University of Mumbai
Examination 2020 under cluster 4 (Lead College: PCE, New Panvel)
Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021
Program: Computer Engineering
Curriculum Scheme: Rev2016
Examination: TE Semester VI
Course Code: CSC604 and Course Name: Cryptography and System Security

Time: 2 hour   Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	A student gives a cheque for $ 20 to buy a used book. Later she finds that the cheque was cashed for $200. Which type of security attack happened in this case.
Option A:	Modification
Option B:	Masquerading
Option C:	Relaying
Option D:	Repudiation
2.	Which of the following is passive attack?
Option A:	Relay attack
Option B:	Masquerade
Option C:	Traffic analysis
Option D:	Which of the following is passive attack?
3.	Assuming the same key is used, two occurrences of the same plaintext character are encrypted as identical output symbols in which of the following
Option A:	Caesar Cipher
Option B:	Vigenere Cipher
Option C:	Hill Cipher
Option D:	One-time Pad
4.	_____ is the science and art of breaking secret codes.
Option A:	Cryptography
Option B:	Cryptanalysis
Option C:	Cryptobreaker
Option D:	Steganography
5.	To encrypt a message from Alka to Brijesh using public key cryptography, the following is needed:
Option A:	Alka's private key
Option B:	Alka's public key
Option C:	Brijesh's private key
Option D:	Brijesh's public key
6.	_____ work by calculating every possible combination that could make up a password and testing it to see if it is the correct password.
Option A:	Statistical attack

Option B:	Brute-force attack
Option C:	Pattern attack
Option D:	Modification attack
7.	Which of the following algorithm is used for key exchange
Option A:	AES
Option B:	DES
Option C:	Diffie Hellman
Option D:	RSA
8.	A Substitution box provides
Option A:	Diffusion only
Option B:	Confusion only
Option C:	Both diffusion and confusion
Option D:	Neither confusion nor diffusion
9.	The number of rounds in 56-bit DES and 128-bit DES are respectively
Option A:	12 and 12
Option B:	12 and 16
Option C:	16 and 16
Option D:	16 and 20
10.	The main purpose of plaintext padding is to
Option A:	Prevent side channel attacks
Option B:	Improve the speed of decryption
Option C:	Prevent plaintext guessing
Option D:	Prevent known plaintext attacks
11.	Which of the following is not an element/field of the X.509 certificates?
Option A:	Issuer Name
Option B:	Serial Modifier
Option C:	Issue unique identifier
Option D:	Signature
12.	Compared to the El Gamal signature, which of the following is true of the Schnorr signature?
Option A:	Signature generation is faster
Option B:	It is less secure
Option C:	It is more space efficient
Option D:	It does not require generation of a random number
13.	_____ provides a centralized authentication server whose function is to authenticate users to servers and servers to users.
Option A:	Kerberos authentication protocol
Option B:	Needham Schroeder authentication protocol
Option C:	One way authentication protocol
Option D:	Needham Schroeder symmetric authentication protocol
14.	Which of the following is NOT the port scan technique?
Option A:	TCP connect

Option B:	TCP SYN
Option C:	TCP FIN
Option D:	TCP CON
15.	A _____ tries to formulate a web resource occupied or busy its users by flooding the URL of the victim with unlimited requests than the server can handle.
Option A:	Phishing attack
Option B:	DoS attack
Option C:	Website attack
Option D:	MiTM attack
16.	SSL provides security at which layer?
Option A:	Application
Option B:	Transport
Option C:	Network
Option D:	Data link
17.	Pretty Good Privacy (PGP) is used in
Option A:	Browser security
Option B:	FTP security
Option C:	Email security
Option D:	SSL
18.	Which of the following firewall type is most complex
Option A:	Packet filtering
Option B:	Stateful inspection
Option C:	Application Proxy
Option D:	Guard
19.	The internal code of any software that will set of a malicious function when specified conditions are met, is called _____
Option A:	logic bomb
Option B:	trap door
Option C:	code stacker
Option D:	none of the above
20.	Which of the following statement is true for virus?
Option A:	A virus typically does not modify any stored program
Option B:	A virus can be spread faster than worm.
Option C:	A virus requires user interaction to infect a machine
Option D:	A virus can only infect a single machine

Q2.	**Solve any Four out of Six**	**5 marks each**
A	Explain different security mechanisms.	
B	Why Secure Socket layer (SSL) is needed? What are the features of SSL?	
C	Compare DES and AES	
D	Compare Mono alphabetic cipher and poly alphabetic cipher.	

E	Explain Man-in-the-middle attack.
F	Explain the applications of Hash functions

Q3.	Solve any Two Questions out of Three	10 marks each

A	In RSA system, the public key of a given user is e=7 and n=187?
	     i) What is the private key of this user?
	     ii) If the intercepted ciphertext is c=11 and sent to a user whose public key is e=7 and n=187, what is the plaintext?	

B	What is firewall? Explain different types of firewalls.	
C	Explain cross site scripting and buffer overflow concept in detail.	

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Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021
Program: Computer Engineering
Curriculum Scheme: Rev2016
Examination: TE Semester VI
Course Code:CSDLO6021 and Course Name: Machine Learning

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.	What is Machine Learning?
Option A:	The autonomous acquisition of knowledge through the use of computer programs
Option B:	The selective acquisition of knowledge through the use of computer programs
Option C:	The autonomous acquisition of knowledge through the use of manual programs
Option D:	The selective acquisition of knowledge through the use of manual programs
2.	Which data is used to optimize the parameter settings of a supervised learner model?
Option A:	Training
Option B:	Testing
Option C:	Validation
Option D:	Verification
3.	Machine Learning is branch of _____
Option A:	Natural Language processing
Option B:	Artificial Intelligence
Option C:	Java
Option D:	C
4.	For a neural network, which one of these structural assumptions is the one that most affects the trade-off between underfitting (i.e. a high bias model) and overfitting (i.e. a high variance model):
Option A:	The number of hidden nodes
Option B:	The learning rate
Option C:	The initial choice of weights
Option D:	The use of a constant-term unit input

5.	Training set of data in supervised learning includes
Option A:	Only Input data
Option B:	Only Output data
Option C:	Pair of Input and Output data
Option D:	Neither input data nor output data
6.	_____ are tree-like branches, responsible for receiving the information from other neurons it is connected to
Option A:	Soma
Option B:	Axon
Option C:	Dendrites
Option D:	Synapse
7.	Which one of the following is incorrect w.r.t. Derivative based optimization
Option A:	Uses derivative information with objective function
Option B:	Slow convergence
Option C:	Follows mathematical methodology
Option D:	Fast convergence
8.	In Classical Newton's method the descent direction is determined by
Option A:	First order derivative of the function
Option B:	Partial order derivative of the available objective function
Option C:	Gradient method
Option D:	Second order derivative of the available objective function
9.	Linear Regression is represented by following equation
Option A:	Y=a+bX where a is X-intercept and b is Slope of the line
Option B:	Y=a+bX where a is the slope of the line and b is X-Intercept
Option C:	Y=a+bX where a is the Y-Intercept and b is the slope of the line
Option D:	Y=a+bX where a is the slope of the line and b is the Y-Intercept
10.	Logistic Regression belongs to which type of machine learning algorithm
Option A:	Supervised Regression
Option B:	Supervised Classification
Option C:	Unsupervised Regression
Option D:	Unsupervised Classification
11.	Calculate the accuracy from given data TP = 30, TN = 930, FP = 30, FN = 10
Option A:	0.96
Option B:	1
Option C:	0.86
Option D:	0.99
12.	A node in decision tree represent
Option A:	Class of instance
Option B:	Data value description
Option C:	Test Specification
Option D:	Data process description
13.	In Bayes theorem, unconditional probability is called as

Option A:	Evidence
Option B:	Likelihood
Option C:	Prior
Option D:	Posterior
14.	Which of the following is true about Support vector machine?
Option A:	Maximum apriori classifier
Option B:	Maximum margin classifier
Option C:	Minimum apriori classifier
Option D:	Minimum margin classifier
15.	In a hard margin SVM, support vectors lie
Option A:	inside the margin
Option B:	on the margin
Option C:	outside the margin
Option D:	can be inside or outside the margin
16.	Assume the incidence of a disease D is about 10 cases per 100 people (i.e., P(D) = 0.05). Let Boolean random variable D mean a patient "has disease D" and let Boolean random variable TP stand for "tests positive." Tests for disease D are known to be very accurate in the sense that the probability of testing positive when you have the disease is 0.99, and the probability of testing negative when you do not have the disease is 0.97. What is P(TP), the prior probability of testing positive.
Option A:	0.0368
Option B:	0.473
Option C:	0.078
Option D:	0.126
17.	Which one of these is not a tree based learner?
Option A:	CART
Option B:	ID3
Option C:	Bayesian Classifier
Option D:	Random Forest
18.	In EM algorithm that finds maximum likelihood estimates for a model with latent variables. You are supposed to modify the algorithm so that it finds MAP estimates instead. Which step do you need to modify?
Option A:	Expectation
Option B:	Sorting
Option C:	No Modification necessary
Option D:	Maximization
19.	If eigenvalues are roughly equal then..
Option A:	PCA will perform outstandingly
Option B:	PCA will perform badly
Option C:	LDA will perform outstandingly
Option D:	LDA will perform badly
20.	Which of the following property is true for PCA Algorithm?
Option A:	Data used for PCA is having Less variance

Option B:	Maximum number of principal components are greater than number of features
Option C:	All principal components are orthogonal to each other
Option D:	PCA is a Supervised learning method

Q2. (20 Marks Each)	
A	**Solve any Two** **5 marks each**
i.	Differentiate between derivative-based and derivative free optimization techniques
ii.	Define logit function. Explain the importance of logit function in logistic regression with appropriate example
iii.	How is AND function solved using McCulloch Pitts model.
B	**Solve any One** **10 marks each**
i.	For the following data, to construct the decision tree calculate Gini indexes and determine which attribute is root attribute.

Sr. No	Age	Income	Student	Credit_Rating	Byus_Computer
1	<=30	high	No	Fair	No
2	<=30	high	No	Excellent	No
3	31...40	high	No	Fair	Yes
4	>40	medium	No	Fair	Yes
5	>40	low	Yes	Fair	Yes
6	>40	low	Yes	Excellent	No
7	31...40	low	Yes	Excellent	Yes
8	<=30	medium	No	Fair	No
9	<=30	low	Yes	Fair	Yes
10	>40	medium	Yes	Fair	Yes
11	<=30	medium	Yes	Excellent	Yes
12	31...40	medium	No	Excellent	Yes
13	31...40	high	Yes	Fair	Yes
14	>40	medium	No	Excellent	No

ii.	Explain the perceptron learning rule with example?

Q3. (20 Marks Each)	
A	**Solve any Two** **5 marks each**
i.	Explain different types of machine learning with examples.
ii.	Explain Expectation Maximization Algorithm with suitable example?
iii.	What is Independent component Analysis and where is it used?
B	**Solve any One** **10 marks each**
i.	What is Hidden Markov Model? Where is it being used? Give an example of

	HMM?Explain the 3 steps of HMM?	
ii.	For the given dataset, compute the covariance matrix, eigenvalues and eigenvectors. X_1 X_2 2.5 2.4 0.5 0.7 2.2 2.9 1.9 2.2 3.1 3.0 2.3 2.7 2.0 1.6 1.0 1.1 1.5 1.6 1.2 0.9	

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Program: **Computer Engineering**
Curriculum Scheme: Rev2016
Examination: TE Semester VI
Course Code: CSDLO6022 and Course Name: Adv. Database System

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.	What feature is a DDBMS advantage?
Option A:	Reduced operating cost
Option B:	Increased storage requirements
Option C:	Increased training cost
Option D:	Complexity of management and control
2.	Each copy of a fragment must be assigned to a particular site in the distributed system. This process is called
Option A:	Data Replication
Option B:	Data Fragmentation
Option C:	Sharding
Option D:	Data Distribution
3.	The techniques that are used to break up the database into logical units, called
Option A:	Block
Option B:	Buffer
Option C:	Fragments
Option D:	Group
4.	____ transparency ensures that the system will continue to operate in the event of a node failure.
Option A:	Transaction
Option B:	Failure
Option C:	Location
Option D:	Fragmentation
5.	The algorithms that are suitable for sorting data structures, such as tables and list, that can fit entirely in main memory
Option A:	external Sorting
Option B:	Internal Sorting
Option C:	Secondary sorting
Option D:	Parser Sorting
6.	In the sorting phase, the number of sorted subfiles can be merged in each step are called
Option A:	degree of sorting

Option B:	degree of runs
Option C:	degree of merging
Option D:	number of file blocks
7.	Semi -join is generally used for unnesting ----------------------------sub queries.
Option A:	Not In
Option B:	All
Option C:	Not Exists
Option D:	Exists
8.	The process of choosing suitable execution strategy for processing a query is known as
Option A:	Database Processing
Option B:	Query Processing
Option C:	Query Optimization
Option D:	Query Parsing
9.	Which command removes user access rights or privileges to the database objects?
Option A:	Revoke
Option B:	Grant
Option C:	Alter
Option D:	Update
10.	Which action is not performed by DBA?
Option A:	Account creation
Option B:	Privilege granting
Option C:	Privilege revocation
Option D:	Infer
11.	Which is not a valid access control mechanism?
Option A:	Mandatory Access Control
Option B:	Discretionary Access Control
Option C:	Role Based Access Control
Option D:	Subjective Access Control
12.	A (geographic) field is a geographic phenomena for which, for every point in the study area
Option A:	A value cannot be determined
Option B:	A value is not relevant
Option C:	A value can be determined
Option D:	A value is missing
13.	Which of the following is related to GIS?
Option A:	Euclidean space
Option B:	Ramanujan space
Option C:	Pythagorean space
Option D:	Logarithmic space
14.	How many type of encoding supported in XML?
Option A:	Three

Option B:	Two
Option C:	One
Option D:	Five
15.	The process of converting unicode characters into their equivalent binary representation
Option A:	Decoding
Option B:	DTD
Option C:	DTO
Option D:	Encoding
16.	The Most Well-Known object oriented Databases
Option A:	Objectstore
Option B:	BaseX
Option C:	eXist
Option D:	SimpleDB
17.	Which is not a consistency level of Document Database?
Option A:	Strong
Option B:	Elastic
Option C:	Bounded-staleness
Option D:	Session
18.	The minimum and maximum number of keys in the internal node of B tree, with order 4 is, respectively are
Option A:	2,4
Option B:	1,4
Option C:	2,3
Option D:	1,3
19.	An index is clustered if
Option A:	It is on a set of fields that forms a candidate key.
Option B:	The data records of file are not organized in the same order as the data entries of the index.
Option C:	It is on set of fields on primary key.
Option D:	The data records of the file are organized in the same order as the data entries of the index.
20.	In Multilevel Indexing the index which leaves some space in each of its blocks for inserting new entries is called
Option A:	Dynamic Multilevel Index
Option B:	Dense Index
Option C:	Primary Index
Option D:	Clustering Index

Q2	Solve any Four out of Six	5 marks each
A	Explain in brief Three Phase Commit Protocol	
B	Explain Sparse Index Files and Dense Index files in detail with examples	
C	Explain Correctness rules for fragmentation with example	
D	Enlist at least 5 issues of database security. How to overcome any one database security issue? Give your suggestion	
E	Explain the functionality of JSON and BSON for encoding XML.	
F	Why its mandatory access control and role-based access control for multilevel security?	

Q3	Solve any Two Questions out of Three	10 marks each
A	Discuss in detail Static Hashing scheme with neat diagram. Explain demerits of static hashing.	
B	Elaborate how GIS applications are put under three different categories explain briefly with an example of each category.	
C	Illustrate with an example on Document oriented database how it is differ from Traditional Databases.	

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Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021
Program: **Computer Engineering**
Curriculum Scheme: Rev2016
Examination:TE Semester VI
Course Code: CSDLO6023 and Course Name: ERP

Time: 2 hour   Max. Marks: 80

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0401_R16_Comp_VI_CSDLO6023_QP2

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1	Which one does not belong to the sales & distribution process?
Option A:	Sales order
Option B:	Material delivery
Option C:	Purchase requisition from production department
Option D:	Billing
2	OLAP is used to transform data warehouse data into _____
Option A:	reports
Option B:	strategic information
Option C:	existing data
Option D:	tables
3	The value chain model 's primary activities are?
Option A:	Inbound logistics, Operations, Outbound Logistics, Marketing and Sales, and Technology Development
Option B:	Inbound logistics, Operations, Outbound Logistics, Marketing and Sales, and Service
Option C:	Inbound logistics, Operations, Infrastructure, HR Management, and Service
Option D:	Inbound logistics, Procurement, Outbound Logistics, Marketing and Sales, and Service
4	Who are the prime users of SCM systems
Option A:	Sales, marketing, customer service
Option B:	Accounting, finance, logistics, and production
Option C:	Customers, resellers, partners, suppliers, and distributors
Option D:	Sales,marketing
5	A bill of materials list contains

Option A:	time needed to perform all phases of production
Option B:	production schedules for all products
Option C:	components, ingredients, and materials required to produce an item
Option D:	operations required to produce an item
6	_____ is the use of technologies and services across an enterprise to enable the integration of software applications and hardware systems.
Option A:	EAI
Option B:	ERP
Option C:	SCM
Option D:	CRM
7	The primary concept of _____ is that storing huge or large amount of data
Option A:	data mining
Option B:	OLAP
Option C:	supply chain management
Option D:	data warehousing
8	The common ERP system security problems are _____ & _____
Option A:	cost of consultant, work estimates
Option B:	Delayed updates & Full access rights
Option C:	selection process and implementation process
Option D:	License fees & vendor charges
9	Big Bang implementation strategy is
Option A:	Functional all modules install at once only
Option B:	ERP all modules install at once
Option C:	Technical all modules install at once only
Option D:	Application all modules install at once only
10	Baan company is famous for _____
Option A:	Manufacturing
Option B:	HR
Option C:	plant and maintenance
Option D:	finance

11	With headlines often commenting on breaches of Internet security, what is the term used for specialized software to prevent unauthorized access to company data from outsiders?
Option A:	Firewall
Option B:	Middleware
Option C:	Enterprise application integration - EAI
Option D:	Web analytics system
12	What is the prime security issue in cloud ERP
Option A:	Allowing more open access
Option B:	Lack of data integrity
Option C:	Compliance issues
Option D:	None of the mentioned
13	What are the major benefits of an ERP system in business
Option A:	Sales forecasts, sales strategies, and marketing campaigns
Option B:	Market demand, resource and capacity constraints, and real-time scheduling
Option C:	Forecasting, planning, purchasing, material management, warehousing, inventory, and distribution
Option D:	Sales Forecast, Market demand
14	Which one is not an ERP Technologies
Option A:	Data Warehousing
Option B:	Business Process Reengineering
Option C:	Data Mining
Option D:	Manufacturing Resource Planning
15	Hire to Retire is a business process of which module
Option A:	Human Resource Module
Option B:	Sales and Distribution Module
Option C:	Material Management Module
Option D:	Accounts Module
16	_____ is a system of enterprise resource planning software and tools that are hosted and managed offsite in the cloud by the vendor.
Option A:	Generalist ERP.
Option B:	Cloud-based ERP
Option C:	Small Business ERP

Option D:	open source ERP
17	Conceptually which statement is most accurate for an ERP
Option A:	ERP means more work and procedure
Option B:	ERP makes many employees redundant
Option C:	ERP integrate and automate organization processes
Option D:	ERP is sole responsibility of management
18	What should be the filter applied by an organization to limit the number of packages to be considered.
Option A:	pre-evaluation screening
Option B:	post implementation.
Option C:	project planning.
Option D:	gap analysis
19	Material Requirement Planning(MRP) module utilizes aplication softwares for scheduling _____
Option A:	sales management
Option B:	production processes
Option C:	marketing techniques
Option D:	human resource management
20	Which is not an open source ERP
Option A:	ERPNext
Option B:	Oracle ERP
Option C:	Odoo
Option D:	Dolibarr

Q2 (20 Marks)	Solve any Four out of Six	5 marks each
A	List Inhouse ERP Implementation Advantage and disadvantages.	
B	Enumerate ERP related Technology	
C	Describe components of CRM	
D	List various benefits of ERP system	
E	List the use of GIS	
F	Explain in brief what is EAI	
Q3. (20 Marks)	Solve any Two out of Three	10 marks each
A	Explain different phases of BPR	
B	Draw and explain ERP Implementation Lifecycle Model	
C	Explain different types of ERP Security issues	

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Program: **Computer Engineering**
Curriculum Scheme: Rev2016
Examination: TE Semester:VI
Course Code: CSDLO6024 and Course Name: Advanced. Computer Network
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.	SONET that is utilized as a transport network to convey loads from different WANs. Select the option which is not a basic transmission device in SONET
Option A:	STS multiplexers/demultiplexers
Option B:	Regenerators
Option C:	Add/drop multiplexers,terminals.
Option D:	Router
2.	Select the option which refer to fundamental characteristics of data communication i)delivery ii)accuracy iii)lateness iv)jitter
Option A:	Only i,ii,iv
Option B:	Only ii,iii,iv

Option C:	Only i and ii
Option D:	Only ii and iii
3.	The cell relay protocol Asynchronous Transfer Mode (ATM) is designed by the ATM with a certain goal. Select the challenges that are faced by the designers of ATM
Option A:	There is no need to interface system with existing systems
Option B:	To move as many of the functions to software as possible and eliminate as many hardware functions as possible
Option C:	The new framework should be connection-oriented to guarantee precise and predictable delivery.
Option D:	The design must be implemented with expensive so that cost would not be a barrier to adoption.
4.	ATM can be used for _____
Option A:	Local area network
Option B:	Wide area network
Option C:	Campus area network
Option D:	Networks covering any range
5.	AAL 3/4 assist which type of data
Option A:	Connection Oriented

Option B:	Connection less
Option C:	Connection Oriented and Connectionless
Option D:	Stream Oriented
6.	Which statement is true for ATM Cell Format
Option A:	ATM moves data in fixed-size units called cells.
Option B:	Every cell comprises of 54 octets
Option C:	ATM header is of UNI format
Option D:	ATM header is of NNI format
7.	The lacking size of the IPv4 header, which doesn't oblige the necessary number of additional parameters refers to _____
Option A:	The problem of security of communications
Option B:	Weak protocol extensibility
Option C:	The lack of address space
Option D:	Lack of quality of service support
8.	Among the given list of extended headers in IPV6 which header provides privacy mechanism
Option A:	Hop-by-hop options header

Option B:	Fragment header
Option C:	Authentication header
Option D:	Encapsulation security payload header
9.	Which of the following network access standards is used for connecting stations to a packet-switched network?
Option A:	X.3
Option B:	X.19
Option C:	X.75
Option D:	X.25
10.	IPv6 does not use _____ type of address.
Option A:	Broadcast
Option B:	Multicast
Option C:	Anycast
Option D:	Unicast

11.	Select the correct Statements
	     i) Two different sets of routing protocol are required by every AS
	     ii) BGP is an interior gateway routing protocol
	     iii) Exchange of information is carried between AS in exterior gateway protocol

	iv) OSPF can be used as EGP
Option A:	i and iii only
Option B:	iv and iii only
Option C:	ii and iii only
Option D:	iv and i only

12.	Select the correct statements
	      i) An autonomous system (AS) is a group of networks and routers under the authority of a solitary organization
	      ii) Intra domain routing is routing inside an AS
	      iii) Inter domain routing is routing between AS
	      iv) one or more inter domain routing protocol handles routing among autonomous system

Option A:	ii and iii only
Option B:	ii,iii and iv only
Option C:	i,ii and iii only
Option D:	i,iii and iv only
13.	An IGMP query is sent from a _____ to a _____.
Option A:	host; host
Option B:	host; router
Option C:	router; host or router

Option D:	router;network

14.	Select the roles of RSVP from the following statements
	
	     i) It is required to be present at sender, receiver and router
	     ii) It carries the resource request all the way through the network
	     iii) It is present both at sender and receiver
	     iv) At each hop consults admission control and sets up reservation and also informs the requester incase of failure

Option A:	i,ii and iv only
Option B:	iii and iv only
Option C:	i,iiii and iv only
Option D:	i and ii only

15.	Which multimedia formats is not supported by RTP?
Option A:	TXT
Option B:	MPEG-4
Option C:	MPEG
Option D:	MJPEG

16.	What are reasons for creating OSPF in a hierarchical design?
	
	     i) To decrease routing overhead
	     ii) To speed up convergence
	     iii) To confine network instability to single ares of the network
	     iv) To make easier the configuring of OSPF

Option A:	i,ii,iii only
Option B:	i,ii,iv only
Option C:	i and ii only
Option D:	ii,iii and iv only
17.	What does not belong to switching delay
Option A:	Circuit switching delay
Option B:	Data switching delay
Option C:	Message switching delay
Option D:	Packet switching delay
18.	How is the total cost of queuing system is calculated typically
Option A:	Waiting cost
Option B:	Sum of waiting and service cost
Option C:	Service cost
Option D:	Difference of the waiting cost and service cost

19.	Design parameter for Peak
	     i) Delay or Latency
	     ii) Availability

	iii) Reliability iv) Throughput
Option A:	i,ii and iv only
Option B:	i,iii and iv only
Option C:	iii and iv only
Option D:	i,ii and iii only
20.	We can compare the task of network management to the task of writing a program. Both tasks need variable declarations. In network management this is handled by _____.
Option A:	SNMP
Option B:	MIP
Option C:	SMI
Option D:	TCP

Q2 (20 Marks)	Solve any Four out of Si 5 marks each
A	Explain B-ISDN reference model.
B	Explain different traffic characteristics: Delay, jitter, Burstiness, Throughput, Lost Packet Percentage

C	Compare RIP and OSPF protocol
D	Explain VC merging with the help of diagram
E	Explain BGP with characteristics.
F	Write short note on SNMP

Q3. **(20 Marks)**	**Solve any Two Questions out of Three 10 marks each**
A	Explain SONET frame Structure
B	Explain IPv6 and its header format in detail
C	Explain IGMP and give its message format in detail

University of Mumbai
Examination 2020 under cluster __ (Lead College: _____)
Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021
to 20th January 2021
Program: **Computer Engineering**
Curriculum Scheme: **Rev - 2016**

Examination: **TE**   Semester **VI**
Course Code: **CSC601**   Course Name: **Software Engineering**
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 types of activities in software process focuses on tracking and control?
Option A:	Process Framework activities
Option B:	Umbrella activities
Option C:	Project based activities
Option D:	Problem based activities
2.	Which process model is appropriate for system engineering projects in which different teams are involved?
Option A:	Spiral Model
Option B:	Incremental Model
Option C:	Concurrent Development Model
Option D:	Rapid Application Development Model
3.	Which one of the following is not used as requirement elicitation technique?
Option A:	Joint Application Development
Option B:	Interview method
Option C:	Critical Path method
Option D:	Questionnaire method
4.	An example for the process metrics which are private to the software project team but public to all team members is -----------
Option A:	Errors found during Formal Technical Reviews
Option B:	Errors uncovered before the release of software
Option C:	Defects delivered to and reported by end-users
Option D:	Defect rates by software component
5.	The relationship between People and Effort can be defined using-----
Option A:	Earned Value Analysis
Option B:	Program Evaluation and Review Technique (PERT)
Option C:	Gantt Chart
Option D:	Putnam-Norden-Rayleigh (PNR) Curve
6.	The entire system testing is performed in the context of:
Option A:	Software Requirement Specification
Option B:	Non-functional requirements
Option C:	Usability requirements

Option D:	Functional requirements
7.	In example, "Update new x, y coordinates on the database and print x, y coordinates", the cohesion involved is:
Option A:	Procedural cohesion
Option B:	Communicational Cohesion
Option C:	Logical Cohesion
Option D:	Functional Cohesion
8.	Which software project metrics do not provide enough granularity for the effort and schedule adjustments, required through an evolutionary process
Option A:	Object oriented metrics
Option B:	Lines of Code and Function Point metrics
Option C:	Use-case oriented metrics
Option D:	Web Engineering Project metrics
9.	What functions are not implemented by a SCM Repository?
Option A:	Design verification and validation
Option B:	Document standardization and Information Sharing
Option C:	Data and Tool Integration
Option D:	Data Integrity and Methodology enforcement
10.	An example of project risk is ------
Option A:	Maintenance problems
Option B:	Specification ambiguity and uncertainty
Option C:	Project schedule slippage and cost increment
Option D:	Losing support of senior management
11.	Conformance to functional, performance requirements & development standards of all professionally developed software is known as---
Option A:	Version Management
Option B:	Software Quality
Option C:	Change Control Management
Option D:	Configuration Management
12.	One among the following is not considered as the basic principles of software project scheduling
Option A:	Cost Estimation
Option B:	Effort Validation
Option C:	Time allocation
Option D:	Interdependency
13.	In statement, "Goto <statement no>", the coupling involved is
Option A:	Data
Option B:	External
Option C:	Stamp
Option D:	Content
14.	Software maintenance is not concerned with
Option A:	Correcting errors found after the software has been delivered

Option B:	Adapting the software to changing requirements
Option C:	Correcting errors found before the software deployment
Option D:	Improve the performance of the system or attributes
15.	Which of the following is applicable for black-box testing?
Option A:	Are all independent paths within a module are exercised?
Option B:	Is the system particularly sensitive to certain input values?
Option C:	Does the internal structure to ensure their validity are exercised?
Option D:	Does all loops at their boundaries and within their operational bounds are exercised?
16.	In Change control process, the change report is evaluated finally by whom?
Option A:	Software Developer
Option B:	Project Manager
Option C:	Software Configuration Manager
Option D:	Change Control authority
17.	Which design concept defines direct outgrowth of modularity and the concepts of abstraction and information hiding?
Option A:	Refinement
Option B:	Architectural Patterns
Option C:	Functional Independence
Option D:	Refactoring
18.	The reverse engineering of the system is concerned with
Option A:	Adaptation
Option B:	Reconstruction
Option C:	Maintenance
Option D:	Documentation change
19.	Estimate the risk exposure, if the risk probability is given as 70%, 15 components need to be developed from scratch and the average component is 100 LOC with software engineering cost for each LOC is $12.
Option A:	$10,500
Option B:	$18,000
Option C:	$8,400
Option D:	$12, 600
20.	Which one among the following provides the upper bound on the number of test cases that will be required to guarantee that every statement in the program has been executed at least one time.
Option A:	Cyclomatic Complexity
Option B:	Flowchart and flow graph
Option C:	Boundary value analysis
Option D:	Independent Program Paths

Q2 (20 Marks)	Solve any Two Questions out of Three 10 marks each
A	Develop Software Requirement Specification document for Online Railway Reservation System.
B	Describe the various testing strategies for object-oriented software. Also discuss the different testing methods applicable at Class level and Inter-class level testing.
C	Explain the change control process with diagram. Also prepare a Change Request Form to add the following feature in the existing system: When a component is selected from the structure, display the name of the file where it is stored.

Q3 (20 Marks)	Solve any Two Questions out of Three 10 marks each
A	What are the characteristics of good design? Illustrate with examples the various types of coupling and cohesion.
B	Describe Scrum Agile Process Model with diagram.
C	Explain FP based estimation techniques. Differentiate between LOC and FP based estimation techniques.

University of Mumbai
Examination 2020 under cluster __(Lead College: _____)
Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021
Program: **Computer Engineering**
Curriculum Scheme: Rev2016
Examination: TE Semester VI
Course Code: CSC602 and Course Name: System Programming and Compiler Construction

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.	The task of assigning load addresses to the various sections of the program and adjusting the code in the program to reflect the assigned addresses is called _____.
Option A:	Assembly
Option B:	Parsing
Option C:	Relocation
Option D:	Symbol resolution
2.	In the macro processor, the conditional expansion facility provides to _____
Option A:	Test a condition during the execution of the expanded program
Option B:	Expand certain model statements depending upon the value of a condition during the execution of the expanded program
Option C:	Implement recursion
Option D:	Expand certain model statements depending upon the value of a condition during the process of macro expansion
3.	At which section of the program, macro can be introduced?
Option A:	Beginning of a program
Option B:	End of a program
Option C:	After initialization of program
Option D:	Anywhere in a program
4.	Identify the invalid statement with respect to IBM instructions- (i) BCR is RR Format instruction whereas BC is RX Format Instruction (ii) BALR is RX Format instruction whereas BAL is RR format instruction (iii)BCT is RX format instruction whereas BCTR is RR format instruction
Option A:	(ii),(iii)
Option B:	(i),(iii)
Option C:	(ii)
Option D:	(i), (ii), (iii)
5.	Which of the following task is performed by simple two pass assembler in first pass?
Option A:	It does not allocate space for the literals
Option B:	It generates code for all the load and store register instruction
Option C:	It builds the symbol table for the symbols and their values

Option D:	It computes the total length of the program
6.	In which of the following Loader Scheme, Relocation information is not required?
Option A:	Compile and go loader
Option B:	Dynamic loader
Option C:	General Loader Scheme
Option D:	Absolute Loader
7.	Which of the following database is used for storing the macro name along with MDT index?
Option A:	MDT
Option B:	MNT
Option C:	ALA
Option D:	MDTP
8.	What is the use of **"ASSUME"** directive in an assembler?
Option A:	To Make the segment register available
Option B:	To indicate the end of assembly language program
Option C:	To indicate start of segment
Option D:	To Manipulate the value of location counter
9.	Which of the following system software must reside in the main memory under all situations?
Option A:	Assembler
Option B:	Linker
Option C:	Loader
Option D:	Compiler
10.	Which data structure in a compiler is used for managing information about variables and their attributes?
Option A:	Abstract syntax tree
Option B:	Symbol Tree
Option C:	Semantic stack
Option D:	Symbol Table
11.	How many tokens will be generated by the scanner for the following statement? $x = x * (a + b) - 5;$
Option A:	12
Option B:	11
Option C:	10
Option D:	7
12.	What is the objective of using intermediate code in compilers?
Option A:	Make parsing and semantic analysis simpler
Option B:	Improve error recovery and error reporting
Option C:	Increase the chances of reusing the machine independent code optimizer in other compilers
Option D:	Improve the register allocation

13.	Why few code optimizations techniques are carried out on the intermediate code?
Option A:	They enhance the portability of the compiler to other target processors
Option B:	Program analysis is more accurate on intermediate code than on machine code
Option C:	The information from data flow analysis cannot otherwise be used for optimization
Option D:	The information from the front end cannot otherwise be used for optimization
14.	In which phase of a compiler, keywords of a language are recognized?
Option A:	Parsing
Option B:	Code Generation
Option C:	Lexical Analysis
Option D:	Dataflow Analysis
15.	As object modules are given to a Linker for a set of programs that were compiled separately. What information needs to be included in an object module?
Option A:	Object Code
Option B:	Relocation Bits
Option C:	Names and locations of all external symbols defined in the object module
Option D:	Absolute address of internal symbols
16.	Consider the following grammar. S → aSB| d B → b The number of reduction steps taken by a bottom-up parser while accepting the string 'aaadbbb' is _____
Option A:	5
Option B:	9
Option C:	7
Option D:	8
17.	What does reduction in strength means in Compiler Design?
Option A:	Replacing run time computation by compile time computation
Option B:	Removing loop invariant computation
Option C:	Removing common sub-expressions
Option D:	Replacing a costly operation by a relatively cheaper one

18.	Consider the following code segment.
	 a = b - c;
	 g = a * d;
	 a = g + e;
	 g = c - f;
	 g =a * g;
	 The minimum number of total variables required to convert the above code segment to static single assignment form is___

Option A:	8
Option B:	9
Option C:	10
Option D:	11
19.	Consider the given below SDT. S→aaB {Print(1);}

	S→d {Print(2);} B→Sc {Print(3);} What will be the output printed if we carry out this SDT on the input string **"aaaadcc"** ?
Option A:	21313
Option B:	23313
Option C:	23131
Option D:	23331
20.	Which one of the following statements is FALSE?
Option A:	Context Free grammars can be used to specify both lexical and syntax rules
Option B:	Type checking is done before parsing
Option C:	High level language can be translated to different intermediate representation
Option D:	Arguments to a function can be passed using the program stack

Q2.	**Solve any Two** **10 marks each**
A	Consider the grammar given below: S-> A A->bA |d Test whether it is SLR or not?
B	With reference to Assembler explain the following tables with suitable examples. (i) POT (ii) ST (iii) MOT (iv) LT (v) BT
C	Define macro & Explain conditional macro, parameterized macro, Nested macro with suitable example.

Q3.	
A	**Solve any Two** **5 marks each**
i.	Compare top-down and bottom-up parsers.
ii.	How various system programs are involved to develop any program for its execution?
iii.	Explain DAG with an appropriate example.
B	**Solve any One** **10 marks each**
i.	What are the functions of Loaders? Explain Compile and Go Loader Scheme with advantages and Disadvantages.

ii.	Generate Three address code for following code.
	 While (x<y) do
	 if (p<=q) then
	 a=2*b
	 else
	 a=3*b

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

Program: Computer engineering
Curriculum Scheme: Rev2016
Examination: TE/VI
Course Code: CSC603 and Course Name: Data Warehousing and Mining

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.	The numeric measurements or values that represent a specific business aspect or activity is
Option A:	Facts
Option B:	Dimensions
Option C:	Tables
Option D:	Schemas
2.	The operation of moving from coarser granular data to finer granular data is called _____
Option A:	Reduction
Option B:	Increment
Option C:	Roll up
Option D:	Drill down
3.	Find the IQR of the data set {3, 7, 8, 5, 12, 14, 21, 13, 18}.
Option A:	6
Option B:	12
Option C:	16
Option D:	10
4.	Tree Pruning is done to
Option A:	Avoid over fitting
Option B:	Handle continuous values attributes
Option C:	Handle missing value attributes
Option D:	Better efficiency
5.	The purpose of data warehouse is to provide_____data that is not stored in the operational environment.
Option A:	Summary
Option B:	Denormalized
Option C:	Normalized
Option D:	Informational
6.	Choose the correct processing technique for the given statements. Identify correlation between salary structure and policies sold made by Insurance agents in an organization.

Option A:	OLTP
Option B:	OLAP
Option C:	OLAM
Option D:	OTLP
7.	Data transformation includes which of the following?
Option A:	A process to change data from a summary level to a detailed level
Option B:	A process to change data from a detailed level to a summary level
Option C:	Separating data from one source into various sources of data
Option D:	Joining data from one source into various sources of data
8.	If particular Datawarehouse in organization provides information about product, customers, suppliers, sales, revenue and does not focus on the ongoing operations ,it is feature of Datawarehouse is
Option A:	Integrity
Option B:	Subject oriented
Option C:	Non volatile
Option D:	Time variant
9.	In KDD and Data mining, noise is referred to as
Option A:	Complex data
Option B:	Meta data
Option C:	Error
Option D:	Repeated data
10.	In a Confusion Matrix False Positive means
Option A:	Class members which are classified as class members
Option B:	Class non-members which are classified as class non-members
Option C:	Class non-members which are classified as class members
Option D:	Class members which are classified as class non-members
11.	The problem of identifying dangerous zones based on earthquake epicenters can be solved using
Option A:	Clustering
Option B:	Classification
Option C:	Frequent Pattern Mining
Option D:	Regression
12.	Use K means algorithm to create 2 clusters for given set of values {2,4,10,12,3,20,30,11,25}
Option A:	{2,4,10,12}, {3,20,30,11,25}
Option B:	{2,3,4,10,11,12} {20,30,25}
Option C:	{2,3} {4,10,12,20,30,11,25}
Option D:	{2,3,4} {10,12,20,30,11,25}
13.	What will happen if support is reduced?
Option A:	Number of frequent item sets remains same.
Option B:	Some item sets will add to the current set of frequent item sets.
Option C:	Some item sets will become infrequent while others will become frequent
Option D:	Can't Predict

14.	PageRank is a metric for _____ documents based on their quality
Option A:	ranking hypertext
Option B:	ranking document structure
Option C:	ranking web content
Option D:	ranking popularity
15.	For questions given below consider the data Transactions : T1 {F, A, D, B} T2 {D, A, C, E, B} T3 {C, A, B, E} T4 {B, A, D} With minimum support is 60% and the minimum confidence is 80%. Find frequent item sets that satisfy the criteria?
Option A:	{ABC}, {ABE}, {BCD}, {ACD}
Option B:	{ABE},{BCD}, {ACD}
Option C:	{ABE}, {BCD}
Option D:	{ABD}
16.	In _____ mining we need to crawl through various target pages to explore the relationship between the various structures
Option A:	Multimedia mining
Option B:	Text mining
Option C:	Web mining
Option D:	Spatial mining
17.	Medical test (positive vs. negative) is which type of attribute
Option A:	Binary
Option B:	Continuous
Option C:	Interval
Option D:	Ordinal
18.	Closed item sets is referred as
Option A:	An item set for which at least one proper super-item set has same support
Option B:	An item set whose no proper super-item set has same support
Option C:	An item set for which at least super-item set has same confidence
Option D:	An item set whose no proper super-item set has same confidence
19.	For the given two statements, state true or false Statement 1: A high value of Support suggests frequent item set. Statement 2: A high value of confidence suggests a weak association rule.
Option A:	Statement 1 is true and Statement 2 is false.
Option B:	Statement 1 is false and Statement 2 is true
Option C:	Both statements are true
Option D:	Both statements are false
20.	Spatial objects are mostly _____ in nature Ex. shopping mall, park
Option A:	Regular
Option B:	Polygon
Option C:	Specific

Option D:	Broad

Q2	**Solve any Four out of Six** **5 marks each**
A	For a supermarket chain consider the following dimensions, namely product, store, time, promotion. The schema contains a central fact table, sales facts with three measures unit_sales, dollars_sales and doller_cost. Design star schema for this application
B	Describe the following OLAP operations using an example : (1) Slice (2) Dice (3) Rollup (4) Drill down (5) Pivot
C	What are the different approaches of binning technique .
D	What is the difference between classification and prediction ?
E	Explain Mining Multilevel Association Rules with example.
F	Write short note on Spatial Vs. Classical Data Mining.

Q3.	Solve any Two Questions out of Three 10 marks each
A	Discuss the agglomerative algorithm using following data and plot adendrogram using single link approach. The following figure contains sample data items indicating the distance between the elements. <table><tr><td>Item</td><td>E</td><td>A</td><td>C</td><td>B</td><td>D</td></tr><tr><td>E</td><td>0</td><td>1</td><td>2</td><td>2</td><td>3</td></tr><tr><td>A</td><td>1</td><td>0</td><td>2</td><td>5</td><td>3</td></tr><tr><td>C</td><td>2</td><td>2</td><td>0</td><td>1</td><td>6</td></tr><tr><td>B</td><td>2</td><td>5</td><td>1</td><td>0</td><td>3</td></tr><tr><td>D</td><td>3</td><td>3</td><td>6</td><td>3</td><td>0</td></tr></table>
B	A database has four transactions. Let min sup=60% and min conf= 80%. <table><tr><td>TID</td><td>Date</td><td>Items-bought</td></tr><tr><td>T100</td><td>10/15/99</td><td>{K, A, D, B}</td></tr><tr><td>T200</td><td>10/15/99</td><td>{D, A, C, E, B}</td></tr><tr><td>T300</td><td>10/19/99</td><td>{C,A,B,E}</td></tr><tr><td>T400</td><td>10/22/99</td><td>{B, A, D}</td></tr></table> Find all frequent itemsets using apriori algorithm List strong association rules(with supports S and confidence C).
C	What is web usage mining? Explain web server log with its structure