

Assignment 2

Q. NO	QUESTION DESCRIPTION	CO'S	TOTAL	BTL
1	Define and Prove the <u>Clausius</u> inequality.	2	2.5	1,2,3
2	Prove that efficiency of all reversible engines operating between same fixed reservoirs is same.	2	2.5	1,2,3
3	Define the following 1) Dry bulb temperature 2) Wet bulb temperature 3) Dew point temperature 4) Relative humidity 5) Specific humidity	3	2.5	1,2,3
4	State <u>Dalton's</u> law of partial pressure and <u>Amagats</u> law.	4	2.5	1,2,3

Figure: Sample Assignment

HoD



Ref.No:MITM/MBA/2021-22/Student Circular/

03.12.2021

CIRCULAR

This is to inform III Semester B12 students that First Internal Assessment Test is been scheduled and the details are given below:

First Internal Assessment Test				
S/L	Time	Subject	Room Superintend	Test Hall
08 - 12 - 2021				
1	09:30 AM to 11:00 AM	Emerging Exponential Technologies (20MBA301)	NHG/AYC	MM/HR / Koutilya
2	2:00 PM to 3:30 PM	Technology & Operational Strategy (20MBA302)	IB/SK	MM/HR / Koutilya
09 - 12 - 2021				
1	09:30 AM to 11:00 AM	Investment Management (20MBAFM303)	IB/RHK	MM/HR / Koutilya
2	12:00 PM to 1:30 PM	Services Marketing (20MBAMM303)	MNV/AYC	MM/HR / Koutilya
3	2:00 PM to 3:30 PM	Recruitment & Selection (20MBAHR303)	NHG/BKK.	MM/HR / Koutilya
10 - 12 - 2021				
1	09:30 AM to 11:00 AM	Direct Taxation (20MBAFM304)	BKK/MNV	MM/HR / Koutilya
2	12:00 PM to 1:30 PM	Marketing Research & Analytics (20MBAMM304)	RHK/SK	MM/HR / Koutilya
3	2:00 PM to 3:30 PM	Human Resource Analytics (20MBAHR304)	AYC/MNV	MM/HR / Koutilya

IA: Coordinators
Dr: Nagesh H G
Mr. Abhilash Y C

HOD
Master of Business Administration
Maharaja Institute of Technology
Mysore

RHK	IB	SK	MNV	BKK
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DEPARTMENT OF MANAGEMENT SCIENCES
MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE



ROOM: Koutilya

SUBJECT: Emerging Exponential Technologies (20MBA301)

INTERNAL ASSESSMENT B-FORM

Sl No	USN	Name	1st IA Test			2nd IA Test			3rd IA Test		
			Additional Sheet No	Booklet No	Signature	Additional Sheet No	Booklet No	Signature	Additional Sheet No	Booklet No	Signature
1	4MH20BA001	Abhisheka H C	251121	250953	Abhisheka H C	2512305	2511286	Abhisheka H C	252913	252913	Abhisheka H C
2	4MH20BA002	Akash T R	251121	250953	Akash T R	252913	2511286	Akash T R	252913	252913	Akash T R
3	4MH20BA003	Anusha V S	251121	250953	Anusha V S	252913	2511286	Anusha V S	252913	252913	Anusha V S
4	4MH20BA004	Archana M G	251121	250953	Archana M G	252913	2511286	Archana M G	252913	252913	Archana M G
5	4MH20BA005	Avinasha B M	251121	250953	Avinasha B M	252913	2511286	Avinasha B M	252913	252913	Avinasha B M
6	4MH20BA006	B G Tejashwini	251121	250953	B G Tejashwini	252913	2511286	B G Tejashwini	252913	252913	B G Tejashwini
7	4MH20BA007	Bharath B K	251121	250953	Bharath B K	252913	2511286	Bharath B K	252913	252913	Bharath B K
8	4MH20BA008	Chandan C K	251121	250953	Chandan C K	252913	2511286	Chandan C K	252913	252913	Chandan C K
9	4MH20BA009	Cheethan V	251121	250953	Cheethan V	252913	2511286	Cheethan V	252913	252913	Cheethan V
10	4MH20BA010	Chithirashree D	251121	250953	Chithirashree D	252913	2511286	Chithirashree D	252913	252913	Chithirashree D
11	4MH20BA011	Devika N S	251121	250953	Devika N S	252913	2511286	Devika N S	252913	252913	Devika N S
12	4MH20BA012	Dhanush K R	251121	250953	Dhanush K R	252913	2511286	Dhanush K R	252913	252913	Dhanush K R
13	4MH20BA013	Dhanushkumar C K	251121	250953	Dhanushkumar C K	252913	2511286	Dhanushkumar C K	252913	252913	Dhanushkumar C K
14	4MH20BA014	Dilip M K	251121	250953	Dilip M K	252913	2511286	Dilip M K	252913	252913	Dilip M K
15	4MH20BA015	Gagan A	251121	250953	Gagan A	252913	2511286	Gagan A	252913	252913	Gagan A
16	4MH20BA016	Girish S M	251121	250953	Girish S M	252913	2511286	Girish S M	252913	252913	Girish S M
17	4MH20BA017	Gladys Sonia J	251121	250953	Gladys Sonia J	252913	2511286	Gladys Sonia J	252913	252913	Gladys Sonia J
18	4MH20BA018	Harsha K Y	251121	250953	Harsha K Y	252913	2511286	Harsha K Y	252913	252913	Harsha K Y
19	4MH20BA019	Harshitha M	251121	250953	Harshitha M	252913	2511286	Harshitha M	252913	252913	Harshitha M
20	4MH20BA020	Hemanth H G	251121	250953	Hemanth H G	252913	2511286	Hemanth H G	252913	252913	Hemanth H G
21	4MH20BA021	Jaswini K N	251121	250953	Jaswini K N	252913	2511286	Jaswini K N	252913	252913	Jaswini K N
22	4MH20BA022	Jeevan S	251121	250953	Jeevan S	252913	2511286	Jeevan S	252913	252913	Jeevan S
23	4MH20BA023	Jithin R Gowda	251121	250953	Jithin R Gowda	252913	2511286	Jithin R Gowda	252913	252913	Jithin R Gowda
24	4MH20BA024	Karunakara K T	251121	250953	Karunakara K T	252913	2511286	Karunakara K T	252913	252913	Karunakara K T
25	4MH20BA025	Kavyashree Y K	251121	250953	Kavyashree Y K	252913	2511286	Kavyashree Y K	252913	252913	Kavyashree Y K
26	4MH20BA026	Kiran M	251121	250953	Kiran M	252913	2511286	Kiran M	252913	252913	Kiran M
27	4MH20BA027	Kishor M K	251121	250953	Kishor M K	252913	2511286	Kishor M K	252913	252913	Kishor M K
28	4MH20BA028	Mahalakshmi S	251121	250953	Mahalakshmi S	252913	2511286	Mahalakshmi S	252913	252913	Mahalakshmi S
29	4MH20BA029	Mahimamahesh	251121	250953	Mahimamahesh	252913	2511286	Mahimamahesh	252913	252913	Mahimamahesh



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BELAWADI, NAGUVANAHALLI POST, SRIRANGAPATNA TALUK, MANDYA-571438
DEPARTMENT OF MANAGEMENT SCIENCES



Ref.No: MITM/MBA/2021-22/Student Circular/

26.07.2022

CIRCULAR

This is to inform II Semester students that First Internal Assessment Test is been scheduled and the details are given below:

S/L	Time	Subject	Room Superintend	Test Hall
01-08-2022				
1	9:00 to 10:30 AM	Human Resource Management (20MBA21)	SK/AYC/RHK	Chanakya/Koutilya /HR-MM
2	2:00 to 3:30 PM	Financial Management (20MBA22)	ACM/IB/BKK	Chanakya/Koutilya /HR-MM
02-08-2022				
1	9:00 to 10:30 AM	Research Methodology (20MBA23)	IB/ACM/RHK	Chanakya/Koutilya /HR-MM
2	2:00 to 3:30 PM	Operations Research (20MBA24)	MNV/IB/SK	Chanakya/Kotilya /HR-MM
03-08-2022				
1	9:00 to 10:30 AM	Strategic Management (20MBA25)	BKK/SK/ACM	Chanakya/Koutilya /HR-MM
2	2:00 to 3:30 PM	Entrepreneurship & Legal Aspects (20MBA26)	IB/AYC/RHK	Chanakya/Kotilya /HR-MM

IA - Coordinators

Dr. Nagesh H G

Mr. Abhilash Y C

HOD

Dr. Shyam B R

ACM	RHK	IB	SK	MNV	BKK	SS	HR	NMD



DEPARTMENT OF MANAGEMENT SCIENCES
MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE



SUBJECT: Human Resources Management (20MBA21) INTERNAL ASSESSMENT B-FORM

ROOM: Chanayya

Sl No	USN	Name	1st IA Test			2nd IA Test			3rd IA Test		
			Booklet No	Additional Sheet No	Signature	Booklet No	Additional Sheet No	Signature	Booklet No	Additional Sheet No	Signature
1	4MH21BA001	Abhishek M C	271025	270805	Abh	272419	271401	Abh	269844	272360	Abh
2	4MH21BA002	Abhishek M N	271024	270804	Abh	272420	271402	Abh	269845	272361	Abh
3	4MH21BA003	Abhisheka J S	271019	270523/514	Abhishek J S	272421	271403	Abhishek J S	269846	272362	Abhishek J S
4	4MH21BA005	Aishwarya S	271016		Aishwarya S	272424	271406	Aishwarya S	269847	272363	Aishwarya S
5	4MH21BA006	Ambika M P	271017	270532	Ambika M P	272425	271407	Ambika M P	269848	272364	Ambika M P
6	4MH21BA007	Anudeep M B	271018		Anudeep	272426	271408	Anudeep	269849	272365	Anudeep
7	4MH21BA008	Archana S	270985	270494	Archana S	272427	271409	Archana S	270077	273372	Archana S
8	4MH21BA009	Arjun H	271009	270512	Arjun H	269849	271410	Arjun H	270098	273373	Arjun H
9	4MH21BA010	Arjun N R	271008		Arjun N R	269805	271301	Arjun N R	271862	273383	Arjun N R
10	4MH21BA011	Arpith Rao S J	271006		Arpith Rao S J	269899	271405	Arpith Rao S J	271864	273384	Arpith Rao S J
11	4MH21BA012	B Hemantha Rayudu	271005		B Hemantha Rayudu	269798	271395	B Hemantha Rayudu	271852	272152	B Hemantha Rayudu
12	4MH21BA013	B N Thungashree	271004	2664	B N Thungashree	269800	271408	B N Thungashree	271854	273385	B N Thungashree
13	4MH21BA014	Bandhavya B V	271003	270521	Bandhavya B V	269801	271409	Bandhavya B V	271855	273386	Bandhavya B V
14	4MH21BA015	Bhavana M	270997		Bhavana M	269802	271410	Bhavana M	271856	273387	Bhavana M
15	4MH21BA017	Brunda R	270998		Brunda R	269801		Brunda R	271857	273388	Brunda R
16	4MH21BA018	Chaitra A E	270996	270519/500	Chaitra A E	269802	271411	Chaitra A E	271858	273389	Chaitra A E
17	4MH21BA019	Chandan K	270995	270513	Chandan K	269803	271412	Chandan K	271859	273390	Chandan K
18	4MH21BA020	Chandan Ss	270994	270518	Chandan Ss	269804	271413	Chandan Ss	271860	273391	Chandan Ss
19	4MH21BA021	Chandana D S	271022	270519	Chandana D S	269805	271414	Chandana D S	271861	273392	Chandana D S
20	4MH21BA023	Cheethan U	271021	270529	Cheethan U	269806	271415	Cheethan U	271862	273393	Cheethan U
21	4MH21BA024	Clement Johnson	271020	2710496	Clement Johnson	269807	271416	Clement Johnson	271863	273394	Clement Johnson
22	4MH21BA025	Darshan M	271015	270516	Darshan M	269808	271417	Darshan M	271864	273395	Darshan M
23	4MH21BA026	Deepushree K T	271014	270517	Deepushree K T	269809	271418	Deepushree K T	271865	273396	Deepushree K T
24	4MH21BA027	Dhanush R V	271023	270524	Dhanush R V	269810	271419	Dhanush R V	271866	273397	Dhanush R V
25	4MH21BA028	Dhanya S	271012	270525	Dhanya S	269811	271420	Dhanya S	271867	273398	Dhanya S
26	4MH21BA029	Dharaneesh B J	271011	270526	Dharaneesh B J	269812	271421	Dharaneesh B J	271868	273399	Dharaneesh B J
27	4MH21BA030	Dhirupad Chavan R	271010	270527	Dhirupad Chavan R	269813	271422	Dhirupad Chavan R	271869	273400	Dhirupad Chavan R
28	4MH21BA031	Divyashree V R	271013	270528	Divyashree V R	269814	271423	Divyashree V R	271870	273401	Divyashree V R
29	4MH21BA032	Faiyaz Ahmed	271013		Faiyaz Ahmed	269815	271424	Faiyaz Ahmed	271871	273402	Faiyaz Ahmed



MAHARAJA INSTITUTE OF TECHNOLOGY, MYSORE

BELAWADI, NAGUVANAHALLI POST, SRIRANGAPATNA TALUK, MANDYA-571438

DEPARTMENT OF MANAGEMENT SCIENCES



BUSINESS STATISTICS

Date: 28-04-2022

Sub Code: 20MBA14

Time: 1.30hrs

Second Internals

Total Marks: 50

Note: 1) Answer any TWO full questions from Q1 or Q2 and Q3 or Q4

2) Question No. 5 is Compulsory

3) Use of Statistical Table Allowed

COs	Q. No	Questions						Marks Allotted																	
20MBA14.1	1	a	What is poisson distribution? Write the formula to calculate its probability.						3 Marks																
20MBA14.2		b	The following table gives the number of days in a 50 day period during automobile accidents occurred in a city. Fit a Poisson distribution.						7 Marks																
			No of Accidents	0	1	2	3	4																	
			No. of Days	21	18	7	3	1																	
20MBA14.2	c	A hospital has 20 kidney dialysis machines and the chance of any one of them malfunctioning during any day is 0.02. You are required to find the probability that exactly 3 machines will be out of service on the same day. Then						10 Marks																	
i) Can we use the binomial formula to find out this probability? If yes, calculate the probability? ii) Can we use the poisson formula to find out this probability? If yes, calculate the probability?																									
OR																									
20MBA14.1	2	a	What is Bayesian decision rule?						3 Marks																
20MBA14.2		b	In an umbrella factory, where the umbrellas are bundled in 10's there is a little chance (1/50) of an umbrella being defective. Find the approximate number of packets containing not more than 2 defective umbrella's in a consignment of 10,000 bundles.						7 Marks																
20MBA14.2			c	The management of a photograph record company has discovered that the number of defects on records appears to follow a poisson distribution with mean equal to 0.4. 1. What is the probability that a record selected at random will have three defects? 2. If management sets a policy that records sold to customers must not have any defects, what percentage of its record production will not be made available for sales because of defects.																					
20MBA14.1	3	a		What is Time Series Analysis?						3 Marks															
20MBA14.2		b	What are the main components of Time Series Analysis?						7 Marks																
20MBA14.2			c	The following table relates to the tourist arrivals (in millions) during 2011 to 2007 in India:																					
20MBA14.2	c	<table><tr><td>Year</td><td>2001</td><td>2002</td><td>2003</td><td>2004</td><td>2005</td><td>2006</td><td>2007</td></tr><tr><td>Tourist Arrivals (in million)</td><td>18</td><td>20</td><td>23</td><td>25</td><td>24</td><td>28</td><td>30</td></tr></table>						Year	2001	2002	2003	2004	2005	2006	2007	Tourist Arrivals (in million)	18	20	23	25	24	28	30	10 Marks	
		Year		2001	2002	2003	2004	2005	2006	2007															
Tourist Arrivals (in million)	18	20	23	25	24	28	30																		
Fit a straight line trend by the method of least squares and estimate the number of tourists that would arrive in the year 2011.																									
OR																									
20MBA14.1	4	a	What is Normal distribution? Write the formula to calculate its probability.						3 Marks																

20MBA14.2		b	The average life of 20000 electric bulbs of a company is found to be 2040 hrs with a standard deviation of 60 hrs. Find the number of bulbs that are expected to burn for: 1. More than 2150 hrs 2. Less than 1960 hrs						7 Marks
20MBA14.2		c	Fit a straight line trend to the following data by the method of least squares and estimate the production for the year 1999.						10 Marks
		Year	1990	1992	1994	1996	1998		
		Production 000's		18	21	23	27	16	
20MBA14.2	5		The daily wages of 1000 workmen are normally distributed around a mean of Rs. 70 & with a standard deviation of Rs. 5. Estimate the number of workers whose daily wages will be 1. between Rs. 70 & 72 2. between Rs. 69 & 72 3. more than Rs. 75 4. less than Rs. 63						10 Marks

CO's	Description of Outcomes
20MBA14.1	Demonstrate different statistical techniques in business / real life situation.
20MBA14.2	Apply the importance of probability & time series analysis in decision making.
20MBA14.3	Assess various data analysis functions for business problems.

Q.No	CO1	CO2
1a	2a	3
1b	2b	7
1c	2c	10
3a	4a	3
3b	4b	7
3c	4c	10
5		10
Marks / CO's	6	44

Fwd: To EC Member (FM) *[Signature]*

Scrutinized and Accepted.

[Signature]

Approved

HEAD OF THE DEPARTMENT
Master of Business Administration
Maharaja Institute of Technology
Mysore



MAHARAJA INSTITUTE OF TECHNOLOGY, MYSORE
BELAWADI, NAGUVANAHALLI POST, SRIRANGAPATNA TALUK, MANDYA-571438
DEPARTMENT OF MANAGEMENT SCIENCES



Scheme & Solutions

Certified that question paper contains question set from VTU prescribed books, covering entire syllabus

Scrutinizer's Signatures

Approved
Chairman

Member

Subject Title: Business Statistics

Subject Code: 20MBA14

COs	Q.No	Questions	Marks Allotted
20MBA14.1	1. a	Poisson Distribution: $\frac{e^{-m} \cdot m^x}{x!}$ - m is fixed - It is always +ve No. - It is a discrete series	3 Marks
20MBA14.2	L. b.	$\sum x = 0, 14, 14, 9, 4 = 45$ $\frac{45}{50} = 0.9$ $P(X=0) = 0.4066$ 20 $P(X=1) = 0.3659$ 14 $P(X=2) = 0.1647$ 8 $P(X=3) = 0.0494$ 3 $P(X=4) = 0.0111$ 1	3+4 = 7 Marks
20MBA14.2	1. C.	$nCx \cdot p^x \cdot q^{n-x}$ $n=20$ $p=0.02$ $q=0.98$ $P(X=3) = {}^{20}C_3 (0.02)^3 (0.98)^{20-3}$ $1140 \times (0.00008) \times (0.98)^{17}$ 0.0065	5+5 = 10 Marks
20MBA14.1	2. a	Bayesian decision rule predicts the outcome not only based on previous observations, but also by taking into account the current situation	3 Marks
20MBA14.2	2. b.	$m = np$ $10 \times \frac{0.02}{100} = 0.002$ $1.0000 \times 0.8187 = 0.8187$ $P(X=0) + P(X=1)$ $0.8187 \times 0.002 = 0.001637$ $0.8187 + 0.001637 = 0.82033$	3+4 = 7 Marks

20MBA14.2	2. C.	$P\{x=3\} = 0.00715$ $P\{x=0\} = 1 - P\{x=0\} = 0.32964$ 33% Not available for orders	✓+✓ = 10 Marks
20MBA14.1	3. a.	Arrangement of statistical data in accordance with time of occurrence in the Chronological order	3 Marks
20MBA14.2	3. b.	Long term: Secular/Trend & Cyclical Short term: Seasonal & Erratic Regular [Explain the above points in detail]	2+5 = 7 Marks
20MBA14.2	3. C.	$n = 7$ $\Sigma y = 168$ $\Sigma x = 0$ $\Sigma xy = 53$ $\Sigma x^2 = 28$ $a = \frac{168}{7} = 24$ $b = \frac{53}{28} = 1.893$ $y = 24 + 1.893x$ $y = 24 + 1.893(7)$ $= 37.251$ Million	✓+✓ = 10 Marks
20MBA14.1	4. a.	It is a Continuous probability distribution when the graph is plotted a bell shaped curve called Normal Curve	3 Marks
20MBA14.2	4. b.	Mean = 2040 hrs $\sigma = 60$ hrs 1. 0.9664 $[Z \geq 1.43]$ 2. 0.0918 $[Z \leq -1.33]$	2+5 = 7 Marks
20MBA14.2	4. C.	$n = 5$ $\Sigma y = 105$ $\Sigma x = 0$ $\Sigma x^2 = 40$ $\Sigma xy = 4$ $a = \frac{105}{5} = 21$ $b = \frac{4}{40} = 0.1$ $y = 21 + 0.1x$ $y = 21 + 0.1(5)$ $= 21.50$ Units	✓+✓ = 10 Marks
20MBA14.2	5.	$\mu = 70$ $\sigma = 5$	

		1. $-0.1554 [Z \leq 0] - [Z \leq 0.4]$ 2. $-0.2347 [Z < -0.2] - [Z \leq 0.4]$ 3. $0.5398 [+1]$ 4. $0.0505 [-1.4]$	$\checkmark + \checkmark =$ 10 Marks

 	 HEAD OF THE DEPARTMENT Master of Business Administration Maharaja Institute of Technology Mysore
Dr. Shyam B R / Dr. Raju H K Course Coordinator/s	Dr. Shyam B R HOD



MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE
BELAWADI, SRIRANGAPATNA TQ, MANDYA-571477

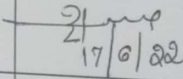
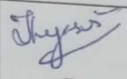


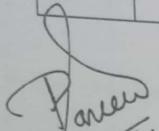
Department of Master of Computer Applications

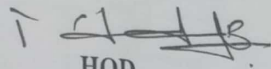
Fourth semester Second IA Invigilation duty List AY 2021-22

Room 1: LH1

Room 2: MCA LAB

Sl no.	Date and Timings	Name	Room	Signature
1	17-06-2022 (9:30 to 10:45AM)	Prof. Amos R	Room1	 17/6/22
		Prof. Mahalakshmi M	Room2	
2	17-06-2022 (2:00PM to 3:30PM)	Prof. Thejswini M N	Room1	 17/6/22
		Prof. Subrahmanya R A	Room2	


Coordinator


HOD



MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE
BELAWADI, SRIRANGAPATNA TQ, MANDYA-571477



Department of Master of Computer Applications

V semester I Internal Assessment December-2021

Subject: Programming using C#.net (18MCA51)

Max. Marks:40 Marks

CO's	Question Number	Question Description		Marks Allocated
18MC52.1	1	a)	What is .NET? Explain components of .NET framework 4.0.	10M
18MC52.2		b)	Write a C# program to demonstrate the usage of properties.	10M
OR				
18MC52.1	2	a)	What is namespace? Explain the steps involved in creating a namespace and mention few common namespaces provided by the .NET framework class library.	10M
18MC52.2		b)	Write a Program in C# to find the sum of each row of given jagged array of 2 inner arrays.	10M
OR				
18MC52.1	3	a)	What is interface? Write a program to implement multiple interface inheritance.	10M
18MC52.3		b)	Differentiate between method overriding and method overloading with suitable example.	10M
OR				
18MC52.1	4	a)	What are delegates? Explain multicast with suitable example.	10M
18MC52.3		b)	Differentiate between Parse and Try Parse method with suitable example and also explain Implicit and Explicit conversion with example.	10M

Vision

To be the premier source that provides a transformative education to create computer professionals, competent entrepreneurs & technocrats to meet the global challenges.

Mission

To facilitate students to nurture skills to practice their professions competently to meet the ever-changing needs of society & environment

To develop the potential of human resources with new ideas, research to meet the requirements of cutting edge technology



MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE
BELAWADI, SRIRANGAPATNA TQ, MANDYA-571477



Department of Master of Computer Applications

V semester I Internal Assessment AY 2021-22

Scheme and Solution

Subject: Programming Using C#.Net (18MCA51)

Max. Marks:40 Marks

CO's	Question Number	Question Description	Marks Allocated
CO1	1	a) .NET Framework is a software development framework developed by Microsoft which supports many languages like C#, Visual Basic, F# etc. .NET Framework includes a large class library called Framework Class Library which provides language interoperability.(02) Components: (08) • Common Language Runtime(CLR) • Common Type System(CLS) • Metadata and Assemblies. • .NET framework class Library. • Windows forms. • ASP.NET and ASP.NET AJAX • ADO.NET • Windows Workflow Foundation • Windows Communication Foundation • Windows Presentation Foundation • Windows cardspace • LINQ(Language Integrated Query)	10M
CO2		b) Program using properties with Get and Set. public class PropertyClass { static string co_name; // Static Property public static string _co_name { get { return co_name; } set { co_name = value; } } }	10M

OR

A namespace is a declarative region that provides a scope to the identifiers (the names of types, functions, variables, etc) inside it. Namespaces are used to organize code into logical groups and to prevent name collisions that can occur especially when your code base includes multiple libraries. (02M)

10M

Steps: (04M)

To define a namespace in C#, we will use the **namespace** keyword followed by the name of the namespace and curly braces containing the body of the namespace as follows:

Syntax:

```
namespace name_of_namespace {
```

```
// Namespace (Nested Namespaces)
```

```
// Classes
```

```
// Interfaces
```

```
// Structures
```

```
// Delegates
```

```
}
```

The System Namespace (Any four) (4M)

The following are some of the common namespaces provided by the .NET Framework class Library:

2

a)

- **System** - The System namespace contains fundamental classes and base classes that define commonly-used value and reference data types, events and event handlers, interfaces, attributes, and processing exceptions.
- **System.Collections** - The System.Collections namespace contains interfaces and classes that define various collections of objects, such as lists, queues, bit arrays, hash tables and dictionaries.
- **System.Data** - The System.Data namespace provides access to classes that represent the ADO.NET architecture. ADO.NET lets you build components that efficiently manage data from multiple data sources.
- **System.Data.OleDb** - The System.Data.OleDb namespace is the .NET Framework Data Provider for OLE DB.
- **System.Data.SqlClient** - The System.Data.SqlClient namespace is the .NET Data Provider for SQL Server.
- **System.Data.OracleClient** - The System.Data.OracleClient namespace is the .NET Framework Data Provider for Oracle.
- **System.Data.Odbc** - The System.Data.Odbc namespace

			is the .NET Framework Data Provider for ODBC.	
2		b)	Jagged Array Program: - Declaration - Read function - Sum function - Display function	10M
01			Interfaces in C# are provided as a replacement of multiple inheritances. Interface contains all abstract methods inherited by classes and structs, which must provide an implementation for each interface member declared. The keyword interface creates an interface. They are public by default. (2M) Program: (08M) using System; <pre> interface A { void Hello(); } interface B { void Hello(); } a) class Test : A, B { public void Hello() { Console.WriteLine("Hello to all"); } } public class interfacetest { public static void Main() { Test Obj1 = new Test(); Obj1.Hello(); } } </pre>	10M
CO3	3	b)	<u>Method Overloading: (02M)</u> Method Overloading is a type of polymorphism. It has several names like	10M

		“Compile Time Polymorphism” or “Static Polymorphism” and sometimes it is called “Early Binding”. Method Overloading means creating multiple methods in a class with same names but different signatures (Parameters). It permits a class, struct, or interface to declare multiple methods with the same name with unique signatures. Compiler automatically calls required method to check number of parameters and their type which are passed into that method. Example: (03M) <u>Method Overriding: (02M)</u> Method Overriding is a type of polymorphism. It has several names like “Run Time Polymorphism” or “Dynamic Polymorphism” and sometime it is called “Late Binding”. Method Overriding means having two methods with same name and same signatures [parameters], one should be in the base class and other method should be in a derived class [child class]. You can override the functionality of a base class method to create a same name method with same signature in a derived class. You can achieve method overriding using inheritance. Virtual and Override keywords are used to achieve method overriding. Example: (03M)	
OR			
CO1	4	a) C# delegates are similar to pointers to functions, in C or C++. A delegate is a reference type variable that holds the reference to a method. The reference can be changed at runtime. Delegates are especially used for implementing events and the call-back methods. All delegates are implicitly derived from the System.Delegate class. Syntax: <code>delegate <return type> <delegate-name> <parameter list></code> Declaring Delegates: Delegate declaration determines the methods that can be referenced by the delegate. A delegate can refer to a method, which has the same signature as that of the delegate. Example: <code>public delegate int MyDelegate (string s); (03M)</code> Multicast Delegate: [03M] The delegate can points to multiple methods. A delegate that points multiple methods is called a multicast delegate. The "+" operator	10M

		adds a function to the delegate object and the "-" operator removes an existing function from a delegate object. Using this property of delegates you can create an invocation list of methods that will be called when a delegate is invoked. This is called multicasting of a delegate. Example: [04M]	
03	b)	Parse() method throws an exception if it cannot parse the value, whereas TryParse() method returns a bool indicating whether it succeeded. However, TryParse does not return the value, it returns a status code to indicate whether the parse succeeded and does not throw exception. (02M) Example: (03M) <u>Implicit and Explicit Conversion(03+2M)</u> Type conversion is converting one type of data to another type. It is also known as Type Casting. In C#, type casting has two forms – • Implicit type conversion – These conversions are performed by C# in a type-safe manner. For example, are conversions from smaller to larger integral types and conversions from derived classes to base classes. • Explicit type conversion – These conversions are done explicitly by users using the pre-defined functions. Explicit conversions require a cast operator. Example:	10M

Parse

g1 me

1/10