University of Mumbai

Examination 2020 under cluster 7 (Lead College: SSJCOE)

Program: **Information Technology**

Curriculum Scheme: 2016/2012 (Keep the required)

Examination: SE Semester: IV

Course Code:ITC405 and Course Name:Automata Theory

Time: 2 hour Max. Marks: 80

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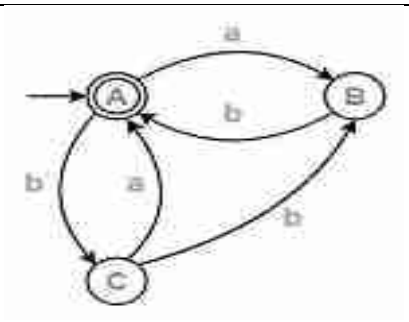
Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Transition function of any automata defines
Option A:	Σ * Q -> Σ
Option B:	Q * Σ -> Σ
Option C:	Σ * Σ -> Q
Option D:	Q * Σ -> Q
2.	In Moore machine, output is produced over the change of:
Option A:	only transitions
Option B:	only states
Option C:	both transition and states
Option D:	only input
3.	Pumping lemma is generally used for proving
Option A:	a given grammar is regular
Option B:	a given grammar is not regular
Option C:	weather two given regular expressions are not equivalent
Option D:	a given grammar is Ambiguous
4.	Which of the following is not a regular expression?
Option A:	(a+b)*(aa+bb)*
Option B:	(0+1)-(0b+a1)*(a+b)*
Option C:	(01+11+10)*
Option D:	(1+2+0)*(1+2)*
5.	Let P, Q be the two regular expressions over the set input alphabet and the equation is R = Q + RP has a unique solution given by
Option A:	R = QP*
Option B:	R = P*Q
Option C:	R = RP*
Option D:	R = Q*R

6.	 RE for given DFA
Option A:	(ab+ba+bbb)*
Option B:	(ab+ba)*bbb
Option C:	(babb+ab)*
Option D:	(ab+bbb)*
7.	The language is said to be of a automata is
Option A:	If it is accepted by automata
Option B:	If it halts
Option C:	If automata touch final state in its life time
Option D:	All language are language of automata
8.	What is the output of Mealy Machine for the given language ? Language: A set of strings over ∑= {a, b} is taken as input and it prints 1 as an output "for every occurrence of ab as its substring. (INPUT: ababaab)
Option A:	0101001
Option B:	0101010
Option C:	0111011
Option D:	0110001
9.	Ambiguous grammar has
Option A:	Different parse trees for left & right derivation
Option B:	Same parse trees for left & right derivation
Option C:	No parse trees
Option D:	No derivations
10.	A-->α is a format of production rule for ----------grammar.
Option A:	Type 0
Option B:	Type 1
Option C:	Type 2
Option D:	Type 3
11.	The symbols that are useless symbols are.
Option A:	Generating
Option B:	Reachable
Option C:	Non reachable
Option D:	Input
12.	What the does the given CFG defines? S->aSbS|bSaS|e and w denotes terminal

Option A:	ww^r
Option B:	wSw
Option C:	Equal number of a's and b's
Option D:	a^nb^n
13.	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
14.	A DPDA is a PDA in which:
Option A:	At least one state has more than one transitions
Option B:	More than one state can have two or more outgoing transitions
Option C:	No state has more than 1 outgoing transitions
Option D:	All State have two outgoing transition
15.	A push down automaton employs _____ data structure.
Option A:	Queue
Option B:	Linked List
Option C:	Hash Table
Option D:	Stack
16.	If the PDA does not stop on an accepting state and the stack is not empty, the string is:
Option A:	goes into loop forever
Option B:	rejected
Option C:	halted
Option D:	accepted
17.	A Turing Machine which simulates any other Turing machine for a given input is
Option A:	Universal Turing Machine
Option B:	Multi-tape turing Machine
Option C:	Multi head Turing Machine
Option D:	Non-deterministic Turing Machine
18.	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
19.	Next move function δ of a Turing machine M = (Q, Σ , Γ, δ, q0, B, F) is a mapping
Option A:	$\delta : Q \times \Sigma \dashrightarrow Q \times \Gamma$
Option B:	$\delta : Q \times \Gamma \dashrightarrow Q \times \Sigma \times \{L, R\}$
Option C:	$\delta : Q \times \Sigma \dashrightarrow Q \times \Gamma \times \{L, R\}$

Option D:	δ : Q x Γ ---> Q x Γ x {L, R}
20.	Which of the following conversion NOT possible algorithmically
Option A:	Regular Grammar to CFG
Option B:	NPDA to DPDA
Option C:	NFA to DFA
Option D:	NTM to DTM

Q2	**Solve any Two Questions out of Three** **10 marks each**
A	Design Turing Machine for well formedness of parenthesis
B	Let G be the Grammar. Find Leftmost derivation, Rightmost derivation and Parse tree for the string **abaaba** G: S→aSa|bSb|a|b|ε
C	Design PDA for $a^n b^m$ where n>m and n,m>=1

Q3.	
A	**Solve any Two Questions out of Three** **5 marks each**
i	Give applications of regular expressions and FA.
ii	Give Regular Expressions for i) For all strings over a,b which contains even number of a's followed by odd number of b's ii) For all strings over 0,1 that starts and ends with different letter
iii	Construct NFA-ε transitions for 10+(0+11)0*1
B	**Solve any One Question out of Two** **10 marks each**
i	Convert the given grammar G into CNF G: S→aAB|a A→aBA|bAB|aa B→Bb|aB|bb
ii	Design Moore machine to convert every occurance of 1100 to 1101 over ∑={0,1}

University of Mumbai

Examination 2020

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021

Program: **Information Technology Engineering**

Curriculum Scheme: Rev2016

Examination: SE Semester: IV

Course Code: ITC401 and Course Name: Applied Mathematics-IV

Time: 2 hour Max. Marks: 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Find the gcd(1565, 674)
Option A:	7
Option B:	5
Option C:	8
Option D:	1
2.	Which of the following is prime number
Option A:	123
Option B:	249
Option C:	137
Option D:	161
3.	Find the solution (x, y) for the given equation 55x+34y=36
Option A:	(7, 10)
Option B:	(23, -40)
Option C:	(25, -42)
Option D:	(26, -41)
4.	Find b if it satisfies the given congruence $5^{69} \equiv b(mod\ 23)$
Option A:	5
Option B:	10
Option C:	15
Option D:	20
5.	Find the value of Jacobi's symbol $(\frac{21}{53})$
Option A:	-1
Option B:	1
Option C:	0
Option D:	2
6.	Calculate Rank correlation coefficient for the following data
Option A:	0.6
Option B:	0.4

x	13	17	23	27	32
y	112	119	117	114	121

Option C:	0.5
Option D:	0.3
7.	IF var(X)=5 and Var(Y)=9 then find Var(3X-2Y+6)
Option A:	9
Option B:	15
Option C:	81
Option D:	75
8.	Given two regression lines 2x+y+8=0 and x+2y-5=0 then find r.
Option A:	0.5
Option B:	-0.5
Option C:	0.6
Option D:	-0.6
9.	IF X follows Poisson distribution and P(x=2)=3P(x=1) then find the value of mean
Option A:	3
Option B:	4
Option C:	5
Option D:	6
10.	If X is Binomially distributed with E(X)=2 and var(X)=4/3 then find n.
Option A:	4
Option B:	5
Option C:	6
Option D:	7
11.	IF X is a random variable for the normal distribution with mean 10 and standard deviation 4 then find Z when X=16
Option A:	0.25
Option B:	1.5
Option C:	0.5
Option D:	0.8
12.	If G={1, 5, 7, 11} is a group under multiplication modulo 12 then inverse of 7 is
Option A:	1
Option B:	5
Option C:	7
Option D:	11
13.	Let G is a cube root of unity and G is a cyclic group under multiplication then generator for G is
Option A:	1
Option B:	w
Option C:	2w
Option D:	0

14.	Let G=(V, E), V={a, b, c, d} E={(a,b), (a,c), (a, d), (b,c), (c,d)}
Option A:	Complete Graph
Option B:	Simple Graph
Option C:	Loop
Option D:	Tree
15.	Hamiltonian graph must visit all…
Option A:	edges at once
Option B:	all vertices at once
Option C:	pedant vertices
Option D:	root vertices
16.	Minimum height of the binary tree with 53 vertices are
Option A:	4
Option B:	6
Option C:	5
Option D:	7
17.	Find the number of vertices in a simple graph with 3n edges and each vertex is of degree 3
Option A:	n
Option B:	2n
Option C:	3n
Option D:	4n
18.	Let L={1,3,5,9,15,45} be a Lattice with relation divisible by then complement of 45 is
Option A:	3
Option B:	5
Option C:	9
Option D:	1
19.	Let L={1, 5, 7, 70} be a Lattice with relation “divisible by” then LUB of 5 and 7 is
Option A:	35
Option B:	7
Option C:	5
Option D:	70
20.	Let L={1, 3, 5, 15, 30} be a Lattice with relation “divisible by” then GLB for 5 and 15 is
Option A:	3
Option B:	5
Option C:	1
Option D:	15

<table>
<tr><td>Q2</td><td>Solve any Four out of Six questions, 5 marks each (Total 20 marks)</td></tr>
<tr><td>A</td><td>Find the smallest positive integer modulo 7, to which $3^2 3^5 3^9 3^{12}$ is congruent</td></tr>
<tr><td>B</td><td>Derive mgf of Bionomial distribution and hence find mean.</td></tr>
<tr><td>C</td><td>Calculate the coefficient of correlation between x and y
<table>
<tr><td>x</td><td>3</td><td>6</td><td>4</td><td>5</td><td>7</td></tr>
<tr><td>y</td><td>2</td><td>4</td><td>5</td><td>3</td><td>6</td></tr>
</table></td></tr>
<tr><td>D</td><td>Show that G={1, -1, i, -i}is a group under usual multiplication of a complex number.</td></tr>
<tr><td>E</td><td>Simplify as a sum of product (A+B+C)(A+B’+C)(A+B+C’)</td></tr>
<tr><td>F</td><td>Give an example of graph which has
i) Eulerian circuit but not a Hamiltonian circuit
(ii) Hamiltonian circuit but not an Eulerian circuit
(iii) Not both Hamiltonian circuit and Eulerian circuit</td></tr>
</table>

<table>
<tr><td>Q3</td><td>Solve any Four out of Six questions, 5 marks each (Total 20 each)</td></tr>
<tr><td>A</td><td>Solve x≡3(mod 4), x≡4(mod 5), x≡5(mod 7) the system of linear congruences by using Chinese Reminder theorem.</td></tr>
<tr><td>B</td><td>The probability density function of a random variable x is zero except at x=0,1,2,3and p(0)=2k, p(1)=3k, p(2)=5k, p(3)=7k find i)k ii)Var(x)</td></tr>
<tr><td>C</td><td>A random sample of 50 items gives the mean 6.2 and variance 10.24. Can it be regarded as drawn from a normal population with mean 5.4 at 5% level of significance? (Given that, $z_\alpha = 1.96$ a 5% level of significance)</td></tr>
<tr><td>D</td><td>Draw a complete graph of 6 vertices.</td></tr>
<tr><td>E</td><td>Let L={1,2,3,5,30}and R be the relation “is divisible by”. Verify (L, R) is a lattice.</td></tr>
<tr><td>F</td><td>Find inverse of $8^{-1}(mod\ 11)$ using Euler’s theorem.</td></tr>
</table>

University of Mumbai

Examination 2020 under cluster 7 (Lead College: SSJCOE)

Program: **Information Technology**

Curriculum Scheme: 2016

Examination: SE Semester: IV

Course Code: ITC402 and Course Name: Computer Networks

Time: 2 hour Max. Marks: 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	……. this layer is responsible for addressing and routing of the packets on the network.
Option A:	Data Link Layer
Option B:	Network Layer
Option C:	Session Layer
Option D:	Transport Layer
2.	The function of Data Link Layer and Physical layer from OSI are performed by …….. layer in TCP model
Option A:	Data Link Layer
Option B:	Transport Layer
Option C:	Internet Layer
Option D:	Network Access Layer
3.	Which of the following is not a DNS record type?
Option A:	A
Option B:	AAAA
Option C:	MX
Option D:	ARP
4.	HTTP works on ……. approach
Option A:	Peer to Peer Architecture
Option B:	Client Server Architecture
Option C:	Distributed Architecture
Option D:	Hybrid Architecture
5.	Which of the following is not correct for API?
Option A:	API allows application to interact with each other.
Option B:	APIs can also connect two programs which are implemented in different language.
Option C:	APIs also allows you to communicate two different types of operating systems.
Option D:	APIs only doesn't work on mobile phones.
6.	Which of the following is true for LZW algorithm?
Option A:	It's a lossless data compressing technique
Option B:	It's a lossy data compressing technique
Option C:	It sometimes behaves as lossy compressing technique
Option D:	Most of the time it gives lossless data compressions

7.	How does a networked server manage requests from multiple clients for different services?
Option A:	Each request is tracked through the physical address of the client.
Option B:	The server uses IP address to identify different services.
Option C:	Each request has a combination of source and destination port numbers, coming from a unique address.
Option D:	Server sends all request through default gateway.
8.	The triple Ack of lost segment shift the sender to----------.
Option A:	Slow-Start mode
Option B:	Fast Retransmission mode
Option C:	Slow Retransmission mode
Option D:	Hold mode
9.	In Taho TCP mechanism, if congestion get detected, cwnd size is set to -------.
Option A:	Half of Current cwnd
Option B:	¼ of current cwnd
Option C:	cwnd sets to 1.
Option D:	cwnd sets to 0.
10.	What TCP mechanism is used to enhance performance by allowing a device to continuously send a steady stream of segments as long as the device is also receiving necessary acknowledgements?
Option A:	Three-way Handshake
Option B:	Socket Pair
Option C:	Two-way Handshake
Option D:	Sliding Window
11.	Match the following (A) Point-to-point link — (i) A network that is connected to only one router (B)Transient link — (ii) A link which connects two routers without any device in between them (C)Virtual link — (iii) A network with several routers attached to it (D)Stub link — (iv) Link which is created by administrator
Option A:	A-ii, B-iii, C-iv- D-i
Option B:	A-i, B-iv, C-iii- D-ii
Option C:	A-ii, B-iv, C-iii- D-i
Option D:	A-i, B-iii, C-iv- D-ii
12.	In PIM-SM whenever any node leaves the multicast group, it has to intimate to root using----------.
Option A:	Left message
Option B:	Drop message
Option C:	Prune message
Option D:	Request to reinitiate tree.

13.	Which of the following is not the part of Closed loop congestion control mechanism?
Option A:	Acknowledgment Policy
Option B:	Choke Packet
Option C:	Implicit Signaling
Option D:	Explicit Signaling
14.	In which transition mechanism, IPv6 packets are going to become the payload portion of IPv4 packet?
Option A:	Dual-Stack
Option B:	IPv6 tunneling
Option C:	Tunnel
Option D:	Translation
15.	Find the number of subnets and valid hosts per subnet for IP address with subnet mask 200.100.230.140/26.
Option A:	64 subnets and 4 hosts per subnets
Option B:	62 subnets and 4 hosts per subnets
Option C:	4 subnets and 64 hosts per subnets
Option D:	4 subnets and 62 hosts per subnets
16.	Which category of HDLC frames undergoes error and flow control mechanisms by comprising send and receive sequence numbers?
Option A:	U-frames
Option B:	S-Frames
Option C:	I-frames
Option D:	Both U-frames and I-frames
17.	In byte stuffing, a special byte is added to the data section of the frame when there is a character with the same pattern as the----------.
Option A:	Flag
Option B:	Error
Option C:	Sender
Option D:	Destination
18.	Which of the following is the multiple access protocol for channel access control?
Option A:	CSMA/CD
Option B:	CSMA/CA
Option C:	CSMA/CD & CSMA/CA
Option D:	HDLC
19.	In TDM, time slots are further divided into ---------._____
Option A:	Seconds
Option B:	Frames
Option C:	Packets
Option D:	Bits
20.	A parabolic dish antenna is a(n) _____ antenna
Option A:	Omnidirectional

Option B:	Bidirectional
Option C:	Unidirectional
Option D:	Horn

Q2	**Solve any Two Questions out of Three** **10 marks each**
A	Explain layer wise interaction process between two hosts of OSI model.
B	Explain in detail the SMTP process for mail transfer using protocols used in it along with diagram.
C	Explain sliding window protocol. Draw the sender and receiver windows for a system using Go-Back-N sliding window (size =8) given that i) frame 0 is sent; frame 0 is ACK ii) frame 1 and 2 are sent; frames 1 and 2 are ACK iii) frame 3, 4, 5 are sent; frame 4 is ACK. iv) timer for frame 5 expires. sender resets the window and 4 more frames are sent.

Q3.	**Solve any Two Questions out of Three** **10 marks each**
A	An ABC organization is granted a block of addresses with the beginning address 16.12.30.0/24. The organization needs to have 4 subblocks of addresses to use in its 4 departments: HR department requires 12 addresses, finance 55 addresses, IT requires 58 addresses and Testing requires 4 subnets of 4 address. Design the subblocks.
B	What are different guided and unguided media? Explain Radio waves and coaxial cables in detail.
C	Explain sliding window protocol. Give a reason behind the size of sliding window in Go Back N and Selective Repeat.

University of Mumbai
Examination 2020 under cluster 7 (Lead College: SSJCOE)
Program: **Information Technology**
Curriculum Scheme: 2016
Examination: SE Semester: IV
Course Code: ITC403 and Course Name: Operating System
Time: 2 hours Max. Marks: 80
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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Which of the following is a part of the Central Processing Unit?
Option A:	Printer
Option B:	Key board
Option C:	Mouse
Option D:	Arithmetic & Logic unit
2.	What characteristic of read-only memory (ROM) makes it useful?
Option A:	ROM information can be easily updated.
Option B:	Data in ROM is non-volatile, that is, it remains there even without electrical power.
Option C:	ROM provides very large amounts of inexpensive data storage.
Option D:	ROM chips are easily swapped between different brands of computers.
3.	The size of virtual memory is based on which of the following?
Option A:	CPU
Option B:	RAM
Option C:	Address bus
Option D:	Data bus
4.	Who provides the interface to access the services of the operating system?
Option A:	API
Option B:	System call
Option C:	Library

Option D:	Assembly instruction
5.	Indicate the best option from the following. System calls of an operating system provide an interface to
Option A:	programs
Option B:	processes
Option C:	Utilities
Option D:	services
6.	What are the services the operating System provides to both the users and to the programs?
Option A:	File System manipulation
Option B:	Error Detection
Option C:	Program execution
Option D:	Resource Allocation
7.	What invokes the system calls?
Option A:	A privileged instruction
Option B:	An indirect jump
Option C:	A software interrupt
Option D:	Polling
8.	Round robin scheduling falls under the category of _____
Option A:	Non-preemptive scheduling
Option B:	Preemptive scheduling
Option C:	Long Term Scheduler
Option D:	Short Term Scheduler
9.	The processes that are residing in main memory and are ready and waiting to execute are kept on a list called:
Option A:	job queue
Option B:	ready queue
Option C:	execution queue
Option D:	process queue

10.	The FIFO algorithm :
Option A:	first executes the job that came in last in the queue
Option B:	first executes the job that came in first in the queue
Option C:	first executes the job that needs minimal processor
Option D:	first executes the job that has maximum processor needs
11.	When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called?
Option A:	dynamic condition
Option B:	race condition
Option C:	essential condition
Option D:	critical condition
12.	Mutual exclusion can be provided by the _____
Option A:	mutex locks
Option B:	binary semaphores
Option C:	both mutex locks and binary semaphores
Option D:	priority inversion
13.	The dining – philosophers problem will occur in case of _____
Option A:	5 philosophers and 5 chopsticks
Option B:	4 philosophers and 5 chopsticks
Option C:	3 philosophers and 5 chopsticks
Option D:	6 philosophers and 5 chopsticks
14.	The disadvantage of a process being allocated all its resources before beginning its execution is _____
Option A:	Low CPU utilization
Option B:	Low resource utilization
Option C:	Very high resource utilization
Option D:	No resource utilization

15.	A computer system has 6 tape drives, with ‘n’ processes competing for them. Each process may need 3 tape drives. The maximum value of ‘n’ for which the system is guaranteed to be deadlock free is?
Option A:	2
Option B:	3
Option C:	4
Option D:	1
16.	Which of the following is not a method in deadlock handling
Option A:	Deadlock prevention
Option B:	Deadlock detection
Option C:	Deadlock recovery
Option D:	Deadlock distribution
17.	A process refers to 5 pages, A, B, C, D, E in the order: A, B, C, D, A, B, E, A, B, C, D, E. If the page replacement algorithm is FIFO, the number of page transfers with an empty internal store of 3 frames is?
Option A:	8
Option B:	10
Option C:	9
Option D:	7
18.	If no frames are free, _____ page transfer(s) is/are required.
Option A:	one
Option B:	two
Option C:	three
Option D:	four
19.	Using swap space significantly _____ system performance.
Option A:	increases
Option B:	decreases
Option C:	maintains

Option D:	does not affect
20.	What is a common problem found in distributed system?
Option A:	Process Synchronization
Option B:	Communication synchronization
Option C:	Deadlock problem
Option D:	Power failure

Q2. A	**Solve any Two** **5 marks each**
i.	Explain the popular multiprocessor thread-scheduling strategies.
ii.	A paging scheme uses a Translation Lookaside buffer (TLB). A TLB access takes 10 ns and a main memory access takes 50 ns. What is the effective access time (in ns) if the TLB hit ratio is 90% and there is no page fault? 1. 54 2. 60 3. 65 4. 75
iii.	What are short, long and medium-term scheduling?
Q2. B	**Solve any One** **10 marks each**
i.	Compare and contrast paging and segmentation.
ii.	Compare and contrast given allocation methods: Contiguous allocation, Linked allocation, Indexed allocation.

Q3. A	**Solve any Two** **5 marks each**
i.	What is the difference between Hard and Soft real time Systems?
ii.	Give the queuing diagram representing process scheduling and show the action point for the different types of CPU schedulers.
iii.	List the Coffman's conditions that lead to a deadlock.
Q3. B	**Solve any One** **10 marks each**
i.	Explain Readers-Writers problem using semaphores.
ii.	With the help of a neat labeled diagram, explain the hardware support with TLB for paging.

University of Mumbai

Examination 2020 under cluster 7 (Lead College: SSJCOE)

Program: **Information Technology**

Curriculum Scheme: 2016

Examination: SE Semester: IV

Course Code: ITC404 and Course Name: : Computer Organization and Architecture

Time: 2 hour Max. Marks: 80

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For the students: - All the Questions are compulsory and carry equal marks.

Q1.	The instruction, MOV BX, [5000H] is an example of _____.
Option A:	Immediate addressing mode
Option B:	Direct addressing mode
Option C:	Indirect addressing mode
Option D:	Register addressing mode
Q2.	The instructions that are used to call a subroutine from the main program and return to the main program after execution of called function are_____.
Option A:	CALL, JMP
Option B:	JMP,IRET
Option C:	CALL,RET
Option D:	JMP,RET
Q3.	Which register is used in an instruction LOOP, to store loop count?
Option A:	AX
Option B:	CX
Option C:	BX
Option D:	DX
Q4.	The instruction CMP, majorly impacts these flags of 8086 Microprocessor.
Option A:	Carry, Sign, Zero
Option B:	Parity, Sign, Zero
Option C:	Overflow, Direction, Zero
Option D:	Overflow, Sign, Parity
Q5.	Which of the following is a disadvantage of Pipelining?
Option A:	The instruction latency is more
Option B:	cycle time of the processor is reduced.
Option C:	Execution time of processor is reduced
Option D:	The instruction latency is less
Q6.	The advantage of hardwired control unit is_____
Option A:	High speed and smaller space
Option B:	High speed and more space
Option C:	High speed and costly
Option D:	Cheaper and simple
Q7.	8086 microprocessor has ___ address lines.

Option A:	16
Option B:	18
Option C:	20
Option D:	24
Q8.	BHE of 8086 microprocessor signal is used to interface the_____
Option A:	I/O
Option B:	DMA
Option C:	Even bank memory
Option D:	Odd bank memory
Q9.	According to the Von Neumann model, _____ are stored in memory.
Option A:	Only data
Option B:	Only Programs
Option C:	Data and Programs
Option D:	Neither data nor Programs
Q10.	To increase the speed of memory access in pipelining, we make use of _____
Option A:	Special memory locations
Option B:	Special purpose registers
Option C:	Cache
Option D:	Buffers
Q11.	The function of control unit in Digital Computer is _____
Option A:	to initiate the sequences of micro-operations
Option B:	to perform arithmetic operations
Option C:	to perform logical operations
Option D:	to perform I/O operations
Q12.	Restoring division algorithm is applied on_____.
Option A:	decimal numbers
Option B:	binary numbers
Option C:	hexadecimal numbers
Option D:	octal numbers
Q13.	In IEEE 32-bit representations, the mantissa occupies _____ bits.
Option A:	24
Option B:	23
Option C:	20
Option D:	16
Q14.	Which of the following is used for binary multiplication?
Option A:	Restoring Multiplication
Option B:	Booth's Algorithm
Option C:	Pascal's Rule
Option D:	Digit-by-digit multiplication
Q15.	Which of the following is often called the double precision format?

Option A:	64-bit
Option B:	8-bit
Option C:	32-bit
Option D:	128-bit
Q16.	A memory device in which bit is stored in the form of charge of the capacitor, is _____.
Option A:	DRAM
Option B:	SRAM
Option C:	EPROM
Option D:	BUBBLE MEMORY
Q17.	The method of mapping the consecutive memory blocks to consecutive cache blocks is called _____
Option A:	Set associative
Option B:	Associative
Option C:	Direct
Option D:	Indirect
Q18.	In low order interleaved memory, lower order bits of the memory address represent the _____.
Option A:	interleaving
Option B:	memory block
Option C:	cache line
Option D:	Bank
Q19.	The DMA transfers are performed by a control circuit called as _____.
Option A:	Device interface
Option B:	Data controller
Option C:	Overlooker
Option D:	DMA controller
Q20.	The method of accessing the I/O devices by repeatedly checking the status flags is _____.
Option A:	Program-controlled I/O
Option B:	Memory-mapped I/O
Option C:	I/O mapped
Option D:	I/O mapped I/O

Q2 (20 Marks)	**Solve any Four out of Six** **5 marks each**
A	Explain in brief Bus controller 8288.
B	Discuss various addressing modes of 8086 microprocessor.
C	Explain following instructions of 8086 microprocessor-ADC, JC, MUL, DAS, LEA
D	Explain IEEE-754 floating point number representation formats.

E	Compare Hardwired and Microprogrammed Control Unit.
F	Explain the concept of DMA.

Q 3 (20 Marks)	**Solve any Two Questions out of Three** **10 marks each**
A	Explain different Mapping techniques of Cache Memory.
B	Explain the Flynn's classification of parallel processing.
C	Perform division of $(6)_{10}$ with $(4)_{10}$ using restoring division algorithm.