Sample Questions

Department of Information Technology

Subject Name: Computer Network and Network Design **Course Code:** ITC402

Semester: IV

Multiple Choice Questions

	Choose the correct option for following questions. All the Questions carry equal marks
1.	RPC stands for
Option A:	Rear Procedure Call
Option B:	Remote Parser Call
Option C:	Remote Passing Call
Option D:	Remote Procedure Call
2.	IPv6 allows _____ security provisions than IPv4.
Option A:	More
Option B:	Less
Option C:	Same
Option D:	None of the above
3.	The IPv4 header field formerly known as the service type field is now called the _____ field.
Option A:	IETF
Option B:	Differentiated Services
Option C:	Checksum
Option D:	Type of Service
4.	BGP protocol uses which of the following algorithm,
Option A:	Distance Vector
Option B:	Path Vector
Option C:	Link-State Routing
Option D:	IGMP
5.	TCP/IP model was developed _____ the OSI model.
Option A:	Prior to
Option B:	After
Option C:	No reference
Option D:	Simultaneous to
6.	Which layer provides the services to user?
Option A:	Application layer
Option B:	Physical layer

Option C:	Transport Layer
Option D:	Network Layer
Option A:	11001001000
Option B:	11001001011
Option C:	11001010
Option D:	110010010011
8.	In polling method, in the poll function, when response is positive then the primary station reads the data and returns an
Option A:	waiting frame
Option B:	Sending frame
Option C:	Receiving frame
Option D:	Acknowledgment frame
9.	Which medium / cable consists of inner copper core and a second conducting outer sheath
Option A:	Fiber optic
Option B:	Unshielded Twisted pair
Option C:	Coaxial cable
Option D:	Shielded Twisted pair
10.	If the resultant value of checksum is 0, what does it indicate?
Option A:	Message accepted
Option B:	Message rejected
Option C:	Message resent
Option D:	Message send back
11.	In the slow start phase of the TCP congestion control algorithm, the size of the congestion window
Option A:	Does not increase
Option B:	Increases linearly
Option C:	Increases quadratically
Option D:	Increases exponentially
12.	The ports ranging from 0 to 1,023 are called the _____ ports. The ports ranging from 1,024 to 49,151 are called _____ ports. The ports ranging from 49,152 to 65,535 are called the _____ ports.
Option A:	well-known; registered; dynamic or private
Option B:	registered; dynamic or private; well-known
Option C:	private or dynamic; well-known; registered
Option D:	private or dynamic; registered; well-known
13.	TCP is a _____ protocol.
Option A:	bit-oriented

Option B:	message-oriented
Option C:	block-oriented
Option D:	byte-oriented
14.	In TCP, the window should not be _____.
Option A:	opened
Option B:	closed
Option C:	shrunk
Option D:	slide
15.	The first section of a URL identifier is the _____.
Option A:	protocol
Option B:	path
Option C:	host
16.	Which of the following compression method is not lossless?
Option A:	run-length coding
Option B:	dictionary coding
Option C:	arithmetic coding
Option D:	predictive coding
17.	In FTP, there are three types of _____: stream, block, and compressed.
Option A:	file types
Option B:	data types
Option C:	Data structures
Option D:	transmission modes
18.	Which layer 1 device can be used to enlarge the area covered by a single LAN segment? .Switch i.NIC i.Hub i.Repeater
Option A:	Switch Only
Option B:	Switch and NIC
Option C:	Switch and Hub
Option D:	Switch and Repeater
19.	In a block, the prefix length is /15; what is the mask?
Option A:	255.254.0.0
Option B:	255.255.255.0
Option C:	255.255.255.128
Option D:	255.255.254.128
20.	An organization is granted a block of classless addresses with the starting address 199.34.76.128/29. How many addresses are granted?
Option A:	4

Option B:	8
Option C:	16
Option D:	32
21	OSI stands for
Option A:	Open system interconnection
Option B:	Operating system interface
Option C:	Optical service implementation
Option D:	Open service internet
22.	Which topology is most fastest topology?
Option A:	Star
Option B:	Hybrid
Option C:	Mesh
Option D:	Bus
23.	Which medium has the highest transmission speed?
Option A:	Coaxial Cable
Option B:	Optical fiber cable
Option C:	Twisted pair cable
Option D:	Electrical cable
24.	A bit-stuffing based framing protocol uses an 8-bit delimiter pattern of 01111110. If the output bit-string after stuffing is 011111000100, then the input bit-string is
Option A:	Output = 01111100100
Option B:	Output = 011111100100
Option C:	Output = 011111001100
Option D:	Output = 0111111111
25.	In CSMA/CD, the frame transmission time (Tt) should be _____ the propogation time(Tp)
Option A:	Tt > Tp
Option B:	Tt>=2Tp
Option C:	Tt>2Tp
Option D:	Tt > 1/Tp
26.	What is the total vulnerable time value of pure Aloha?
Option A:	1/2 Tfr
Option B:	Tfr
Option C:	2*Tfr
Option D:	4*Tfr
27.	A subset of a network that includes all the routers but contains no loops is called _____
Option A:	spanning tree
Option B:	cost tree
Option C:	path tree

Option D:	special tree
28.	In IPv6, the _____ field in the base header restricts the lifetime of a datagram.
Option A:	version
Option B:	next-header
Option C:	hop limit
Option D:	neighbour-advertisement
29.	The term _____ means that IP provides no error checking or tracking. IP assumes the unreliability of the underlying layers and does its best to get a transmission through to its destination, but with no guarantees.
Option A:	Reliable delivery
Option B:	Connection oriented delivery
Option C:	Best effort delivery
Option D:	Worst delivery
30.	OSPF protocol uses which algorithm?
Option A:	Distance Vector
Option B:	Path Vector
Option C:	Link State Routing
Option D:	RIP
31.	Which of the following transport layer protocols is used to support electronic mail?
Option A:	SMTP
Option B:	IP
Option C:	TCP
Option D:	UDP
32.	In TCP, one end can stop sending data while still receiving data. This is called a _____ termination.
Option A:	half-close
Option B:	half-open
Option C:	full-close
Option D:	Full open
33.	Which of the following functionalities must be implemented by a transport protocol over and above the network protocol?
Option A:	Recovery from packet losses
Option B:	Detection of duplicate packets
Option C:	Packet delivery in the correct order
Option D:	End to end connectivity
34.	In TCP, if the ACK value is 200, then byte _____ has been received successfully.
Option A:	199

Option B:	200
Option C:	201
Option D:	202
35.	The second phase of JPEG compression process is _____.
Option A:	DCT transformation
Option B:	Quantization
Option C:	lossless compression encoding
Option D:	None of the choices are correct.
36.	During an FTP session the data connection may be opened _____ .
Option A:	only once
Option B:	only two times
Option C:	Five times
Option D:	as many times as needed
37.	The protocol data unit (PDU) for the application layer in the Internet stack is ____.
Option A:	segment.
Option B:	datagram.
Option C:	message.
Option D:	frame.
38.	A table of a router normally contains addresses belonging to _____ protocol.
Option A:	a single
Option B:	Two
Option C:	Three
Option D:	multiple
39.	The first address assigned to an organization in classless addressing _____.
Option A:	must be a power of 2
Option B:	must be a power of 4
Option C:	must belong to one of the A, B, or C classes
Option D:	must be evenly divisible by the number of addresses
40.	An organization is granted a block of classless addresses with the starting address 199.34.32.0/27. How many addresses are granted?
Option A:	4
Option B:	8
Option C:	16
Option D:	32
41.	Which of the following layers is an addition to OSI model when compared with TCP IP model?
Option A:	Application layer
Option B:	Presentation layer
Option C:	Session layer
Option D:	Session and Presentation layer

42.	How many layers are present in the Internet protocol stack (TCP/IP model)?
Option A:	5
Option B:	7
Option C:	6
Option D:	10
43.	The Media Access Control sublayer deals with which of the following function?
Option A:	Error Control
Option B:	Framing
Option C:	Access Control
Option D:	Flow Control
44.	In which method, a station that wishes to send a frame over a shared channel will sense the channel. If the channel is idle it sends immediately. If the channel is not idle, it waits a random amount of time and then senses the line again.
Option A:	Non- persistent
Option B:	1-persistent
Option C:	p-persistent
Option D:	r-persistent
45.	If the code value in the control field of a S-Frame in HDLC is "10", which type of frame does this code indicate
Option A:	Receive Ready
Option B:	Receive Not Ready
Option C:	Selective-Reject
Option D:	Reject
46.	What does the physical layer define?
Option A:	Data Rate
Option B:	Logical addressing
Option C:	Compression algorithm
Option D:	Encryption method
47.	Which one of the following is not a function of network layer?
Option A:	Routing
Option B:	inter-networking
Option C:	congestion control
Option D:	error control
48.	Which one of the following algorithm is not used for congestion control?
Option A:	Nagle Algorithm
Option B:	load shedding
Option C:	Choke packet
Option D:	routing information protocol

49.	The main function of ICMP is
Option A:	Error and diagnostic functions
Option B:	Routing
Option C:	Forwarding
Option D:	Addressing
50.	Which field restricts the lifetime of a datagram in IPv6 header
Option A:	Version
Option B:	Next-header
Option C:	Hop-limit
Option D:	Neighbor advertisement
51.	TCP groups a number of bytes together into a packet called a _____.
Option A:	user datagram
Option B:	segment
Option C:	datagram
Option D:	message
52.	The inclusion of the checksum in the TCP segment is _____.
Option A:	optional
Option B:	mandatory
Option C:	depends on the type of data
Option D:	Depends on the type of application program
53.	The source port number on the UDP user datagram header defines _____.
Option A:	the sending computer
Option B:	the receiving computer
Option C:	the process running on the sending computer
Option D:	the process running on the receiving computer
54.	In TCP, a SYN segment consumes _____ sequence number(s).
Option A:	no
Option B:	one
Option C:	two
Option D:	three
55.	Lempel Ziv Welch (LZW) method is an example of _____.
Option A:	run-length coding
Option B:	dictionary coding
Option C:	arithmetic coding
Option D:	predictive coding
56.	In the DNS, the names are defined in _____ structure.
Option A:	a linear list
Option B:	an inverted-tree
Option C:	a three-dimensional
Option D:	a nonlinear list

57.	FTP uses the services of _____.
Option A:	UDP
Option B:	TCP
Option C:	IP
Option D:	ICMP
58.	What is the first address of a block of classless addresses if one of the addresses is 12.2.2.76/10?
Option A:	12.0.0.0
Option B:	12.2.0.0
Option C:	12.2.2.2
Option D:	12.2.2.8
59.	The topology that requires multipoint connection is _____.
Option A:	Star
Option B:	Mesh
Option C:	Ring
Option D:	bus
60.	In fixed-length subnetting, the number of subnets must _____.
Option A:	be a power of 2
Option B:	be a multiple of 128
Option C:	be divisible by 128
Option D:	be a multiple of 256

Descriptive Questions

10 marks each
1. Explain HDLC protocol in detail
2. Compare Bus and Star topology
3. Explain IP v4 Header with a neat labelled diagram
4. Write note on TCP timers.
5. Explain SNMP protocol.
6. An organization is granted the block of 16.0.0.0/8. The administrator wants to create 500 fixed length subnets. Find (a) subnet mask (b) number of addresses in each subnet (c) first and last addresses in subnet 1.
7. Explain the OSI Model in brief with suitable figure
8. What is a sliding window? Explain Go back N protocol in detail
9. What do you mean by switching? What are the types of switching techniques
10. What is congestion and what are causes of congestion?
11. Compare TCP and UDP.
12. Consider five source symbols of a discrete memory less source. Their probabilities are given below. Find the Huffman code for eace symbol.

Symbol	M1	M2	M3	M4
probability	0.4	0.3	0.2	0.1

13. Explain ALOHA and Slotted ALOHA.

14. Compare LAN, WAN, MAN
15. Explain IP v4 Header format
16. Compare connectionless and connection-oriented services.
17. What is Domain Name System? How does it work?
18. An organization is granted a block of addresses with the beginning address 14.24.74.0/24. The organization needs to have 3 subblocks of addresses to use in its three subnets: one subblock of 10 addresses, one subblock of 60 addresses and one subblock of 120 addresses. Design the subblocks.
Compare connectionless and connection-oriented services.

Sample Questions

Department of Information Technology

Subject Name: Operating System **Course Code:** ITC403

Semester: IV

Multiple Choice Questions

	Choose the correct option for following questions. All the Questions carry equal marks
1.	To access the services of operating system, the interface is provided by the _____
Option A:	API
Option B:	System calls
Option C:	Library
Option D:	Assembly instructions
2.	It is mediator between computer hardware and software.
Option A:	Operating system
Option B:	System calls
Option C:	Process
Option D:	Open system
3.	What is Process Control Block?
Option A:	Process type variable
Option B:	Data structure
Option C:	A secondary storage section
Option D:	A block in memory
4.	What is the ready state of a process?
Option A:	when process is scheduled to run after some execution
Option B:	when process is unable to run until some task has been completed
Option C:	when process is using the CPU
Option D:	Process is removed from all queues
5.	What is dispatch Latency?
Option A:	The speed of dispatching a process from running to the ready state
Option B:	The time of dispatching a process from running to ready state and keeping the CPU idle
Option C:	The time to stop one process and start running another one.
Option D:	The speed of dispatching process from ready to terminate state
6.	What is a semaphore?

Option A:	Is a binary Mutex.
Option B:	Must be accessed from only one process
Option C:	Can be accessed from multiple processes
Option D:	Must be accessed from only multiple user
7.	A thread is also called___
Option A:	Heavy weight processes
Option B:	Light weight processes
Option C:	Program
Option D:	Process
8.	Deadlock prevention is a set of methods_____
Option A:	To ensure that at least one of necessary conditions cannot hold
Option B:	To ensure that all of the necessary conditions do not hold
Option C:	To decide if requested resources for a process have to be given or not
Option D:	To recover from deadlock
9.	Which of the following two operations are provided by IPC facility?
Option A:	Write and delete facility
Option B:	Delete and receive message
Option C:	Send and delete message
Option D:	Receive and send message
10.	Which one of the following is deadlock avoidance algorithm?
Option A:	Banker's algorithm
Option B:	Round robin algorithm
Option C:	Election algorithm
Option D:	Dijekstra algorithm
11.	In segmentation, each address is specified by _
Option A:	A segment number and offset
Option B:	An offset and value
Option C:	A value and segment number
Option D:	A key and value
12.	What is dynamic loading?
Option A:	Loading multiple routines dynamically
Option B:	Loading a routine only when it is called
Option C:	Loading multiple routines randomly
Option D:	Loading a routine randomly
13.	Consider a logical address space of eight pages of 1024 words each, mapped onto a physical memory of 32 frames. How many bits are there in the logical address?
Option A:	13
Option B:	16

Option C:	10
Option D:	8
14.	_____ chooses the block that is closest in size to the request.
Option A:	First fit
Option B:	Next fit
Option C:	Worst fit
Option D:	Best fit
15.	CPU fetches the instructions from memory according to the value of _
Option A:	Status register
Option B:	Instruction register
Option C:	Program counter
Option D:	Program status word
16.	Device controller works like
Option A:	An interface between device and device driver
Option B:	An interface between human and device
Option C:	An interface between human and OS
Option D:	An interface between device and OS
17.	_____technique uses striping and dedicates one drive to storing parity information.
Option A:	RAID 1
Option B:	RAID2
Option C:	RAID 3
Option D:	RAID 4
18.	In this algorithm the disk arm goes as far as the final request in each direction, and then reverses direction immediately without going to the end of the disk.
Option A:	LOOK
Option B:	SCAN
Option C:	S-SCAN
Option D:	C-LOOK
19.	In real time operating system_____
Option A:	All processes have same priority
Option B:	A task must be serviced by its deadline period
Option C:	Process scheduling can be done only once
Option D:	Kernel is not required
20.	Network Operating system runs on _____.
Option A:	server
Option B:	Every system in server
Option C:	Both server and every system in network

Option D:	On system not in network
21.	What is operating system?
Option A:	Collection of programs that manages hardware resources
Option B:	System service provider to the application programs
Option C:	Interface between user and hardware
Option D:	Collection of programs that manages Software resources
22.	Which of the following is not the Network Operating system ?
Option A:	Ubuntu
Option B:	Windows 7
Option C:	Unix
Option D:	Mach
23.	--- provides the interface to access the services of operating system.
Option A:	System calls
Option B:	API
Option C:	Library
Option D:	Command interpreter
24.	The process enters from ------- state to ------ when interrupt occurs.
Option A:	Ready, Running
Option B:	Running, Waiting
Option C:	Running, Ready
Option D:	Waiting, Running
25.	Which of the statement is correct from the following statements? I. The long-term scheduler selects the process form the job pool and loads into the main memory II. The short-term scheduler selects the process from waiting queue and allocates to the processor for execution III. The execution frequency of short-term scheduler is more than long term scheduler IV. The medium-term scheduler executes less frequently than long term scheduler
Option A:	I and II
Option B:	II and III
Option C:	III and IV
Option D:	I and III
26.	In RR scheduling algorithm if the time quantum is increased more, then it acts as a ----- algorithm
Option A:	FCFS
Option B:	SJF
Option C:	Multilevel Queue
Option D:	Priority

27.	In which of the load balancing the specific task find for imbalance on each processor, if found then moves processes form one overloaded processor to Idle one.
Option A:	Pull Migration
Option B:	Push Migration
Option C:	Mutually exclusive Pull and Push Migration
Option D:	Hyper threading Algorithm
28.	The productive operating system, checks for the deadlock --------
Option A:	Every time the process requests recourse
Option B:	After a specific time interval
Option C:	When a system is in unsafe state
Option D:	Every time a resource request is made at a fixed time interval
29.	In a certain application a value of counting semaphore is 17. The following operations were completed on the semaphores in the given order 2P, 20P, 5V, 10V, 10P, 2P. What would be the new value of counting semaphore?
Option A:	2
Option B:	10
Option C:	0
Option D:	3
30.	Which of the statements are true in case of recovery from Deadlock ? I Ignore the processes which are in deadlock state II Abort all resources which are in deadlock III Abort one process at a time until deadlock cycle is eliminated IV Abort the process which requests the deadlocked resources
Option A:	Only III
Option B:	Only IV
Option C:	II and III
Option D:	Only IV
31.	In dynamic storage allocation problem, the --- fit and --- fit are preferable than ---- fit.
Option A:	Worst, First, Best
Option B:	Best, First, Worst
Option C:	Worst, Best, First
Option D:	Worst, First, Best
32.	Which of the sentence is false? I Valid bit indicates that the page is in process's logical address space II Valid and Invalid bits provides protection. III Invalid bit indicates that the page is not in process's logical address space IV Shared pages do not have the Valid, Invalid bits
Option A:	IV
Option B:	III
Option C:	I and II

Option D:	I and III
33.	Generally, each process has an associated ------
Option A:	Segment Table
Option B:	Page Table
Option C:	Cache
Option D:	Virtual Memory
34.	Which of the following are the likely causes of thrashing? I. There are too many applications in the system II. The segment size was very small III. First in first out policy is followed IV. Least recently used policy for page replacement is used
Option A:	II and IV
Option B:	I and III
Option C:	II and III
Option D:	I and IV
35.	After an allocation of space using the worst-fit policy the number of holes in memory --- .
Option A:	Increases by one
Option B:	Decreases by one
Option C:	Remains same
Option D:	Memory Reduces by the process size
36.	If there are 32 segments, each of size 1KB ,then the logical address should have ----
Option A:	13 bit
Option B:	14 bit
Option C:	15 bit
Option D:	16 bit
37.	----- causes file system fragmentation.
Option A:	Unused space or single file are not contiguous
Option B:	Used space is not contiguous
Option C:	Used space is non-contiguous
Option D:	Multiple files are non-contiguous
38.	Which of the statement is true
Option A:	RAID level 0 supports byte stripping
Option B:	RAID level 1 allows bit stripping
Option C:	RAID level 0 supports no mirroring and RAID 1 supports mirroring with block striping
Option D:	RAID protects against data protection.
39.	The number of applications in any given task at a particular time in Android are ----
Option A:	One
Option B:	Many
Option C:	Few

Option D:	Zero
40.	Which of the following which is not the characteristics of embedded system
Option A:	Real time operation
Option B:	Reactive Operation
Option C:	Continuity
Option D:	I/O device flexibility
41.	Which process state will do instruction execution?
Option A:	Running state
Option B:	Waiting state
Option C:	Ready state
Option D:	Halt state
42.	Which data structure is associated with process?
Option A:	Process Common Batch
Option B:	Process Control Block
Option C:	Process Counter Block
Option D:	Program Control Block
43.	What is the job of Program counter?
Option A:	Iterate the few instructions.
Option B:	Print the next instruction.
Option C:	Stop the execution of next instruction.
Option D:	Address of next instruction to be executed is stored.
44.	Select pair of atomic operations associated with Semaphore S.
Option A:	exit () and print ()
Option B:	wait () and signal ()
Option C:	length () and wait ()
Option D:	wait() and get()
45.	The necessary conditions needed before deadlock can occur?
Option A:	No Mutual Exclusion, Hold and wait, Preemption, Circular Wait
Option B:	Mutual Exclusion, No Hold and wait, Preemption, Circular Wait
Option C:	Mutual Exclusion, Hold and wait, No Preemption, Circular Wait
Option D:	Mutual Exclusion, Hold and wait, Preemption, No Circular Wait
46.	Which of the following is not allocation method of a disk space?
Option A:	Contiguous allocation
Option B:	Linked allocation
Option C:	Indexed allocation
Option D:	Parallel allocation
47.	Page called into memory only when it is needed is called as
Option A:	Demand Memory
Option B:	Demand Paging
Option C:	Demand Page Fault
Option D:	Demand Segmentation
48.	Page-Table base register (PTBR) indicates

Option A:	Page Table Base address
Option B:	Paging File address
Option C:	Main Memory address
Option D:	Virtual Memory address
49.	Consider the following table of arrival time and burst time for three processes P0, P1 and P2. <table><tr><td>Process</td><td>AT</td><td>BT</td></tr><tr><td>P0</td><td>0 ms</td><td>9 ms</td></tr><tr><td>P1</td><td>1 ms</td><td>4 ms</td></tr><tr><td>P2</td><td>2 ms</td><td>9 ms</td></tr></table> The pre-emptive shortest job first scheduling algorithm is used. Scheduling is carried out only at arrival or completion of processes. What is the average waiting time for the three processes?
Option A:	5.0 ms
Option B:	4.33 ms
Option C:	7.88 ms
Option D:	5.2 ms
50.	Who is responsible to release write lock in reader-writer process?
Option A:	First reader
Option B:	Last reader
Option C:	First writer
Option D:	No reader as well as writer
51.	The DMA transfers are performed by a control circuit called as
Option A:	Device interface
Option B:	DMA controller
Option C:	Data controller
Option D:	Device Manager
52.	The defective sectors on the disks are often called as……
Option A:	Good blocks
Option B:	Bad sectors
Option C:	Bad blocks
Option D:	Blocked sectors
53.	Response time is very crucial in …….OS.
Option A:	Batch OS
Option B:	Mobile OS
Option C:	Cloud based OS
Option D:	Real-Time OS
54.	In which system, tasks are equally divided between all the nodes?
Option A:	client/server systems
Option B:	peer to peer systems
Option C:	Virtual system
Option D:	Master slave system
55.	Consider a disk queue with requests for I/O to blocks on cylinders.

	98 183 37 122 14 124 65 67. Considering SSTF (shortest seek time first) scheduling, the total number of head movements is, if the disk head is initially at 53 is?
Option A:	236
Option B:	237
Option C:	240
Option D:	200
56.	Which of the following is synchronization tool?
Option A:	Thread
Option B:	Catch memory
Option C:	Semaphore
Option D:	Socket
57.	Which one of the following error will not be handle by the operating system?
Option A:	power failure
Option B:	lack of paper in printer
Option C:	connection failure in the network
Option D:	removal of malicious code
58.	A Process Control Block (PCB) does not contain which of the following?
Option A:	Code
Option B:	Stack
Option C:	MBR
Option D:	Data
59.	Peterson's solution is applicable to …..
Option A:	Only two processes
Option B:	One process
Option C:	Three Processes
Option D:	More than two processes
60.	A file control block does not contain the information about
Option A:	File permissions
Option B:	Virtual file memory
Option C:	File ownership
Option D:	Location of file contents

Descriptive Questions

10 marks each
1. What is an operating system? What is need of operating system? Explain various functions of an OS.
2. Explain file allocation methods in detail with proper diagram.
3. Consider the following set of processes indicated as **(process name, Arrival time, burst time)** for the following (P1,0,6), (P2,1,4), (P3,3,5), (P4, 5, 3).

Draw the Gantt charts illustrating the execution of these processes using preemptive and non-preemptive SJF and FCFS. Calculate average turnaround time, average waiting time in each case.

4. Calculate hit and miss for the following string using page replacement policies- FIFO, LRU, Optimal with frame size=4. Reference string is given as 1 2 3 2 1 5 2 1 6 2 5 6 3 1 3 6 1 2 4 3.

5. Explain the necessary conditions for deadlock. Explain how a resource allocation graph determines a deadlock.

6. Explain paging in detail. Describe how logical address is converted into physical address.

7. Consider following processes. Calculate the Waiting and Turnaround time for each process using SJF and RR algorithm. Time quantum is 3.

Process Id	Burst Time	Arrival Time
P1	8	0
P2	4	1
P3	9	2
P4	5	3

8. What is a thread? How multithreading is beneficial? Compare and contrast different multithreading models.

9. What is semaphore and its types? How the classic synchronization problem -Dining philosopher is solved using semaphores?

10. Consider the page reference string 1,2,3,5,2,4,5,6,2,1,2,3,7,6,3,2,1,2,3,6. Calculate the Page fault using 1. Optimal 2. LRU 3. FIFO algorithms for a memory with three frames.

11. Consider the snapshot of a system. Answer the following questions based on Bankers Algorithm

	Allocation	Max	Available
	ABCD	ABCD	ABCD
P0	0012	0012	1520
P1	1000	1750	
P2	1354	2356	
P3	0632	0652	
P4	0014	0656	

i. What is the content of Need Matrix?
ii. Is the system is safe state? What is the safe sequence?

12. What is open-source operating system? What are the design issues of Mobile operating system and Real time operating system?

13. Explain how process will be represented using PCB. Elaborate role of PCB in context switching.

14. Explain concept of critical section. Explain reader- writer problem using semaphore.

15. Discuss hardware support required for demand paging. What is page fault ratio using optimal page replacement for reference string given below using page frame size=4.
1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2

16. Consider following snapshot of a system.

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

Answer the following questions using Banker's algorithm.
a) Find Need Matrix.
b) Is the system in safe state. Find safety sequence.
c)If request from process P1 arrives for (0,4,2,0). Can this request be granted immediately?

17. Suppose that a disk drive has 5000 cylinders, numbered from 0 to 4999. The drive is currently serving the request at cylinder 143 and previous request was at cylinder 125. Queue of pending request in FIFO order is
86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130.
Calculate the Seek time using following disk scheduling algorithm.
a) FIFO b) SSTF c) SCAN d) LOOK

18. What are the features of Mobile OS? Compare any two types of Mobile OS. Discuss process management in mobile OS.

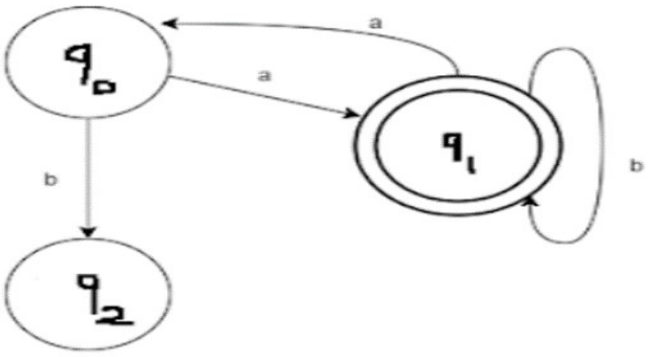
Sample Questions

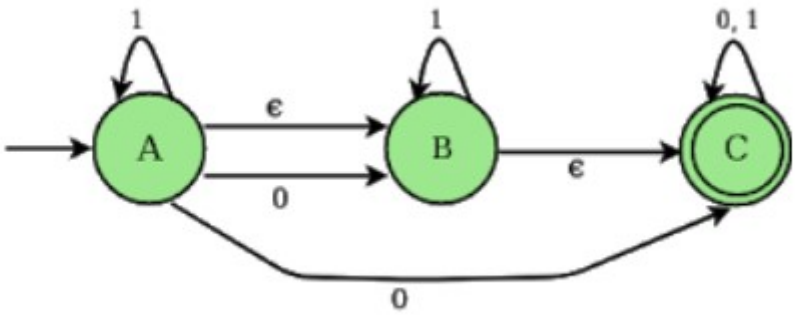
Information Technology

Subject Name: Automata Theory **Course Code**: ITC404

Semester: IV

Multiple Choice Questions

	Choose the correct option for following questions. All the Questions carry equal marks
1.	Which of the following is not a regular expression?
Option A:	(0+1)*. (00+11)*
Option B:	(0+1)-(01+01)*(0+1)*
Option C:	(01+11+10)*
Option D:	(1+2+0)*(1+2)*
2.	which language is represented by Regular expressions ?
Option A:	Recursive language
Option B:	Regular language
Option C:	Context free language
Option D:	Ambiguous Language
3.	The set of all strings over ∑ ={} in which a single 0 is followed by any number of 1's or a single 1 followed by any number of 0's is-----
Option A:	01* + 10*
Option B:	01*10*
Option C:	0*1 + 1*0
Option D:	0*
4.	The language accepted by this DFA is 
Option A:	ababaabaa

Option B:	abbbaa
Option C:	abbbaabb
Option D:	abbaabbaa
5.	Moore Machine is an application of:
Option A:	Finite automata without input
Option B:	Finite automata with output
Option C:	Non- Finite automata with output
Option D:	Non- Finite automata without output
6.	In regular expressions, the operator '*' stands for------
Option A:	Concatenation
Option B:	Addition
Option C:	Selection
Option D:	Iteration
7.	The number of elements present in the ε-closure(B) in the given diagram. 
Option A:	0
Option B:	1
Option C:	2
Option D:	3
8.	Grammar is called ambiguous if ----------
Option A:	Two or more productions have the same non-terminal on the left-hand side
Option B:	Derivation tree has more than one associated sentence
Option C:	There is a sentence with more than one derivation tree corresponding to it
Option D:	Brackets are not present in the grammar
9.	S -> aSa S->bSb S->a S->b The language generated by the above grammar over the alphabet {a,b} is the set of
Option A:	All Palindromes
Option B:	All Odd length Palindromes

Option C:	All even length palindromes
Option D:	String with null value
10.	Unrestricted grammar is also called _____ Grammar
Option A:	Type 3
Option B:	Type 2
Option C:	Type 1
Option D:	Type 0
11.	The Trees which represent derivations in CFG are called
Option A:	Parse tree
Option B:	Derivation Tree
Option C:	Both A and B
Option D:	Binary Tree
12.	A Multitape Turing machine is _____ powerful than a single tape Turing machine.
Option A:	More
Option B:	Less
Option C:	Equal
Option D:	Not equal
13.	At Pushdown automata is _____ if there is at most one transition applicable to each configuration.
Option A:	Deterministic
Option B:	Non-Deterministic
Option C:	Finite
Option D:	Non-Finite
14.	Select value of n, if Push down automata is defined using n-tuples:
Option A:	7
Option B:	5
Option C:	6
Option D:	3
15.	In pushdown automata notation, what does the symbol Z_0 represents?
Option A:	An element of G
Option B:	Initial stack symbol
Option C:	Top stack alphabet
Option D:	Head
16.	The language recognized by Turing machine is:
Option A:	Context free language
Option B:	Context sensitive language
Option C:	Recursively enumerable language
Option D:	Regular language

17.	In Multi Tape Turing machine there are
Option A:	Having more stack
Option B:	More than one input tapes of Turing machine
Option C:	Similar to the basic model of Turing machine
Option D:	More than one head going in only one direction
18.	Which of the following statement is false for a Turing machine?
Option A:	There exists an equivalent deterministic Turing machine for every non-deterministic Turing machine
Option B:	Turing decidable languages are closed under intersection and complementation
Option C:	Turing recognizable languages are closed under union and intersection
Option D:	Turing recognizable languages are closed under union and complementation
19.	Which of the following is the most general phase structured grammar?
Option A:	Regular
Option B:	Context-sensitive
Option C:	Context free
Option D:	Recursive
20.	The concept of FSA is much used in this part of the compiler
Option A:	Lexical analysis
Option B:	Parser
Option C:	Code Generation
Option D:	Code Optimization
21.	Which symbol is used to represent a Transition Function of Finite Automata?
Option A:	β
Option B:	δ
Option C:	$\sum$
Option D:	ε
22.	What is the language of Finite Automata?
Option A:	Recursive Language
Option B:	Context-Sensitive Language
Option C:	Regular Language
Option D:	Context-Free Language
23.	Number of states in NFA are
Option A:	Less than or equal to equivalent DFA
Option B:	Less than equivalent DFA
Option C:	Greater than equivalent DFA
Option D:	Greater than or equal to equivalent DFA
24.	What is the correct form of productions in Chomsky Normal Form?
Option A:	$A \rightarrow aB$
Option B:	$A \rightarrow BC$
Option C:	$A \rightarrow B$

Option D:	A →Ba
25.	The language WW^R is accepted by-
Option A:	Deterministic Pushdown Automata
Option B:	Non-Deterministic Finite Automata
Option C:	Deterministic Finite Automata
Option D:	Non-Deterministic Pushdown Automata
26.	The transition δ (q1,a,a) = (q_f, ε) of PDA is -
Option A:	Performing delete and pop operation
Option B:	Performing delete operation only
Option C:	Performing pop operation only
Option D:	Performing push operation
27.	What is the language of the Turing machine?
Option A:	Regular language
Option B:	Context free language
Option C:	Recursive enumerable language
Option D:	Context sensitive language
28.	What is the limitation of regular grammar?
Option A:	Can generate simple strings
Option B:	Can only describe regular language
Option C:	Can't generate long strings
Option D:	Too difficult to understand
29.	DFA designed to accept strings with no more than 2 a's can accept:
Option A:	a b a b
Option B:	a b a a
Option C:	b a a a
Option D:	a b a b a b a b
30.	The length of Moore machine compared to Mealy machine is:
Option A:	Equal to Mealy machine for given input
Option B:	Smaller than Mealy machine for given input
Option C:	One smaller than Mealy machine for given input
Option D:	One longer than Mealy machine for given input
31.	Derivation process is one which-
Option A:	Parses given string
Option B:	Generates new string
Option C:	Convert string to right linear grammar
Option D:	Convert string to left linear grammar
32.	Language of PDA is:
Option A:	Recursively Enumerable language
Option B:	Regular Language
Option C:	Context sensitive language

Option D:	Context free language
33.	The tuple Σ in Turing machine represents-
Option A:	Tape symbol
Option B:	Output symbol
Option C:	Tape alphabet
Option D:	Input alphabet
34.	A Turing Machine can compute problems which are-
Option A:	Complex
Option B:	Simple
Option C:	Unsolvable
Option D:	Computable
35.	Which of the following languages are most suitable for implementing context free languages?
Option A:	C
Option B:	Perl
Option C:	Assembly Language
Option D:	Compiler language
36.	With reference to the process of conversion of a context free grammar to CNF, the number of variables to be introduced for the terminals are: S→AB0 A→001 B→A1
Option A:	3
Option B:	4
Option C:	2
Option D:	5
37.	Next move function δ of a Turing machine M = (Q, Σ , Γ, δ, q0, B, F) is a mapping
Option A:	δ : Q x Σ → Q x Γ
Option B:	δ : Q x Γ → Q x Σ x {L, R}
Option C:	δ : Q x Σ → Q x Γ x {L, R}
Option D:	δ : Q x Γ → Q x Γ x {L, R}
38.	1. Which of the following grammars are in Chomsky Normal Form:
Option A:	S→AB|BC|CD, A→AB B→CD, C→2, D→3
Option B:	S→AB, S→BCA|0|1|2|3
Option C:	S→ABa, A→aab, B→Ac
Option D:	S→ABa, A→AAB, B→Ac
39.	0. The lexical analysis for a high level language needs the power of which one of the following machine models?
Option A:	Turing Machine

Option B:	Deterministic pushdown automata
Option C:	Finite state automata
Option D:	Non-Deterministic pushdown automata
40.	Which of the following relates to Chomsky hierarchy?
Option A:	Regular<CFL<CSL<Unrestricted
Option B:	CFL<CSL<Unrestricted<Regular
Option C:	CSL<Unrestricted<CF<Regular
Option D:	CSL<Unrestricted< Regular<CF
41.	(r+s)* is equivalent to:
Option A:	s*r*
Option B:	(r*s*)*
Option C:	r*s*
Option D:	rs
42.	X→Y |α is the production rule for_____
Option A:	Regular Grammar
Option B:	Context Free Grammar
Option C:	Right Linear Grammar
Option D:	Left Linear Grammar
43	Let L={ab,aa,baa},then which of the following does not belong to the L*?
Option A:	ε
Option B:	abab
Option C:	abba
Option D:	aaabbaa
44.	*Epsilon*-closure of a state is a combination of self state and _____
Option A:	Initial state
Option B:	Final state
Option C:	Non-epsilon reachable state
Option D:	ε reachable state
45.	Number of states required to accept the string that ends with 10.
Option A:	1
Option B:	2
Option C:	3
Option D:	4
46.	The finite automata is called NFA when there exists_____ for a specific input from current state to next state.
Option A:	More than one paths
Option B:	Single path
Option C:	No path
Option D:	Infinite paths
47.	Which of the following is FALSE:

Option A:	Any given mealy machine has an equivalent moore machine.
Option B:	Any given moore machine has an equivalent mealy machine.
Option C:	Mealy and moore machines are FSM with output capability.
Option D:	Moore machine does not have an equivalent mealy machine.
48.	The transition function of deterministic finite automata is _____ and non-deterministic finite automata is _____
Option A:	δ: Q x $\sum \rightarrow$Q δ: Q x $\sum \rightarrow 2^Q$
Option B:	δ: Q x $\sum \rightarrow$Q δ: Q x $\sum \rightarrow Q^2$
Option C:	δ: Q x $\sum \rightarrow \{Q, \sum\}$ δ: Q x $\sum \rightarrow 2^Q$
Option D:	δ: Q x $\sum \rightarrow \{Q, \sum\}$ δ: Q x $\sum \rightarrow$Q
49.	Generation of a language using specific rule is called_____
Option A:	Optimization
Option B:	Derivation
Option C:	Analysis
Option D:	Transition
50.	In a production rule, if one non-terminal derives another non-terminal then it is called as _____
Option A:	ε-Production
Option B:	Null Production
Option C:	Useless Symbol
Option D:	Unit Production
51.	Which of following does not belong to 4-tuples of CFG?
Option A:	Start Symbol
Option B:	Terminal Symbol
Option C:	Non-terminal symbol
Option D:	End symbol
52.	In simplification of grammar, the variable which produces an epsilon is called____
Option A:	terminal
Option B:	nullable
Option C:	Empty variable
Option D:	Useless symbol
53.	Which of the following productions are not accepted by Chomsky Grammar?
Option A:	A$\rightarrow$ABC
Option B:	A$\rightarrow$BC
Option C:	A$\rightarrow$a
Option D:	A$\rightarrow \varepsilon$
54.	_____is accepted by Non-deterministic PDA but not by deterministic PDA.
Option A:	Even Palindromes

Option B:	Odd Palindromes
Option C:	Equal no of a's and b's
Option D:	String ending with a particular terminal
55.	The language, $\{a^n b^n \mid n>=1\}$ is generated by the CFG:
Option A:	S → aSb | ab | ε
Option B:	S→ aaSbb | ε
Option C:	S → aaSbb | aabb
Option D:	S→aSb | ab
56.	Transition function of Turing machine is given by:
Option A:	$Q \times \sum \rightarrow Q \times \sum \times \{L,R\}$
Option B:	$Q^* \times \sum \rightarrow Q \times \sum \times \{L,R\}$
Option C:	$Q \times \sum^* \rightarrow Q \times \sum \times \{L,R\}$
Option D:	$Q \times \sum \rightarrow Q^* \times \sum^* \times \{L,R\}$
57.	According to Chomsky hierarchy, Recursively Enumerable language comes under_____
Option A:	Type 0
Option B:	Type 1
Option C:	Type 2
Option D:	Type 3
58.	Which of the following can accept even palindrome over {a,b}?
Option A:	Deterministic Push down Automata
Option B:	Turing machine
Option C:	NDFA
Option D:	DFA
59.	If *L* and L' are recursively enumerable, then *L* is
Option A:	regular
Option B:	Context sensitive
Option C:	Context free
Option D:	recursive
60.	In a compiler, keywords of a language are recognized during:
Option A:	Parsing of the program
Option B:	Code generation
Option C:	Lexical analysis of the program.
Option D:	Data flow analysis

Descriptive Questions

10 marks each
1. Explain the concepts, acceptance by final state and acceptance by empty stack of a Pushdown automata. Construct a PDA for the language, L={ $a^{2n}b^n$ | n ≥ 1}
2. Give a formal definition of Turing Machine (TM). Design a TM that performs the addition of two unary numbers. (transition table and diagram both are expected)
3. Write a short note on Chomsky hierarchy. Convert the following grammar to Chomsky Normal Form: S→ABA A→ aA | ε B→bB | ε
4. Construct a Mealy machine and Moore machine for the following: For input from, ∑*, where ∑= (0,1), if the input ends in '101', the output should be 'x'; if the input ends in '110', output should be 'y' otherwise output should be 'z'. (transition table and diagram both are expected)
5. Convert the given grammar G to CNF. G: S → a | aA | B |C , A → aB | ε , B →Aa, C →aCD | a, D → ddd.
6. Design a Turing Machine for 2's Complement of a binary number
7. Design PDA for odd length palindrome let Σ = {0, 1}, L = {wcw^R} *where* w ϵ Σ *
8. Construct DFA for given regular expression (a+b)* aba (a+b)*
9. Design Turing Machine to accept language L={ $a^nb^nc^n$ | n≥1}
10. Consider the following grammar S→ aB | bA A→ a | aS | bAA B→ b | bS | aBB with S as start symbol ,find Left most derivation, Right most derivation and parse tree for the string 'bbaaabbaba'.
11. Construct Turing Machine accepting palindromes over Σ={a,b}

5 marks each
1. Give formal definition of NFA. Construct a DFA equivalent to the NFA: ({p, q, r, s},{0,1},δ, p, {q,s}), where 'δ' is given by:

Σ Q	0	1
→p	q,r	q
q*	r	q,r
r	s	p
s*	--	p

2. Consider the following CFG:
G = { (S, A), (a, b), P, S},
where P consists of :
S→aAS | a
A→SbA | SS | ba
Derive the string 'aabbaa' using leftmost derivation and rightmost derivation.

3. Give regular expression for
a. All strings containing an even number of 0's over the alphabet {0,1}
b. All strings that do not end with 'ab' over the alphabet {a,b}

4. Construct a DFA that reads a strings made up of {0,1} and accepts only those strings which end in either '00' or '11'. (transition table and diagram both are expected)

5. Briefly explain the types of Turing Machine.

6. Construct a Context-free grammar equivalent to the following Push Down Automata (described with the help of the given set of equations):
$\delta(q_0, b, Z_0) = \{(q_0, ZZ_0)\}$
$\delta(q_0, \varepsilon, Z_0) = \{(q_0, \varepsilon)\}$
$\delta(q_0, b, Z) = \{(q_0, ZZ)\}$
$\delta(q_0, a, Z) = \{(q_1, Z)\}$
$\delta(q_1, b, Z) = \{(q_0, \varepsilon)\}$
$\delta(q_1, a, Z_0) = \{(q_0, Z_0)\}$

7. Construct DFA to accept strings that ends with substring 110 for Σ={0,1}

8. Design a Moore machine which counts the occurrence of substring bab in an input string for Σ = {a, b}.

9. Give Regular Expressions for
i) For all strings over a,b which contains exactly 3 occurrence of b over Σ={a,b}
ii) For all strings over 0,1 that starts with 10 and ends with 01

10. Let G be the grammar having the following set of production. S→ABA, A→aA | bA | B→bbb Find LMD and RMD for string “ababbbba”
11. Write Short Note on Chomsky Hierarchy
12. Compare and Contrast between FA, PDA and TM
13. Give Regular Expression for a language over the alphabet Σ={a,b} containing at most two a’s
14. Convert Following CFG grammar into CNF Sa→AbB A→Aa|a B→bB|b
15. Design PDA to check well formedness of parenthesis.
16. Design a Moore Machine for binary adder
17. State and explain closure properties of regular languages
18. Differentiate between Moore and Mealy machine

Sample Questions

Information Technology

Subject Name: Computer Organization and Architecture **Course Code**:ITC405

Semester: IV

Multiple Choice Questions

	Choose the correct option for following questions. All the Questions carry equal marks
1.	What is the 2's complement of 0010 ?
Option A:	1101
Option B:	0101
Option C:	1110
Option D:	1010
2.	-------- is a circuit with many inputs and one output.
Option A:	DECODER
Option B:	MUX
Option C:	ENCODER
Option D:	DEMUX
3.	-- is used as a building block of memory.
Option A:	Half Adder
Option B:	MUX
Option C:	Encoder
Option D:	Flip Flop
4.	What is the result of 10100 - 00101 ?
Option A:	01111
Option B:	01010
Option C:	10000
Option D:	00101
5.	If the program has a total 1000 instructions and CPU has 10 average CPI with speed of 2GHz. Find the execution time of a program
Option A:	01 micro seconds
Option B:	50 micro seconds
Option C:	05 micro seconds
Option D:	10 micro seconds
6.	Assuming AL=00H, which flag will be set when ALU performs, SUB AL, 22H?
Option A:	Sign
Option B:	Carry
Option C:	Parity
Option D:	Zero

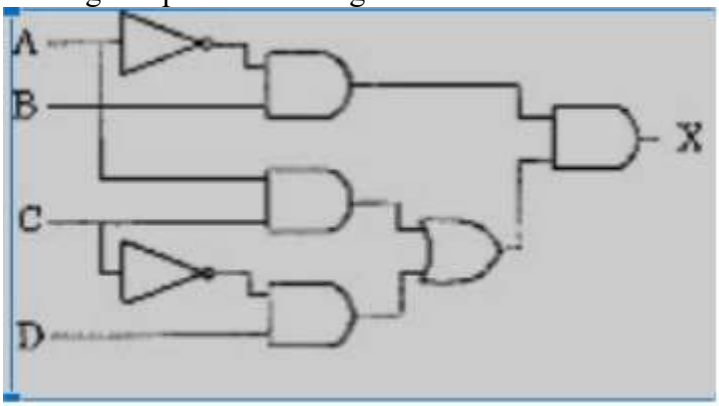
7.	MOV [1050H], BL is an example of _____ addressing mode.
Option A:	Indirect
Option B:	Register
Option C:	Direct
Option D:	Implied
8.	_____ is not a conditional jump instruction.
Option A:	JC
Option B:	JNC
Option C:	JMP
Option D:	JNZ
9.	If the initial value of AL register is 55H, what is the value stored in AL register after the execution of AND AL, 0FH?
Option A:	00H
Option B:	50H
Option C:	55H
Option D:	05H
10.	During the execution of an instruction, the processor checks for an interrupt ---- ---- .
Option A:	As soon as an interrupt occurs
Option B:	After fixed time interval
Option C:	Will not check during instruction execution
Option D:	After the current instruction execution
11.	------- is used to control the hardware of the system.
Option A:	Programming
Option B:	Microprogramming
Option C:	Assembly programming
Option D:	Nanoprogramming
12.	Which is not the part of CPU?
Option A:	ALU
Option B:	Flash memory
Option C:	Registers
Option D:	Control Unit
13.	---- register stores internally the address of memory location to be accessed for read/write operation.
Option A:	MDR
Option B:	SI
Option C:	MAR
Option D:	AX

14.	In case of Non Restoring Division Algorithm, when 18 is divided by 10, then what is stored in the registers Q & A respectively ?
Option A:	0001 , 1000
Option B:	0110 , 0001
Option C:	1000, 0001
Option D:	0001, 1010
15.	How many bits are used to represent "Exponent" in Single precision IEEE 754 floating point standard?
Option A:	8
Option B:	127
Option C:	32
Option D:	16
16.	If cache memory has 10 lines, then 24th block of main memory would be placed in which line of cache memory, in case of direct mapping function?
Option A:	1
Option B:	2
Option C:	3
Option D:	4
17.	In the memory hierarchy, -------- is most nearest to the processor.
Option A:	Register
Option B:	DRAM
Option C:	Cache
Option D:	SRAM
18.	Which system faces the problem of cache coherency?
Option A:	Client-server
Option B:	Multi-processor
Option C:	Multi-tasking
Option D:	Single bus
19.	I/O module sends a signal to CPU when device is ready, this is called as_____
Option A:	Interrupt driven I/O
Option B:	Exceptions
Option C:	Signal handling
Option D:	DMA
20.	In case of ----, the I/O devices and the memory devices have the same address space in memory .
Option A:	IO mapped-mapped I/O
Option B:	Interrupt-driven I/O
Option C:	Memory-mapped I/O
Option D:	Direct Memory Access
21.	Memory mapped I/O means
Option A:	Using separate memory address space for I/O ports

Option B:	Assigning a part of the main memory address space to I/O ports
Option C:	Using separate input and output instructions
Option D:	Using combined input and output instructions
22.	Instruction AND is executed by
Option A:	Decoder unit
Option B:	ALU
Option C:	Memory unit
Option D:	Control unit
23.	In memory Hierarchy which is the fastest memory
Option A:	SRAM
Option B:	DRAM
Option C:	Register
Option D:	Cache
24.	Cache memory is also known as
Option A:	Content Addressable Memory
Option B:	Content Accessible Memory
Option C:	Computer Addressable Memory
Option D:	Computer Accessible Memory
25.	Micro program consisting of _____ is stored in control memory of control unit
Option A:	Instructions
Option B:	micro instructions
Option C:	micro program
Option D:	macro program
26.	Choose appropriate sequence of instruction cycle
Option A:	Instruction fetch, Instruction address calculation, Instruction decode, operand address calculation , fetch operand, data operation, operand address calculation, operand store
Option B:	Instruction address calculation , Instruction fetch, operand address calculation fetch operand, Instruction decode, data operation, operand address calculation and operand store
Option C:	Instruction address calculation , Instruction fetch, Instruction decode, operand address calculation , fetch operand, data operation , operand address calculation, operand store
Option D:	Instruction address calculation, Instruction fetch, Instruction decode, operand address calculation , fetch operand, operand address calculation , operand store, data operation
27.	In Instruction Pipelining Structural Hazard means
Option A:	any condition in which either the source or the destination operands of an instruction are not available at the time expected in the pipeline
Option B:	a delay in the availability of an instruction causes the pipeline to stall

Option C:	the situation when two instructions require the use of a given hardware resource at the same time.
Option D:	When a data gets overwritten by branching
28.	Convert number($41.62)_8$ into equivalent hexadecimal number
Option A:	$(20.D8)_{16}$
Option B:	$(21.C8)_{16}$
Option C:	$(21.D8)_{16}$
Option D:	$(20.C8)_{16}$
29.	The sign and magnitude representation for +7 is
Option A:	00001000
Option B:	10000101
Option C:	10000111
Option D:	00000111
30.	8086 has 20 bit address lines to access memory, hence it can access
Option A:	100 MB
Option B:	1 KB
Option C:	1 MB
Option D:	10 MB
31.	The advantage of DMA is
Option A:	Avoiding busy waiting by CPU
Option B:	High speed data transfer between memory and I/O
Option C:	Polling
Option D:	Accessing CPU
32.	Program Counter Holds
Option A:	The Instruction
Option B:	The Data
Option C:	Address of the Current Instruction which is executed
Option D:	Address of the Next Instruction to be executed
33.	Which of the following is not a key characteristics of memory devices or memory system
Option A:	Location
Option B:	Physical Characteristics
Option C:	Availability
Option D:	Access Method
34.	In restoring division method when subtraction is said to be unsuccessful
Option A:	if result is positive
Option B:	if result is negative
Option C:	if result is zero
Option D:	if result is infinite

35.	The disadvantage of an SRAM is
Option A:	Very high power consumption
Option B:	Very high access time
Option C:	These are volatile memories
Option D:	Very low price
36.	The main memory contains 8K blocks, each consisting of 128 words. How many bits are there in a main memory address?
Option A:	19 bits
Option B:	21 bits
Option C:	22 bits
Option D:	20 bits
37.	In Restoring division Algorithm if A<0 then which of the following is immediate step (Assume M as Dividend Q as Divisor And A as result)
Option A:	Q_0 =0
Option B:	A= A +M
Option C:	Q_0 =0 & A=A-M
Option D:	Q_0 =0 & A=A+M
38.	Third generation of computer is between
Option A:	1940 and 1956
Option B:	1964 and 1971
Option C:	1972 and 2010
Option D:	1910 and 1930
39.	Find the output of full adder with A=1, B=0, C=1
Option A:	S=0,C=0
Option B:	S=0,C=1
Option C:	S=1,C=0
Option D:	S=1,C=1
40.	A combinational logic circuit which sends data coming from a single source to two or more separate destinations is
Option A:	MUX
Option B:	ENCODER
Option C:	DECODER
Option D:	DEMUX
41.	How many two-input AND and OR gates are required to realize Y = CD+EF+GH?
Option A:	3,3
Option B:	3,2
Option C:	2,3
Option D:	2,2

42.	The hexadecimal number $(3E8)_{16}$ is equal to decimal number ……
Option A:	1000
Option B:	982
Option C:	768
Option D:	320
43	The logic expression for Figure is 
Option A:	$X = \overline{A}\overline{B}C + A\overline{C}\overline{D}$
Option B:	$X = AB\overline{C}\left(\overline{C}B\overline{D}\right)$
Option C:	$X = \left(\overline{A}B\right)\left(AC + \overline{C}D\right)$
Option D:	$X = \left(\overline{AB}\right)\left(A\overline{C}\overline{C}D\right)$
44.	------ are used to convert one type of number system to another form
Option A:	Encoder
Option B:	Logic Gates
Option C:	Half Adder
Option D:	Full Adder
45.	The different ways in which a source operand is denoted in an instruction is known as
Option A:	Instruction Set
Option B:	Interrupts
Option C:	8086 Configuration
Option D:	Addressing Modes
46.	If AX = FFFFH and add AX,01h instruction is executed. The value in AX reg is
Option A:	1010 H
Option B:	1111 H
Option C:	0000 H
Option D:	0101 H
47.	Which of the following is an implicit instruction ?
Option A:	ADD

Option B:	ADC
Option C:	AAA
Option D:	ADD & ADC
48.	Match the following a) DB 1) used to direct the assembler to reserve only 10-bytes b) DT 2) used to direct the assembler to reserve only 4 words c) DW 3) used to direct the assembler to reserve byte or bytes d) DQ 4) used to direct the assembler to reserve words
Option A:	a-3, b-2, c-4, d-1
Option B:	a-2, b-3, c-1, d-4
Option C:	a-3, b-1, c-2, d-4
Option D:	a-3, b-1, c-4, d-2
49.	The condition flag Z is set to 1 to indicate _____
Option A:	The operation has resulted in an error
Option B:	The operation requires an interrupt call
Option C:	The result is zero
Option D:	There is no empty register available
50.	The Instruction fetch phase ends with _____
Option A:	Placing the data from the address in MAR into MDR
Option B:	Placing the address of the data into MAR
Option C:	Completing the execution of the data and placing its storage address into MAR
Option D:	Decoding the data in MDR and placing it in IR
51.	A shared communication path consisting of one or more connection lines between registers is known as
Option A:	Transistor
Option B:	Integrated Circuits
Option C:	Bus
Option D:	Register Transfer
52.	Which of the following Special purpose register holds the operation codes currently being executed?
Option A:	Program Counter
Option B:	Instruction Register
Option C:	Stack pointer
Option D:	Base Register
53.	Transfer of data from memory to processor during load operation is done on this register
Option A:	Accumulator
Option B:	Instruction register
Option C:	Program Counter
Option D:	MAR

54.	Control Units are designed using which of the following approach?
Option A:	Hardwired approach
Option B:	Microprogramming approach
Option C:	Hardwired & Microprogrammed approach
Option D:	Macro programming approach
55.	The advantage of using Dynamic RAM as main memory in a computer system as it
Option A:	Consumes less power
Option B:	has higher speed
Option C:	has lower cell density
Option D:	needs refreshing circuitry
56.	Which of the following is example of internal processor storage component
Option A:	Registers
Option B:	Hard disk
Option C:	RAM
Option D:	ROM
57.	The memory that communicates directly after cache with CPU is
Option A:	Secondary Memory
Option B:	Primary Memory
Option C:	Shared Memory
Option D:	Auxiliary memory
58.	Unit of computer which controls processors communication with peripheral devices is called
Option A:	Control Unit
Option B:	I/O unit
Option C:	ALU
Option D:	Memory Unit
59.	The I/O Devices are also known as
Option A:	Framework
Option B:	Peripherals
Option C:	Firmware
Option D:	Software
60.	The advantage of I/O mapped devices over memory mapped is
Option A:	The former offers faster transfer of data
Option B:	The devices connected using I/O mapping have a bigger buffer space
Option C:	The devices have to deal with fewer address lines
Option D:	No advantage as such

Descriptive Questions

10 marks each	
A	Explain the memory segmentation and memory banking of 8086 Microprocessor.
B	With the help of diagram, explain 6-stage pipeline architecture and various pipeline hazards with example.
C	Explain different cache mapping techniques.
D	Draw the flow chart of Booths algorithm for signed multiplication and Perform 7 x -3 using booths algorithm
E	Explain in detail with suitable Architecture of 8086 microprocessor
F	List and explain in detail characteristics /parameters of memory
G	Explain architecture of 8086 in detail
H	Draw Booths Algorithm flowchart and solve for -9 * 9
I	Minimize the following 4 variable logic function using K- map and draw logic diagram for reduced expression: 1. $f(A,B,C,D) = \sum m(0,1,3,4,7,9,11,13,15)$ 2. $f(A,B,C,D) = \pi M(0,2,5,6,10,12,13,14)$

5 marks each	
A	Write a program for an 8086 microprocessor to add two 8 bit decimal numbers.
B	Reduce the expression using K – Map: $f(a,b,c,d) = \sum m(2, 4, 6, 10, 11,12, 14)$. Also draw the logic circuit for the reduced expression.
C	Explain the working of 8:1 Multiplexer.
D	Perform the multiplication of -5 X 4 using Booth's algorithm.
E	Discuss the need of I/O module in computing system.
F	With neat diagram, explain Memory Hierarchy.
G	Explain the working of 8:1 Multiplexer.
H	Minimize the following four variable logic function using K-map $f(A,B,C,D)=\sum m(0,1,3,4,7,9,11,13,15)$
I	Describe Flynn's classification of parallel computing in detail
J	Differentiate between Hardwired control unit and Micro programmed control unit
K	Identify the addressing modes of the following instructions 1.MOV AX,1000 2.MOV AX,[1000] 3.MOV AX,BX 4.MOV [BX],AX 5.MOV AX,[SI+200]
L	Write short note on DMA
M	Explain Flynn's Classification of parallel computers.
N	Explain IEE 754 standards for floating point representation with examples.

O	Explain different data transfer techniques of DMA.
P	Explain Amdahl's Law.
Q	Explain in short, the concept of Nano programming.
R	Give types of Cache Mapping technique and explain any one in detail