K. J. Somaiya Institute of Engineering and Information Technology
Sion, Mumbai - 400022
NAAC Accredited Institute with 'A' Grade
NBA Accredited 3 Programs (Computer Engineering, Electronics & Telecommunication Engineering and Electronics Engineering) Permanently Affiliated to University of Mumbai

EXAMINATION TIME TABLE (JUNE 2021)

PROGRAMME - T.E. (Information Technology)(REV. -2016) (Choice Based)

SEMESTER - V

Days and Dates	Time	Course Code	Paper
Wednesday, June 16, 2021	11.30 a.m to 1.30 p.m	ITC501	Microcontroller & Emebedded Programming
Friday, June 18, 2021	11.30 a.m to 1.30 p.m	ITC502	Internet Programming
Monday, June 21, 2021	11.30 a.m to 1.30 p.m	ITC503	Advanced Data Management Technology
Wednesday, June 23, 2021	11.30 a.m to 1.30 p.m	ITC504	Cryptography & Network Security
Friday, June 25, 2021	11.30 a.m to 1.30 p.m	ITDLO5011	Elective I : Advanced Data Structres & Analysis of Algorithms
Friday, June 25, 2021	11.30 a.m to 1.30 p.m	ITDLO5012	Elective I : Image Processing
Friday, June 25, 2021	11.30 a.m to 1.30 p.m	ITDLO5013	Elective I : E-Commerce & E-Business
Friday, June 25, 2021	11.30 a.m to 1.30 p.m	ITDLO5014	Elective I : IT Enabled Services
Friday, June 25, 2021	11.30 a.m to 1.30 p.m	ITDLO5015	Elective I : Computer Grahics & Virtual Reality

Important Note: ● **Change if any, in the time table shall be communicated on the college web site.**

PRINCIPAL

Mumbai
20th May, 2021

University of Mumbai
Examination 2020 under cluster _7_ (Lead College:SSJCOE)

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: BE Information Technology

Curriculum Scheme: Rev.2016

Examination: TE Semester: V

Course Code: ITC501 and Course Name: Microcontroller & Embedded Programming

Time: 2 hour Max. Marks: 80

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Which of the following is not an addressing mode of 8051?
Option A:	Direct addressing mode
Option B:	Register addressing mode
Option C:	Immediate addressing mode
Option D:	Arithmetic addressing mode
2.	Instruction used to Test equality of two 32-bit values in ARM7 is called _____.
Option A:	TEQ
Option B:	TST
Option C:	EOR
Option D:	SRQ
3.	Embedded system is
Option A:	Reactive
Option B:	Real time
Option C:	Proactive
Option D:	Reactive & Real time
4.	The problem of priority inversion can be solved by _____
Option A:	priority inheritance protocol
Option B:	priority inversion protocol
Option C:	both priority inheritance and inversion protocol
Option D:	priority interrupt protocol
5.	When the microcontroller executes some arithmetic operations, then the flag bits of which register are affected?
Option A:	PSW
Option B:	SP
Option C:	DPTR

Option D:	PC
6.	Which register is used as a stack pointer in ARM7?
Option A:	R15
Option B:	R13
Option C:	R11
Option D:	R8
7.	Name the Operating System that works on Raspberry Pi?
Option A:	Android
Option B:	Linux
Option C:	Windows 10
Option D:	Rasbian
8.	Timer 0 is a _____ bit register.
Option A:	32-bit
Option B:	16-bit
Option C:	8-bit
Option D:	10-bit
9.	For real time operating systems, interrupt latency should be _____
Option A:	minimal
Option B:	maximum
Option C:	zero
Option D:	dependent on the scheduling
10.	Which pin of 8051 used to demultiplex AD0-Ad7 ?
Option A:	EA
Option B:	ALE
Option C:	PSEN
Option D:	VCC
11.	FIQ stands for_____
Option A:	Fast Interrupt Request
Option B:	For Interrupt Request
Option C:	Fast Input Request
Option D:	First Input Request
12.	How many external interrupts are there in micro controller 8051
Option A:	5
Option B:	8

Option C:	2
Option D:	4
13.	The concept of start of conversion and end of conversion is applicable to
Option A:	DAC
Option B:	ADC
Option C:	LCD
Option D:	RTC
14.	For writing commands on an LCD, RS bit is
Option A:	Set
Option B:	reset
Option C:	set & reset
Option D:	not used
15.	A program written with the IDE for Arduino is called
Option A:	IDE source
Option B:	Sketch
Option C:	Cryptography
Option D:	Source code
16.	The internal RAM Memory of 8051 is
Option A:	32 Bytes
Option B:	64 Bytes
Option C:	128 Bytes
Option D:	256 Bytes
17.	ARM7 is _____ pipelined microcontroller.
Option A:	3-Stage
Option B:	4-Stage
Option C:	5-Stage
Option D:	2-stage
18.	The binary semaphore is also known as
Option A:	Cluster
Option B:	Mutex
Option C:	Scheduler
Option D:	Spooling
19.	The pin that clears the control word register of 8255 when enabled is
Option A:	CLEAR
Option B:	SET
Option C:	RESET

Option D:	CLK
20.	An instruction that is used to move data from an ARM Register to a Status Register (CPSR or SPSR) is called _____.
Option A:	MRC
Option B:	MRS
Option C:	MSR
Option D:	MCS
Q2. A	**Solve any Two** **5 marks each**
i.	Differentiate between Real-Time Operating System and General Purpose Operating System.
ii.	Draw interfacing of DAC to 8051 and write program to generate ramp wave.
iii.	List important features of ARM7 processor
B	**Solve any One** **10 marks each**
i.	Explain different addressing modes of 8051 with example
ii.	List and explain how exceptions and interrupts handled in ARM7.
Q3. A	**Solve any Two** **5 marks each**
i.	List various microcontroller cores used for an Embedded system & explain any one in detail
ii.	List various components of Raspberry_pi board.
iii.	Explain SCON SFR in detail
B	**Solve any One** **10 marks each**
i.	Draw & explain internal RAM structure of 8051 in detail
ii.	Write short note on Pipelining of ARM7

University of Mumbai
Examination 2020 under cluster _7_ (Lead College: SSJCOE)

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: BE Information Technology

Curriculum Scheme: Rev.2016

Examination: TE Semester: V

Course Code: ITC501 and Course Name: Microcontroller & Embedded Programming

Time: 2 hour Max. Marks: 80

Question Number	Correct Option
Q1.	D
Q2.	A
Q3.	D
Q4	A
Q5	A
Q6	B
Q7	D
Q8.	B
Q9.	A
Q10.	B
Q11.	A
Q12.	C
Q13.	B
Q14.	B
Q15.	B

Q16.	C
Q17.	A
Q18.	B
Q19.	C
Q20.	C
Q.2 A	
ii.	Diagram-2 marks Explaination-3 marks
Q.3 B	
i.	Diagram-4 marks Explaination – Partitions of internal RAM, Use of each partition in detail, detail about register banks - 6 marks

University of Mumbai

Examination 2020 under cluster 7 (Lead College: SCSJCE)

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **Information Technology**

Curriculum Scheme: **Rev 2016**

Examination: **TE** Semester **V**

Course Code: **ITC502** and Course Name: **Internet Programming**

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.	Full form of isNaN is
Option A:	is not a number
Option B:	is number not
Option C:	is not number
Option D:	is number
2.	The correct sequence of HTML tags for starting a webpage is
Option A:	Head, Title, HTML, body
Option B:	HTML, Body, Title, Head
Option C:	HTML, Head, Body, Title,
Option D:	HTML, Head, Title, Body
3.	How to create an unordered list (a list with the list items in bullets) in HTML?
Option A:	
Option B:	
Option C:	
Option D:	<i>
4.	If we want to use a nice looking green dotted border around an image, which css property will we use?
Option A:	border-color
Option B:	border-decoration
Option C:	border-style
Option D:	border-line
5.	The following elements <header>, <footer>, <article>, <section> are the new elements in HTML5. These elements are called,
Option A:	Control attributes
Option B:	Semantic elements
Option C:	Graphic elements
Option D:	Multimedia elements
6.	Which of the following Media Query determines if output is grid, like a simple terminal or phone, or bitmap, like a standard monitor or printer?
Option A:	monochrome
Option B:	grid

Option C:	resolution
Option D:	device-height
7.	Which of the following selector is used to selects the element that is the first child of its parent that is of its type?
Option A:	:nth-child(n)
Option B:	::first-line
Option C:	:last-of-type
Option D:	:first-of-type

8.	h1 {
	text-shadow: 2px 2px;
	}
	first value of text-shadow property is

Option A:	horizontal shadow
Option B:	vertical shadow
Option C:	Left Shadow
Option D:	Right Shadow
9.	Analyze and reformat the data on a remote server and transmit the data to the user's browser in its final form.
Option A:	Web-based mashups
Option B:	Server-based mashups
Option C:	Ajax mashup
Option D:	JSON mashup
10.	JSON name/value pair is written as
Option A:	name' : 'value'
Option B:	name = 'value'
Option C:	name = "value"
Option D:	"name" : "value"
11.	What does the XMLHttpRequest object accomplish in Ajax?
Option A:	It's the programming language used to develop Ajax applications.
Option B:	It provides a means of exchanging structured data between the Web server and client.
Option C:	It provides the ability to asynchronously exchange data between Web browsers and a Web server.
Option D:	It provides the ability to mark up and style the display of Web-page text.
12.	What is the file extension of JSON?
Option A:	.jn
Option B:	.js
Option C:	.jsn
Option D:	.json
13.	What is the type of configuration Django requires for logging?
Option A:	Django requires a dictConfig in settings.py.
Option B:	Django requires no configuration. Use logging by an import.
Option C:	Django requires a configuration of handlers and loggers.

Option D:	Logging can be directly used in each module separately.
14.	What are request.GET and request.POST objects?
Option A:	Python Dictionary-Like objects
Option B:	Python Lists
Option C:	Python Dictionaries
Option D:	Python Tuple
15.	What will be the output of the following PHP code? <?php $i= 1; print($i); print $i; ?>
Option A:	10
Option B:	01
Option C:	11
Option D:	error
16.	Which of the following contains a reference to every variable which is currently available within the global scope of the script?
Option A:	$_SERVER
Option B:	$_COOKIE
Option C:	$_SESSION
Option D:	$GLOBALS
17.	What will be the output of the following PHP code? <?php $num = "4"; $num1 = "5"; print $num+$num1; ?>
Option A:	4
Option B:	4+5
Option C:	45
Option D:	9
18.	Which is a language for finding information in an XML document.
Option A:	Xpath
Option B:	XSLT
Option C:	XLink
Option D:	XPointer
19.	To match the specific XML elements child like of parent element is the syntax will be
Option A:	<xsl:template match=”PLANET_NAME”>
Option B:	<xsl:template match=”PLANET/NAME”>
Option C:	<xsl:template match=”/NAME”>
Option D:	<xsl:template match=”//”>

20.	Which internet language is used for describing available web services in XML.
Option A:	WSDL
Option B:	RSS
Option C:	RDF
Option D:	OWL

Q2	
A	**Solve any Two 5 marks each**
i.	Explain native objects in JavaScript.
ii.	How you will embed audio and video in webpage.
iii.	Define and describe mash ups. What are the primary reasons for the success of mashups?
B	**Solve any One 10 marks each**
i.	Write an XML to accept student details (Name, ID, Branch, Address and CGPA). Write an XSL to display to list of the students in descending order of their CGPA.
ii.	Write a PHP code to database connectivity with Insert, Update, Delete, record using MYSQL?

Q3.	
A	**Solve any Two 5 marks each**
i.	What are features of Web Services?
ii.	Write a PHP Program to create a simple login form using GET method?
iii.	Difference between HTML and XML?
B	**Solve any One 10 marks each**
i.	Draw the diagram for AJAX application model and traditional web application Model and compare them.
ii.	Demonstrate CSS3 Animation with an example.

University of Mumbai

Examination 2020 under cluster 7 (Lead College: SCSJCE)

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **Information Technology**

Curriculum Scheme: **Rev 2016**

Examination: **TE** Semester **V**

Course Code: **ITC502** and Course Name: **Internet Programming.**

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	D
Q3.	A
Q4	D
Q5	B
Q6	B
Q7	D
Q8.	A
Q9.	B
Q10.	D
Q11.	C
Q12.	D
Q13.	A
Q14.	A
Q15.	C
Q16.	D
Q17.	D
Q18.	A
Q19.	B
Q20.	A

University of Mumbai

Examination 2020 under cluster 7 (Lead College:_____)

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **Information Technology**

Curriculum Scheme: **Rev2016**

Examination: **TE Semester V**

Course Code: **_ITC503_** and Course Name: **_Advanced Data Management Technology_**

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.	In which search algorithm the system scans each file block and tests all records to see whether they satisfy the selection condition.
Option A:	Index Search
Option B:	Linear Search
Option C:	File scan
Option D:	Access paths
2.	_____ is an example of immediate data extraction
Option A:	real-time data capture
Option B:	data capture based on date
Option C:	data capture based on timestamps
Option D:	data capture by comparing files
3.	A _____ is a set of fact tables that share some dimension tables
Option A:	Fact Table Set
Option B:	Collection
Option C:	Fact Dimension Set
Option D:	Fact Constellation
4.	Which pass of ARIES rolls back all transactions that were incomplete at the time of crash?
Option A:	Test pass
Option B:	Redo pass
Option C:	Undo pass
Option D:	Analysis pass
5.	_____ store some summaries in memory and store the base data and other summaries in a relational database
Option A:	TOLAP (Total OLAP)
Option B:	ROLAP (Relational OLAP)
Option C:	MOLAP (Multidimensional OLAP)
Option D:	HOLAP (Hybrid OLAP)
6.	Which of the following is a basic form of grant statement?
Option A:	GRANT 'privilege list' ON 'relation name or view name' TO user/role list
Option B:	GRANT 'privilege list' ON user/role list TO 'relation name or view name'

Option C:	GRANT 'privilege list' TO 'user/role list'
Option D:	GRANT 'privilege list' ON 'relation name or view name' ON user/role list
7.	A hardware, software, or network error occurs in the computer system during transaction execution is a type of
Option A:	Transaction failure
Option B:	System failure
Option C:	exception conditions detected by the transaction
Option D:	Physical problems and catastrophes
8.	Challenges of Mobile Database are
Option A:	Disconnection
Option B:	Low Bandwidth
Option C:	Disconnection and Low Bandwidth
Option D:	Neither Disconnection nor Low Bandwidth
9.	Degree of Merging in external Sorting refers to
Option A:	Number of runs in iterations to complete the merge phase
Option B:	Number of runs that can be merged in each pass of merge phase
Option C:	Number of runs required to complete the merge phase
Option D:	Number of passes required to complete the merge phase
10.	Which of the following occurs when one transaction reads a changed record that has not been committed to the database?
Option A:	Dirty read
Option B:	Phantom read
Option C:	Non-repeatable read
Option D:	Consistent read
11.	_____ is generally not normalized
Option A:	Star Schema Dimension Table
Option B:	Fact Table
Option C:	Relational Table
Option D:	Snowflake Schema Dimension Table
12.	Data is dumped at regular intervals in this type of loading method
Option A:	Immediate Load
Option B:	Deferred Load
Option C:	Full Load
Option D:	Incremental Load
13.	Strict TO ensures that the schedule is/are
Option A:	Strict and serializable
Option B:	Strict
Option C:	recoverable
Option D:	Strict and recoverable
14.	Which of the following is true concerning a distributed transaction?
Option A:	The required data are at one local site and the distributed DBMS routes requests as necessary.

Option B:	The required data are located in at least one nonlocal site and the distributed DBMS routes requests as necessary.
Option C:	The required data are at one local site and the distributed DBMS passes the request to only the local DBMS.
Option D:	The required data are located in at least one nonlocal site and the distributed DBMS passes the request to only the local DBMS
15.	Wait-for graph is used for _____ in Distributed database.
Option A:	Handling concurrency control
Option B:	Managing failures
Option C:	Deadlock handling
Option D:	Handling concurrent transaction
16.	MAC is based on the following multilevel security.
Option A:	Top secret and Secret
Option B:	Secret and Confidential
Option C:	Confidential, Restricted, and Unclassified
Option D:	Top secret , Secret, Confidential, and Unclassified
17.	The recovery scheme that does not require the use of a log in a single-user is environment
Option A:	Redo Algorithm
Option B:	Undo Algorithm
Option C:	Aries Recovery Algorithm
Option D:	Shadow Paging
18.	Assume a relation Employee as given below: Employee (EmpID, Emp_name, Job_profile, Salary, Department) Assume that there are two applications which are accessing the above-mentioned table. One application typically retrieves information about employees who earn more than Rs.150000; the other application typically manages information about 'Manager' (job_profile). Also, assume that there are employees with other designations and different salaries are stored in Employee relation. With this information, answer the question From the given relational schema which of the following simple predicates can be directly get extracted?
Option A:	{Job = clerk, Salary>=15000}
Option B:	{Job = clerk, Salary>150000}
Option C:	{ Job = Manager, Salary>15000}
Option D:	{Job = Manager, Salary<150000}
19.	The ROLLUP extension is used with the _____ clause to generate aggregates by different dimensions
Option A:	ORDER BY
Option B:	GROUP BY
Option C:	HAVING
Option D:	PIVOT
20.	A subject S is not allowed read access to an object O unless class(S) ≥ class(O) is known as the
Option A:	Snow flax schema property

Option B:	Star property
Option C:	Complex Security property
Option D:	Simple security property

Q2	**Solve any Four out of Six** **5 marks each**
A	List various fragmentation strategies in distributed database and explain any one with example.
B	Explain two phase locking protocol
C	Explain Role based access control
D	Explain operations in data cube.
E	Explain ACID Property with example
F	Explain the challenges in ETL functions

Option 2

Q3.	**Solve any Two Questions out of Three** **10 marks each**
A	Design a star schema for the data warehouse for wholesale Electronics Company. The data warehouse has to allow analyzing the company's situation at least with respect to the Electronics, Customer and Time. Moreover, the company needs to analyze the Electronics with respect to its type, category and material. The customers with respect to their spatial location, by considering at least cities, region, and states. The company is interested in learning the quantity, income and discount of its sales. Convert the star schema to snowflake schema.
B	Explain External Sorting Algorithm
C	Explain the conditions for conflict serializable schedule with example

University of Mumbai

Examination 2020 under cluster 7 (Lead College: _____)

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **INFORMATION TECHNOLOGY**

Curriculum Scheme: **Rev2016**

Examination: **TE Semester V**

Course Code: **_ITC503_** and Course Name: **_Advanced Data Management Technology_**

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	B
Q2.	A
Q3.	D
Q4	C
Q5	D
Q6	A
Q7	B
Q8.	C
Q9.	B
Q10.	A
Q11.	A
Q12.	D
Q13.	A
Q14.	B
Q15.	D
Q16.	D
Q17.	D
Q18.	B
Q19.	B
Q20.	D

University of Mumbai
Examination 2021 under cluster 7
Examinations Commencing from 15th June 2021 to 26th June 2021

Program: BE Information Technology Engineering
Curriculum Scheme: Rev 2016
Examination: Third Year Semester V

Course Code: ITC504 Course Name: Cryptography & Network Security
Time: 2 hours Max. Marks: 80

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

Q1.	The counter measure to eavesdropping on the communication link is the use of
Option A:	a login name and password
Option B:	a cryptographic sum
Option C:	Encryption
Option D:	a fake identity
Q2.	Which one of the following security service ensures that the sender and the intended recipients only can understand the contents of the message?
Option A:	Integrity
Option B:	Confidentiality
Option C:	Access control
Option D:	Authentication
Q3.	In a Digital Certificate, _____ entity should never appear.
Option A:	Private Key
Option B:	User's Name
Option C:	Organisation Name
Option D:	Public Key
Q4.	Using Rail fence cipher technique, The Cipher text for the plaintext "COME HOME TOMORROW" is
Option A:	CMHMTMEOORWOEOER
Option B:	ROOEOECMHMTMOORW
Option C:	CMHMTMROOEOEOORW
Option D:	EOORWCMHMTMROOEO
Q5.	Firewall Should be situated _____ .
Option A:	Inside a corporate network
Option B:	outside a corporate network
Option C:	between a corporate network and the outside network.
Option D:	inside the server

Q6.	In which mode of IPSec protocol, the entire IP Datagram including it's original header is encrypted and a new header is added?
Option A:	Transport mode
Option B:	Tunnel Mode
Option C:	In both Transport and Tunnel mode
Option D:	Encryption mode
Q7.	In which one of the following modes of operation the output of the Initialization vector of the encryption process is fed into the next stage of the encryption process?
Option A:	Cipher Feedback
Option B:	Electronic Code Book
Option C:	Counter Mode
Option D:	Output FeedBack
Q8.	Blowfish algorithm uses variable length key ranges from _____ to _____ bits.
Option A:	32 to 448 bits
Option B:	36 to 512 bits
Option C:	32 to 512 bits
Option D:	36 to 448 bits
Q9.	For the Knapsack: {1 6 8 15 24}, Find the cipher text value for the plain text 11010.
Option A:	40
Option B:	45
Option C:	22
Option D:	0
Q10.	What is the value of ipad in the HMAC algorithm?
Option A:	0x5C
Option B:	0x36
Option C:	0x34
Option D:	0x5B
Q11.	Message Authentication Code takes two inputs such as _____- and _____ .
Option A:	message and message digest
Option B:	message and hash value
Option C:	message and a secret key
Option D:	message and ipad value
Q12.	The Certification Authority signs a Digital Certificate with _____ .
Option A:	User's Public key
Option B:	User's Private key
Option C:	CA's Public key
Option D:	CA's Private key
Q13.	In an asymmetric-key cipher, the receiver uses which key for decrypting the Cipher Text?

Option A:	Receiver's Private Key
Option B:	Sender's Private Key
Option C:	Receiver's Public key
Option D:	Sender's Public key
Q14.	The relationship between RSA encryption and decryption keys is
Option A:	$ed \equiv 1 \bmod n$
Option B:	$ed \equiv 0 \bmod n$
Option C:	$ed \equiv 1 \bmod phi(n)$
Option D:	$ed \equiv 0 \bmod phi(n)$
Q15.	A digital certificate is used to bind
OptionA:	A person's public key to his private key
Option B:	A person's public key to his identity
Option C:	A person's private key to his identity
Option D:	A person's signature to his private key
Q16.	Which one of the following may be negotiated as part of the SSL Handshake?
Option A:	New Session ID
Option B:	Nounces
Option C:	Initial Sequence number
Option D:	Encryption algorithm
Q17.	Kerboros protocol protects against which of the following attack?
Option A:	Dictionary Attack
Option B:	Man in the middle Attack
Option C:	Replay Attack
Option D:	Logarithmic Attack
Q18.	Entity Authentication is used to protect against
Option A:	session hijacking
Option B:	Impersonation
Option C:	replay attack
Option D:	identity theft
Q19.	Attackers establish a large number of half open connections using .
Option A:	ARP spoofing
Option B:	Session hijacking
Option C:	ARP poisoning
Option D:	IP spoofing
Q20.	Which one of the following security service is not achieved by Digital Signature Scheme?
Option A:	Integrity
Option B:	Non-Repudiation
Option C:	Confidentiality
Option D:	Authentication

Q2	
A	**Solve any Two** **5 marks each**
i.	Explain with examples,keyed and keyless transposition ciphers.
ii.	Explain the Key Generation Process in DES.
iii.	Explain HMAC and CMAC in detail
B	**Solve any One** **10 marks each**
i.	Calculate Cipher text using RSA Algorithm for the following data: Prime Numbers p and q are 7, 17 respectively. Plain text message M= 10. Assume that e = 5. a) Find the private key ‘d’ and the CipherText CT. b) Can we select e as 3? Justify your answer.
ii.	List the functions of Different SSL protocols and explain handshake protocol in detail.

Q3	
A	**Solve any Two** **5 marks each**
i.	Draw a sample Digital Certificate and explain each and every field of it.
ii.	Explain the different ways of distributing the public keys.
iii.	Differentiate between the transport mode and tunnel mode of IPSec
B	**Solve any One** **10 marks each**
i.	Draw AES block diagram and explain the round function in detail.
ii.	Define DOS attack.Explain different types of DoS attacks.

University of Mumbai
Examination 2021 under cluster 7
Examinations Commencing from 15th June 2021 to 26th June 2021

Program: BE Information Technology Engineering
Curriculum Scheme: Rev 2016
Examination: Third Year Semester V

Course Code: ITC504 Course Name: Cryptography & Network Security
Time: 2 hours Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	C
Q2.	B
Q3.	A
Q4	C
Q5	C
Q6	B
Q7	D
Q8.	A
Q9.	C
Q10.	B
Q11.	C
Q12.	D
Q13.	A
Q14.	C
Q15.	B
Q16.	D
Q17.	B
Q18.	B
Q19.	D
Q20.	C

University of Mumbai

Examination 2020 under cluster 7 (Lead College: SCSJCE)

Program: Information Technology

Curriculum Scheme: Rev2016

Examination: TE Semester V

Course Code: ITDLO5011 and Course Name: Advanced Data Structures & Analysis of Algorithms

Time: 2 hour Max. Marks: 80

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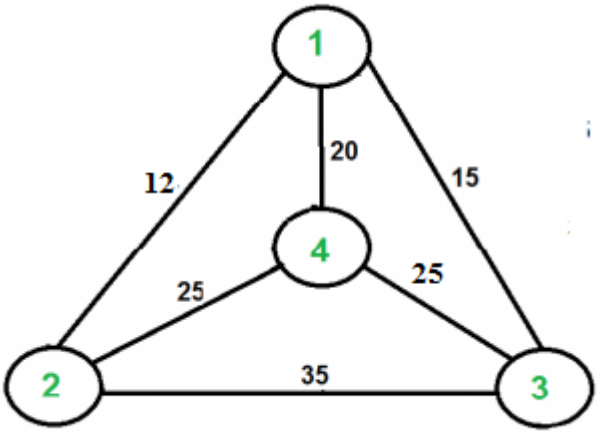
Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Solve the following recurrence using Master's theorem. T(n) = T (2n/3) + 1
Option A:	T(n)=O(log n)
Option B:	T(n)=O(1)
Option C:	T(n)=O(n.logn)
Option D:	$T(n)=O(n^2)$
2.	Solve the following recurrence using Master's theorem. T(n) = 3T (n/3) + n
Option A:	T(n)=O(n.logn)
Option B:	T(n)=O(n)
Option C:	T(n)=O(logn)
Option D:	$T(n)=O(n^2)$
3.	Find out the time complexity of following equation. T(n)=T(n/2)+1
Option A:	T(n)=O(1)
Option B:	T(n)=O(n)
Option C:	T(n)=O(logn)
Option D:	T(n)=O(n.logn)
4.	Solve with the help of recursive tree method. T(n)=T(n/2)+T(n/4)+n^3
Option A:	$T(n)=O(n^3)$
Option B:	T(n)=O(n logn)
Option C:	T(n)=O(n^3. logn)
Option D:	T(n)=O(logn)
5.	Which of the following algorithms is the best approach for solving Huffman codes?
Option A:	exhaustive search
Option B:	greedy algorithm
Option C:	brute force algorithm
Option D:	divide and conquer algorithm
6.	In Huffman coding, data in a tree always occur?
Option A:	Roots
Option B:	Leaves
Option C:	left sub trees
Option D:	right sub trees

7.	Consider a binary max-heap implemented using an array. Which one of the following array represents a binary max-heap?
Option A:	25,12,16,13,10,8,14
Option B:	25,12,16,13,10,8,14
Option C:	25,14,16,13,10,8,12
Option D:	25,14,12,13,10,8,16
8.	Which of the following is true about Red Black Trees?
Option A:	The path from the root to the furthest leaf is no more than twice as long as the path from the root to the nearest leaf
Option B:	At least one children of every black node is red
Option C:	Root may be red
Option D:	A leaf node may be red
9.	Merge sort uses which of the following technique to implement sorting?
Option A:	Backtracking
Option B:	greedy algorithm
Option C:	divide and conquer
Option D:	dynamic programming
10.	What is the best case complexity of Quicksort?
Option A:	O(nlogn)
Option B:	O(logn)
Option C:	O(n)
Option D:	O(n^2)
11.	If Matrix A is of order X*Y and Matrix B is of order M*N, then what is the order of the Matrix A*B given that Y=M?
Option A:	Y*N
Option B:	X*M
Option C:	X*N
Option D:	Y*M
12.	Which of the following algorithm is used to solve fractional knapsack problem efficiently?
Option A:	Dynamic Programming
Option B:	Greedy algorithm
Option C:	Divide and Conquer
Option D:	Backtracking
13.	What is the purpose of the Knapsack problem?
Option A:	To obtain minimum weight in the knapsack
Option B:	To obtain minimum total value in the knapsack
Option C:	To obtain maximum weight in the knapsack
Option D:	To obtain maximum total value in the knapsack
14.	Which of the following is true?
Option A:	Prim's algorithm can also be used for disconnected graphs
Option B:	Kruskal's algorithm can also run on the disconnected graphs
Option C:	Prim's algorithm is simpler than Kruskal's algorithm

Option D:	In Kruskal's sort edges are added to MST in decreasing order of their weights
15.	Which is not correct about NP-Complete
Option A:	It must be both NP and NP-hard problem.
Option B:	Can be solved by deterministic algorithm in polynomial time.
Option C:	It is not a Decision problem.
Option D:	It is exclusively Decision problem.
16.	Problems that can be solved in polynomial time are called.
Option A:	Intractable problems
Option B:	Tractable problems
Option C:	Undecidable problems
Option D:	Decidable problems
17.	Find out the cost of tour in following Travelling salesman problem. 
Option A:	62
Option B:	80
Option C:	77
Option D:	90
18.	The concept of prefix and suffix is used in which of the following algorithms?
Option A:	KMP
Option B:	Boyer-Moore
Option C:	Brute Force
Option D:	Advanced Brute Force
19.	What is the worst case time complexity of KMP algorithm for pattern searching, where n=length of text and m= length of pattern
Option A:	O(m)
Option B:	O(n)
Option C:	O(log n)
Option D:	O(n*m)
20.	What is the time complexity of the brute force algorithm used to find the longest common subsequence?

Option A:	O(n)
Option B:	$O(n^2)$
Option C:	$O(n^3)$
Option D:	$O(2^n)$

Q2. (20 Marks Each)	**Solve any Two Questions out of Three** **10 marks each**
A	Which are the different methods of solving recurrences? Explain with the help of example
B	Explain AVL trees. Explain the four cases that require rotation. Insert the following elements into an AVL Tree 63,52,49,83,92,29,23,54,13,99 along with the rotations used.
C	Explain divide & Conquer approach. Write a recursive algorithm to determine the max and min from given elements.

Q3. (20 Marks Each)	**Solve any Two Questions out of Three** **10 marks each**
A	Solve the following knapsack problem by using greedy approach where N=7,M=15,(P1,P2,P3,P4,P5,P6,P7)=(10,5,15,7,6,18,3), (W1,W2,W3,W4,W5,W6,W7)=(2,3,5,7,1,4,1)
B	Write a short note on Optimal Binary Search Tree.
C	Explain KMP Pattern Matching algorithm with a suitable example.

University of Mumbai

Examination 2020 under cluster 7 (Lead College: SCSJCE)

Program: Information Technology

Curriculum Scheme: Rev2016

Examination: TE Semester V

Course Code: ITDLO5011 and Course Name: Advanced Data Structures & Analysis of Algorithms

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	A
Q2.	A
Q3.	C
Q4	A
Q5	B
Q6	B
Q7	C
Q8.	A
Q9.	C
Q10.	A
Q11.	C
Q12.	B
Q13.	D
Q14.	B
Q15.	C
Q16.	B
Q17.	C
Q18.	A
Q19.	B
Q20.	D

University of Mumbai

Examination 2020 under cluster 7

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **Information Technology**

Curriculum Scheme: Rev2016

Examination: TE Semester V

Course Code: ITDLO5012 and Course Name: **Image Processing**

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.	Digitizing the image amplitude is called
Option A:	Framing
Option B:	Sampling
Option C:	Quantization
Option D:	Sampling and Framing
2.	The smallest element of an image is called
Option A:	Pixel
Option B:	Dot
Option C:	Digit
Option D:	Coordinate
3.	_____ is the first and foremost step in image processing.
Option A:	Image enhancement
Option B:	Image acquisition
Option C:	Image restoration
Option D:	Image segmentation
4.	Histogram equalization is used to _____
Option A:	Resize the image
Option B:	Increase the number of gray levels
Option C:	Assign equal number of pixels to each gray level
Option D:	Increase the brightness of image
5.	An image of size 32x32 has all pixels of value 100, and if high pass filter is applied on this image then the resultant image will have pixel values
Option A:	Zero
Option B:	50
Option C:	10
Option D:	100
6.	A filtering process which is based on the separation of illumination and reflectance component of an image is termed as
Option A:	Band pass filtering
Option B:	Band stop filtering
Option C:	Median filtering

Option D:	Homomorphic filtering
7.	For a digital image of size MxN having L discrete gray levels, how many bits are required to store this digital image if M=N=32 and L=16.
Option A:	4096
Option B:	1024
Option C:	65536
Option D:	16384
8.	The purpose of image transformation is to _____
Option A:	convert an image from spatial domain to frequency domain
Option B:	1D to 2D
Option C:	type conversion
Option D:	time domain to spatial domain
9.	Walsh transform returns a value called _____
Option A:	Sequency
Option B:	Frequency
Option C:	Filtered
Option D:	Absolute
10.	Discrete Fourier Transform is
Option A:	periodic
Option B:	asymmetric
Option C:	symmetric
Option D:	aperiodic
11.	In image compression, the technique where information ignored by the human eye is called as
Option A:	coding redundancy
Option B:	spatial redundancy
Option C:	temporal redundancy
Option D:	irrelevant information
12.	Image compression techniques are used to save _____
Option A:	Money
Option B:	Text
Option C:	Storage
Option D:	Quality
13.	In image morphology, Opening and Closing operation are called _____
Option A:	Centers
Option B:	Neighbours
Option C:	Duals
Option D:	Corners
14.	Huffman codes are based on the concept of
Option A:	Derivatives
Option B:	Integration
Option C:	Probability of occurrence

Option D:	Matrix Multiplication
15.	_____ is not an approach for describing image boundaries.
Option A:	Fourier Descriptors
Option B:	Shape Numbers
Option C:	Perimeter
Option D:	Moments
16.	Gradient is also known as _____
Option A:	Mask
Option B:	Slope
Option C:	Contrast
Option D:	Limit
17.	For a given chain code 00332211, the shape number is _____
Option A:	303030
Option B:	3030303
Option C:	300303
Option D:	3003000
18.	In HSI color model, I is defined as _____
Option A:	R+G+B
Option B:	(R+G+B)*3
Option C:	(R+G+B)/3
Option D:	R+(G+B)*3
19.	_____ is a color model.
Option A:	CMI
Option B:	HSB
Option C:	RGY
Option D:	HSV
20.	____ is not a physical characteristic in biometric authentication.
Option A:	Ear shape
Option B:	Hand Geometry

Option C:	Bone angle
Option D:	Vein pattern

Q2	**Solve any Two Questions out of Three** **10 marks each**
A	Explain basic relationships between pixels.
B	List all properties of DFT and explain any 3 properties of DFT.
C	Explain with suitable example: i) Region based segmentation ii) Polygon approximation

Q3	**Solve any Two Questions out of Three** **10 marks each**
A	Explain with example any three neighborhood processing techniques in spatial domain.
B	List all lossless compression techniques and find arithmetic code for the message: INDIA
C	Write short notes on: i) Pseudocolor image processing ii) Content based image retrieval

University of Mumbai

Examination 2020 under Cluster 7

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **INFORMATION TECHNOLOGY**

Curriculum Scheme: Rev2016

Examination: TE Semester V

Course Code: ITDLO5012 and Course Name: **Image Processing**

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	C
Q2.	A
Q3.	B
Q4	C
Q5	A
Q6	D
Q7	A
Q8.	A
Q9.	A
Q10.	A
Q11.	D
Q12.	C
Q13.	C
Q14.	C
Q15.	D
Q16.	B
Q17.	B
Q18.	C
Q19.	D
Q20.	C

University of Mumbai

Examination 2020 under cluster __ (Lead College: _____)

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **Information Technology**

Curriculum Scheme: Rev2016

Examination: TE Sem-V

Course Code: ITDLO5013 and Course Name: E-Commerce & E-Business

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.	E-commerce is bringing about advantages to both consumers and ----------.
Option A:	search agents
Option B:	business interest
Option C:	business organizations
Option D:	customer interest
2.	What is used to recognize the client each time when he requests something, the server maintains an ID number?
Option A:	Session number
Option B:	Session variable
Option C:	Session identity
Option D:	Session request
3.	-------are images that display logos, contact information, or links to other sites these images can add visual interest to a web page.
Option A:	Image map
Option B:	Banners
Option C:	Hyperlinks
Option D:	Menu bars
4.	In this case, the seller is a business organization whereas the buyer is a consumer.
Option A:	Business-to-consumer (B2C)
Option B:	Business-to-business (B2B)
Option C:	Consumer-to-consumer (C2C)
Option D:	Consumer-to-business (C2B)
5.	When Dreamweaver Workspace gives access to widgets then it is called?
Option A:	Forms
Option B:	Spry
Option C:	Layout
Option D:	Favorites
6.	Blind Signatures technique which is used in E-Cash makes use of which encryption technique?
Option A:	RSA
Option B:	Blowfish

Option C:	AES
Option D:	DSA
7.	A ---------- is commonly used to ensure data integrity.
Option A:	Public key infrastructure
Option B:	Blowfish
Option C:	Digital signature
Option D:	Blind Signature
8.	This refers to whether a payment can be carried out without the involvement of a third party such as a bank.
Option A:	Divisibility
Option B:	Transferability
Option C:	Acceptability
Option D:	Anonymity
9.	In the physical credit card system, data integrity can basically be ensured by
Option A:	using printed receipts and cardholder's authentication relies on simple signature checking
Option B:	using printed receipts and cardholder's authentication relies on digital signature
Option C:	using electronic receipts and cardholder's authentication relies on digital signature
Option D:	using only electronic receipts
10.	Most commonly offered interactive feature of newspaper Web sites is called as _____
Option A:	Video.
Option B:	Comments on blogs.
Option C:	RSS feeds.
Option D:	Podcasts.
11.	_____ is a site that people use as a launching point to enter the Web .
Option A:	Connection
Option B:	Site
Option C:	Web Portal
Option D:	Internet
12.	_____ are markets in which prices are variable and based on the competition among participants who are buying or selling the products.
Option A:	Actions
Option B:	Sale bidding
Option C:	Auctions
Option D:	Sealed bid market.
13.	Tick the correct example- Retailers using the Web catalog revenue model to sell books, music, and videos have been among the most visible.
Option A:	Ebusiness
Option B:	Value chain
Option C:	Profit

Option D:	Ecommerce
14.	What is true about the technology ?
Option A:	Technology has given power to consumers to choose from multiple sites
Option B:	Technology has given power to reach many people in less time
Option C:	Technology has given power to consumers so that they can give feedback to companies
Option D:	Technology has increased threat of existing business
15.	Which of the following is not required in an e- business ?
Option A:	CRM
Option B:	ERP
Option C:	Digital Marketing
Option D:	Business Standards
16.	Before developing any type of strategy management team needs to agree the process they will follow for generating and then implementing the strategy, such a framework is known as
Option A:	E business stratification process
Option B:	E channel strategy
Option C:	A strategy process model
Option D:	Multi channel e-business strategy
17.	Web browsers are software such as Microsoft Internet Explorer and Mozilla Firefox which we use to access the information on the WWW that is stored on ----
Option A:	web servers.
Option B:	web browser.
Option C:	web page.
Option D:	web application.
18.	The--------- is a model that describes different value-adding activities that connect a company's supply side with its demand side.
Option A:	Ebusiness
Option B:	Value chain
Option C:	Profit
Option D:	Ecommerce
19.	The interactive nature of the web combined with e-mail communications provides an ideal environment in which to develop customer relationships, and databases provide a foundation for storing information about the relationship and providing information to strengthen it by improved, personalized services. This online approach to CRM is often known as ----------.
Option A:	Ecommerce
Option B:	ERP
Option C:	SCM
Option D:	e-CRM
20.	---------- should be directed at improving performance for each of the 'five rights of purchasing' which are sourcing items: 1 at the right price 2 delivered at the right time

	3 of the right quality 4 of the right quantity 5 from the right source.
Option A:	E-CRM
Option B:	E-procurement
Option C:	E-Business
Option D:	ERP

Q2 **(20 Marks)**	**Solve any Two Questions out of Three** **10 marks each**
A	*Explain in detail SET Protocol for Credit Card Payment?*
B	*You are appointed as developer of an e-commerce website for Online business Portal. Design and develop websites to promote the same.*
C	*What is the difference between e-commerce and e-business? And what are the E-business opportunities?*

Q3 **(20 Marks)**	**Solve any Two Questions out of Three** **10 marks each**
A	*Explain E-Commerce Trade Cycle with example.*
B	*Suggest strategies to migrate traditional business to online business.*
C	*What is the Value Chain Process in Ecommerce? Discuss with diagrams.*

University of Mumbai

Examination 2020 under cluster __ (Lead College: _____)

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **Information Technology**

Curriculum Scheme: Rev2016

Examination: TE Sem-V

Course Code:ITDLO5013 and Course Name:E-Commerce & E-Business

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	C
Q2.	B
Q3.	B
Q4	A
Q5	B
Q6	A
Q7	C
Q8.	B
Q9.	A
Q10.	C
Q11.	C
Q12.	C
Q13.	D
Q14.	D
Q15.	D
Q16.	C
Q17.	A
Q18.	B
Q19.	D
Q20.	B

University of Mumbai

Examination 2020 under cluster 07

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **Information Technology**

Curriculum Scheme: Rev2016

Examination: TE Semester V

Course Code: ITDLO5014 Course Name: IT Enabled Services

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.	Which of the following is not the requirement for Executing an IT strategy?
Option A:	strong IT leadership;
Option B:	the chief information officer (CIO)
Option C:	chief technology officer (CTO) needs to work closely with business, budget and legal departments as well as with other lines of business and user groups to achieve its success.
Option D:	Chief executive officer.
2.	_____is not one of the Key Characteristics of an Effective Business Strategy.
Option A:	Business Plan
Option B:	Actionable
Option C:	Measurable
Option D:	Not Tactical
3.	Which process model should be used in virtually all situations of web engineering?
Option A:	Incremental Model
Option B:	Waterfall Model
Option C:	Spiral Model
Option D:	Circular Model
4.	Often the biggest increases in productivity results from increased .
Option A:	System competence
Option B:	System efficiency
Option C:	System effectiveness
Option D:	System value
5.	To realize its intended strategy, management of the firm must focus all its energies on alignment between
Option A:	core competencies and remote environment.
Option B:	competitive methods and task environment.
Option C:	business strategy and corporate strategy.

Option D:	core competencies and competitive methods.
6.	Which web app attribute is defined by the statement: “A large number of users may access the WebApp at one time”?
Option A:	Unpredictable load
Option B:	Performance
Option C:	Concurrency
Option D:	Network intensiveness
7.	Strategic decisions are based on what managers_____, rather than on what they_____.
Option A:	Know; forecast
Option B:	React to; anticipate
Option C:	Forecast; know
Option D:	Compromise with; analyze
8.	Two motivations for Strategic IT Planning are, first _____ & second _____.
Option A:	help in setting a direction for IT in the firm, helps in getting the business managers involvement.
Option B:	help to motivate individual, help motivate groups involvement
Option C:	help motivate vendors, help vendors get motivated
Option D:	help in setting policy of the business, helps in involvement of CEO.
9.	The strategies such as horizontal and vertical integration are classified as:
Option A:	integrative growth
Option B:	disintegrative growth
Option C:	extensive growth
Option D:	intensive growth
10.	Strategy is developed by the visionary chief executive in _____ mode of strategic management
Option A:	planning mode
Option B:	adaptive mode
Option C:	strategic mode
Option D:	entrepreneurial mode
11.	The merging of analysis of internal and external factors influencing the organizations strategy is known as
Option A:	complete studies

Option B:	organizational behavior and theory
Option C:	definitional analysis
Option D:	SWOT analysis
12.	EITA is in a way the definition of business capabilities which comprise people(who) ,_____ (what & How) & technology (through what) working together to produce business results.
Option A:	product
Option B:	procurement
Option C:	pid
Option D:	process
13.	Benefits of PMO are: 1.Predictability 2. Cost Savings 3. Standardization leads to Understanding & 4. _____
Option A:	Customization
Option B:	Assurance
Option C:	Optimization
Option D:	Control
14.	Six Key Factors in a PMO Success Story are 1. Strong, dedicated leadership 2. Experienced personnel 3. Executive backing 4. _____ 5. Processes, policies, and templates defined 6. Authority to act
Option A:	Business processes
Option B:	commercial perspective
Option C:	Innovations
Option D:	High visibility
15.	One of the following belongs to the 7 ITIL Guiding Principles,
Option A:	Government Regulation
Option B:	Lessons learned
Option C:	Progress iteratively with feedback
Option D:	Perform integrated change control

16.	Which in-built function will add a value to the end of an array?
Option A:	array_unshift()
Option B:	into_array()
Option C:	inend_array()
Option D:	array_push()
17.	The wording of SLAs and OLAs should be:
Option A:	Technically focused, so that they may be understood by IT professionals
Option B:	A mixture of business, technical and legal language, so that they can be understood by everyone
Option C:	Clear and concise, leaving no room for ambiguity.
Option D:	Legally worded as they must be contractually binding
18.	WSDL Stands for
Option A:	Web Services Development Language
Option B:	Web Services Design Language
Option C:	Web Services Definition Language
Option D:	Web Services Description Language
19.	Outsourcing is
Option A:	Exporting
Option B:	Importing
Option C:	A firm having someone else do part of what it previously did itself.
Option D:	Building a factory in another country to produce for that country's market.
20.	Which one of the following keywords is used to inherit our subclass into a superclass?
Option A:	extends
Option B:	implements
Option C:	inherit
Option D:	Include

Q2. A	**Solve any Two** **10 marks each**
i.	What is the need to established principles before practice?
ii.	Explain SITP process
iii.	What are benefits of PMO

Q3. A	**Solve any Two** **10 marks each**
i.	Explain OOP's concepts used in PHP.
ii.	What are current trends in ITES
iii.	What is ITIL? Also explain Service Support Processes of ITIL.

University of Mumbai

Examination 2020 under cluster 07

Examinations Commencing from 15th June 2021 to 26th June 2021

Program: **Information Technology**

Curriculum Scheme: Rev2016

Examination: TE Semester V

Course Code: ITDLO5014 Course Name: IT Enabled Services

Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	A
Q3.	A
Q4	C
Q5	D
Q6	C
Q7	C
Q8.	A
Q9.	A
Q10.	D
Q11.	D
Q12.	D
Q13.	B
Q14.	D
Q15.	C
Q16.	D
Q17.	C
Q18.	D
Q19.	C
Q20.	A

University of Mumbai
Examination 2020 under cluster 4 (PCE)
Program: Information Technology
Curriculum Scheme: Rev2016
Examination: TE Semester V
Course Code: ITDLO5015 and Course Name: Computer Graphics & Virtual Reality
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.	Expansion of line DDA algorithm is
Option A:	Digital difference analyzer
Option B:	Direct differential analyzer
Option C:	Digital differential analyzer
Option D:	Data differential analyzer
2.	Pixels can be arranged in a regular
Option A:	One dimensional grid
Option B:	Two dimensional grid
Option C:	Three dimensional grid
Option D:	Four dimensional grid
3.	Computer graphics was first used by
Option A:	William fetter in 1960
Option B:	James fetter in 1969
Option C:	James gosling in 1991
Option D:	John Taylor in 1980
4.	Seed fill algorithm for filling polygon is algorithm
Option A:	Recursive
Option B:	non-recursive
Option C:	Shift
Option D:	Impulsive
5.	There are 2 types of polygons. They are?
Option A:	square and rectangle
Option B:	convex and concave
Option C:	octagon and convex
Option D:	hexagon and square
6.	Which of the following is considered as the first step to rotate an object X about an arbitrary point?
Option A:	Translation
Option B:	Rotation
Option C:	Inverse Translation
Option D:	Scaling

7.	What is Region code for (clipping) Window in line clipping algorithm?
Option A:	0 1 0 1
Option B:	1 1 0 0
Option C:	0 0 0 0
Option D:	1 1 1 1
8.	In Orthographic Projection lines of projections are
Option A:	Parallel
Option B:	Not Parallel
Option C:	Perpendicular
Option D:	intersecting each other
9.	The two-dimensional translation equation in the matrix form is
Option A:	P'=P+T
Option B:	P'=P-T
Option C:	P'=P*T
Option D:	P'=P
10.	What is the primary use of clipping in computer graphics?
Option A:	adding graphics
Option B:	removing objects and lines
Option C:	Zooming
Option D:	Copying
11.	Coordinates of window are knows as.....
Option A:	Screen coordinates
Option B:	World coordinates
Option C:	Device coordinates
Option D:	Cartesian coordinates
12.	Which of the following is a technique to blend two or more images to form a new image?
Option A:	Modeling
Option B:	Morphing
Option C:	Animating
Option D:	Warping
13.	In OpenGL, what is a "stencil buffer"?
Option A:	A low-resource buffer used for accumulating fragments from rendering to "cut out" another accumulated render
Option B:	The act of swapping buffers done natively on the hardware
Option C:	A high-bandwidth buffer used for fragmenting images into accumulation buffers
Option D:	A special type of buffer used only to draw text
14.	____ is all about the process to generate two-dimensional images from given virtual cameras and 3D objects.
Option A:	Graphics rendering pipeline
Option B:	Scene graphs
Option C:	Rasterization

Option D:	Pipeline
15.	What components make up a light source in OpenGL?
Option A:	Specular and Ambient.
Option B:	Diffuse, Specular, and Ambient.
Option C:	Diffuse and Ambient.
Option D:	Diffuse, Opaque, Ambient.
16.	Which of the following is NOT a modeling technique of VR?
Option A:	Geometric Modeling
Option B:	Kinematic Modeling
Option C:	Physical Modeling
Option D:	Logical Modeling
17.	In this type of VR environment, the subjects can perform both in the real and virtual environment.
Option A:	Immersive
Option B:	Semi immersive
Option C:	Non immersive
Option D:	Augmented
18.	You can view VRML files using
Option A:	VRMLpad
Option B:	VRML Browser
Option C:	VRML Plugin
Option D:	VRML Notebook
19.	Java3D uses _____ for representation of objects
Option A:	Scene Graph
Option B:	Wrapper Class
Option C:	Constructor
Option D:	Utility Classes
20.	Acronym for VRML:
Option A:	Virtual Reality Modulation Language
Option B:	Virtual Reality Modulation Language
Option C:	Virtual Reality Modeling Language
Option D:	Virtual Reality Marketing Language

Q2	**Solve any Two Questions out of Three** **10 marks each**
A	List the properties of the bezier curve. Generate three points on a cubic bezier curve with control points A(1,1), B(2,3), C(4,3), D(6,4).
B	Explain graphical rendering pipeline.
C	Define window and viewport, explain viewing transformation.

Q3.	Solve any Four out of Six 5 marks each
A	Write note on Text Clipping
B	Write a note on Morphing.
C	Write a note on VRML.
D	Explain Raster and Random scan display.
E	Explain applications of Virtual Reality.
F	Compare flood-fill and boundary fill Algorithm

University of Mumbai
Examination 2020 under cluster 4(PCE)

Program: Information Technology
Curriculum Scheme: Rev2016
Examination: TE Semester V
Course Code: ITDLO5015 and Course Name: Computer Graphics & Virtual Reality
Time: 2 hour Max. Marks: 80

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Question Number	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	C
Q2.	B
Q3.	A
Q4	A
Q5	B
Q6	A
Q7	C
Q8.	A
Q9.	A
Q10.	B
Q11.	B
Q12.	B
Q13.	A
Q14.	A
Q15.	B
Q16.	D
Q17.	B
Q18.	B
Q19.	A
Q20.	C