

University of Mumbai

Examination 2021

Examinations Commencing from 1st June 2021 to 15th June 2021

Program: **Information Technology**

Curriculum Scheme: Rev-2016

Examination: BE

Semester VIII

Course Code: ITC801 and Course Name: Big Data Analytics

Time: 2 hour

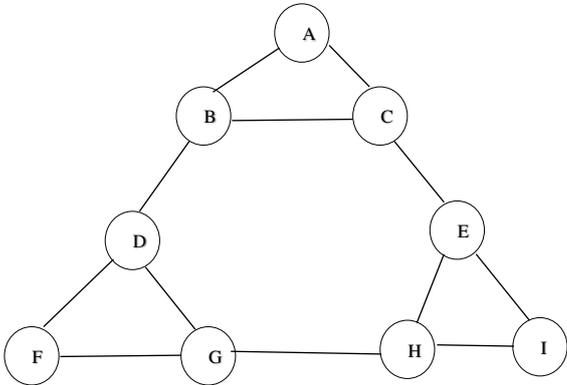
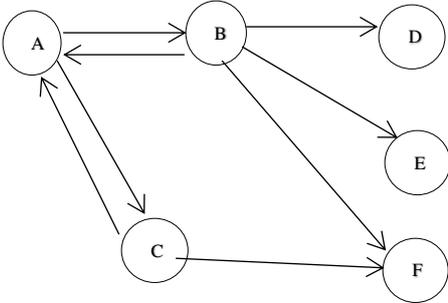
Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Vertical scaling means
Option A:	Adding computers serially
Option B:	Adding computers in parallel
Option C:	Adding computers serially as well as parallel
Option D:	Adding more processors, more memory and faster hardware typically within a single server
2.	NoSQL databases is used mainly for handling large volumes of
Option A:	Structured Data
Option B:	Unstructured Data
Option C:	Semi-Structured Data
Option D:	Relational Data
3.	HBase is _____type of NOSQL database
Option A:	Key-Value
Option B:	Column family Oriented
Option C:	Document Based
Option D:	Graph Based
4.	Which of the following statements is correct with respect to the statement, “In Hadoop there exists ...”
Option A:	one JobTracker per Mapper
Option B:	one JobTracker per node
Option C:	one JobTracker per Hadoop job
Option D:	one JobTracker per cluster
5.	Which of the following is a valid flow in Hadoop ?
Option A:	Input -> Reducer -> Mapper -> Combiner -> -> Output
Option B:	Input -> Mapper -> Reducer -> Combiner -> Output
Option C:	Input -> Mapper -> Combiner -> Reducer -> Output
Option D:	Input -> Reducer -> Combiner -> Mapper -> Output
6.	How can you disable the reduce step?
Option A:	The Hadoop administrator has to set the number of the reducer slot to zero on all slave nodes. This will disable the reduce step.
Option B:	It is impossible to disable the reduce step since it is critical part of the Map-Reduce abstraction.

Option C:	A developer can always set the number of the reducers to zero. That will completely disable the reduce step.
Option D:	While you cannot completely disable reducers, you can set output to one. There needs to be at least one reduce step in Map-Reduce abstraction.
7.	HBASE satisfies which of the following properties:
Option A:	Partition tolerance – Consistency
Option B:	Availability – Partition Tolerance
Option C:	Consistency – Availability
Option D:	Availability – partition tolerance – Consistency
8.	The number of maps is usually driven by the total size of :
Option A:	Inputs
Option B:	Outputs
Option C:	Tasks
Option D:	Nodes in cluster
9.	Using Map Reduce for Union in map phase what happens
Option A:	Maps tuples and emits all tuples of two set to be united
Option B:	Maps tuples and emits tuples
Option C:	Maps keys and emits keys
Option D:	Maps keys and emits all keys of two set to be united
10.	In order to count the 1's bit from large data stream model, the algorithm we can use as
Option A:	Bloom Filter
Option B:	Flajolet- Martin
Option C:	Sampling Algorithms
Option D:	DGIM
11.	In Flajolet Martin algorithm, if an element appears second time, the value
Option A:	Decreases
Option B:	Increases
Option C:	Increases or Decreases depending on the stream.
Option D:	Remains unchanged
12.	Bloom Filter provides which answer from large collection of Data Set.
Option A:	Member is definitely present in the set.
Option B:	Not sure whether a member is present or not in the set.
Option C:	Member may be present, or definitely not present in the set.
Option D:	Member can be present or absent is not predicted.
13.	You are owner of an online shopping website and have just ended the “Great Indian Shopping Sale” offer. This offer was valid for 2 days. You want to find out how many unique customers have utilized the offer during this period. Which big data streaming approach will you adopt to achieve the result.
Option A:	Bloom Filter
Option B:	Flajolet- Martin
Option C:	Sampling Algorithms
Option D:	DGIM

14.	MapReduce can be applied to decision trees if
Option A:	Data is large to be kept in memory and the generated tree is large such that it cannot be stored in single machine memory
Option B:	Data is large to be kept in memory, but the generated tree can be stored in memory
Option C:	Data is small and can be stored in single machine memory, but the generated tree cannot be stored in single memory
Option D:	Data is small and can be stored in single machine memory and the generated tree can be stored in single memory
15.	Margin in SVM is defined as
Option A:	the distance of closest example from the decision boundary/hyperplane
Option B:	the distance between other side of the margin and data point
Option C:	distance between two data points on the same side of hyperplane
Option D:	distance between two data points on the opposite side of hyperplane
16.	Canopy Clustering is usually used as
Option A:	Pre Clustering techniques for very large datasets
Option B:	Clustering techniques for high dimensional datasets
Option C:	Clustering techniques for very small datasets
Option D:	post clustering techniques for Large datasets
17.	The pairs (i, j) that are generated in pass 2 of the PCY are those
Option A:	where one of i or j hash to a frequent bucket
Option B:	where both i and j hash to a frequent bucket
Option C:	where neither i or j hash to a frequent bucket
Option D:	does not depend on the frequent bucket
18.	Data structure format in which graph can be represented
Option A:	Queue
Option B:	Array
Option C:	Matrix
Option D:	Stack
19.	Which of the following factors have an impact on the Google PageRank?
Option A:	The Subject Matter of the site providing the inbound link to a page of a web site
Option B:	The Total Number of inbound links to a page of a web site
Option C:	The Text used to describe the inbound link to a page of a web site
Option D:	The Number of Outbound Links on the page that contains the inbound link to a page of a web site
20.	In a web graph if a set of pages all have outlinks that reach only pages from the same set, the structure is called a
Option A:	Hubs
Option B:	Spider Traps
Option C:	Dead Ends
Option D:	Authorities

Q2. (20 Marks)	Solve any Four out of Six	5 marks each
A	Explain Hadoop Architecture and its Components with proper diagram	
B	Explain CAP theorem and explain how NoSQL systems guarantees BASE property.	
C	Discuss how failures are handled in MapReduce job?	
D	Describe the memory utilization in PCY algorithm	
E	i) Find Jaccard distance $\{1, 2, 3, 4\}$ & $\{2, 3, 5, 7\}$ and $\{a, a, a, b\}$ & $\{a, a, b, b, c\}$ ii) Find Hamming Distance between 110011 & 010101 and 11001 & 01011 iii) Compute the cosines of the angles between $(3, -1, 2)$ and $(-2, 3, 1)$.	
F	Explain with example Collaborative based filtering in a recommendation system.	

Q3. (20 Marks)	Solve any two out of three	10 marks each
A	For the graph given below, use Clique Percolation Method and find all communities. 	
B	Define PageRank. Using the web graph shown below compute the PageRank at every node at the end of the second iteration. Use teleport factor = 0.8. 	
C	Suppose a data stream consists of the integers 3,1,4,1,5,9,2,6,5. Let the hash function being used be: <ul style="list-style-type: none"> i) $h(x) = 3x + 1 \pmod{5}$ ii) $h(x) = 5x + 6 \pmod{5}$ iii) $h(x) = 2x + 3 \pmod{5}$ Show how the Flajolet-Martin algorithm will be used to estimate the	

	number of distinct element in this stream.
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University of Mumbai

Examination June 2021

Examinations Commencing from 1st June 2021

Program: BE Information Technology

Curriculum Scheme: Rev2012

Examination: BE Semester VIII

Course Code: ITC801 and Course Name: Storage Network Management and Retrieval

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 Fibre Channel protocol layer provides Fibre Channel addressing, structure, and organization of data?
Option A:	FC-0
Option B:	FC-1
Option C:	FC-2
Option D:	FC-4
2.	Which category of data center management ensures business continuity by eliminating single points of failure?
Option A:	Availability Management
Option B:	Capacity Management
Option C:	Performance Management
Option D:	Security Management
3.	What is the minimum number of disks required for RAID 5 implementation?
Option A:	2
Option B:	3
Option C:	4
Option D:	5
4.	What is Significance of E-Port?
Option A:	Creates an arbitrated loop
Option B:	Extends the fabric by connecting to other fabric
Option C:	Represent uninitialized state of port
Option D:	Represent port with disconnected FC Link
5.	What is the primary benefit of data striping?
Option A:	Independent disks allow multiple reads/writes simultaneously
Option B:	Improves security by creating multiple identical copies of data
Option C:	More efficient allocation of sequential reading/writing
Option D:	More efficient allocation of random reading/writing
6.	Which of the following is not a business driver for an information system?
Option A:	Business process redesign
Option B:	Knowledge asset management
Option C:	The proliferation of networks and the internet
Option D:	Security and privacy

7.	What is the protocol used by a Windows client to communicate with a NAS device?
Option A:	CIFS
Option B:	FCP
Option C:	NFS
Option D:	SCSI
8.	Which component of an intelligent storage system improves performance of reads and writes?
Option A:	Back-end
Option B:	Cache
Option C:	Host
Option D:	Physical Disks
9.	In a SAN based backup, which of the following is true?
Option A:	Data passes through LAN and metadata passes through SAN
Option B:	Data passes through SAN and metadata passes through LAN
Option C:	Both data and metadata passes only through SAN
Option D:	Both data and metadata passes only through LAN
10.	In Fibre channel which login type is performed between an N Port and another N Port to establish a session?
Option A:	Fabric login
Option B:	Process login
Option C:	N-Port login
Option D:	Node login
11.	Which of the following is fundamental operation in an information retrieval system in both document and query?
Option A:	Information processing
Option B:	Matching in terms
Option C:	Assigning probabilities
Option D:	Assigning weights to terms
12.	Which feature applies only to an integrated NAS device?
Option A:	Allows external hosts access to storage devices
Option B:	Manages storage devices via array management software
Option C:	Manages storage devices via NAS management software
Option D:	Utilizes external switch access to storage devices
13.	What is an advantage of using tape over disk as the backup destination device?
Option A:	Faster restore time
Option B:	Portability
Option C:	RAID protection
Option D:	Random Access
14.	A local replica of an application is created with pointer based virtual replication technology. What is a requirement to perform a successful restore?
Option A:	Save location must be larger than source device

Option B:	Save location must be equal to the size of the source device
Option C:	Source device must be healthy
Option D:	Source devices must be larger than the target device
15.	What is the key advantage of write-through cache over write-back cache?
Option A:	Write response times are faster
Option B:	Saves more space on disk
Option C:	Risks of data loss are low
Option D:	Improves read hit ratio
16.	iSCSI is mapping of
Option A:	SCSI over TCP/IP
Option B:	IP over SCSI
Option C:	FC over SCSI
Option D:	SCSI over SAN
17.	Which SAN security mechanism restricts the type of initialization of a switch port?
Option A:	Port binding
Option B:	Persistent port disable
Option C:	Port lockout
Option D:	Persistent port enable
18.	Zipf's law states that
Option A:	The frequency of any word is directly proportional to its rank in the frequency table.
Option B:	The frequency of any word is inversely proportional to its order in the frequency table.
Option C:	The frequency of any word is directly proportional to its order in the frequency table.
Option D:	The frequency of any word is inversely proportional to its rank in the frequency table.
19.	A company has two SAN islands approximately one mile apart. The company wants to create a single fabric over its public WAN connection. Which protocol is recommended to connect sites?
Option A:	FCP
Option B:	FCIP
Option C:	iSCSI
Option D:	SCSI
20.	The Recovery Point Objective (RPO) of a company is 2 hours. Which statement is true in the event of a disaster?
Option A:	No more than 2 hours of production data can be lost
Option B:	No more than 4 hours of production data can be lost
Option C:	Time to resume production operations must be no more than 2 hours
Option D:	Time to resume production operations must be no more than 4 hours

Q2	
A	Solve any Two 5 marks each
i.	What are different techniques of indexing a document?
ii.	Differentiate between symmetric and asymmetric storage virtualization.
iii.	Explain Boolean based matching process in detail
B	Solve any One 10 marks each
i.	Explain the architecture and working of an intelligent storage system in detail.
ii.	What is Information availability and Information unavailability? Explain BC planning lifecycle.

Q3	
A	Solve any Two 5 marks each
i.	What are challenges in storage virtualization?
ii.	Discuss the impact of RAID on disk performance related to IOPS. Explain with example.
iii.	Write a short note on : Document term matrices.
B	Solve any One 10 marks each
i.	Explain in detail Fibre Channel Protocol Stack with neat diagram.
ii.	Compare Fibre Channel SAN, iSCSI and NAS

University of Mumbai
Examination June 2021

Examinations Commencing from 1st June 2021

Program: Information Technology

Curriculum Scheme: Rev2016

Examination: BE Semester VIII

Course Code: **ITC802** and Course Name: **Internet of Everything**

Time: 2 hour

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	-----are the entity identifiers of the IoT application.
Option A:	Thing identifiers
Option B:	Device identifiers
Option C:	User identifiers
Option D:	Communication identifiers
2.	Thein the objects help the IoT devices interact with physical entities.
Option A:	Data
Option B:	Process
Option C:	Actuators
Option D:	Sensors
3.	RFID tags are also referred as
Option A:	Transponder
Option B:	Transmitter
Option C:	Receiver
Option D:	Responder
4.	In ----- tag, the battery/energy source is not used for communication.
Option A:	Active
Option B:	Passive
Option C:	Semi-Passive
Option D:	Active and Passive
5.	RFID functions mainly involve three aspects like
Option A:	Monitoring, Learning, Predicting
Option B:	Monitoring, Tracking, Learning
Option C:	Tracking, Learning, Supervising
Option D:	Monitoring, Tracking, Supervising
6.	STT stands for
Option A:	Smart Tree Traversal Protocol
Option B:	Smart Trend Traversal Protocol
Option C:	Smart Tree Training Protocol
Option D:	Smart Trend Training Protocol

7.	BAT anti-collision protocol is used for
Option A:	Active Tags
Option B:	Passive Tags
Option C:	Semi Passive Tags
Option D:	Semi Active Tags
8.	NFC works on the principle of -----
Option A:	Electromagnetic Wave Propagation
Option B:	Skywave propagation
Option C:	Magnetic induction
Option D:	NFC works on the principle of
9.	CoAP stands for -----
Option A:	Constrained Application Protocol
Option B:	Cost dependent Application Protocol
Option C:	Core Application Protocol
Option D:	Cooperative Application Protocol
10.	Sensor MAC (S-MAC) and Timeout MAC (T-MAC) are example of:
Option A:	Efficiency based protocol
Option B:	contention-based protocols
Option C:	reservation based protocols
Option D:	schedule-based protocols
11.	Y-MAC
Option A:	Is a TDMA-based multi-channel MAC protocol, allocates a time slot to each node in the network, Time is divided into several variable-length frames, and each frame is having a broadcast period.
Option B:	Is a TDMA-based multi-channel MAC protocol, allocates a time slot to each node in the network, Time is divided into several frames, and each frame is composed of a unicast period
Option C:	Is a TDMA-based multi-channel MAC protocol, allocates a time slot to each node in the network, Time is divided into several fixed-length frames, and each frame is composed of a broadcast period and a unicast period
Option D:	Is a CSMA-based multi-channel MAC protocol, allocates a time slot to each node in the network, Time is divided into several fixed-length frames, and each frame is composed of a broadcast period and a unicast period
12.	Greedy-face-greedy routing is a variant of
Option A:	Gradient based routing
Option B:	Geographic routing
Option C:	Multi hop routing
Option D:	Greedy routing
13.	In GRAB, $\alpha(\text{used}) = P_{(\text{consumed})} + C_{(\text{receiver})} - C_{(\text{source})}$ α refers to

Option A:	the amount of power assigned to the packet at the source, it determines the “height” of the forwarding mesh.
Option B:	the amount of credit assigned to the packet at the source, it determines the “width” of the forwarding mesh.
Option C:	the amount of debit assigned to the packet at the source, it determines the “width” of the forwarding mesh.
Option D:	the amount of budget assigned to the packet at the source, it determines the “height and width” of the forwarding mesh.
14.	In active mode of link layer handoff session -----.
Option A:	the HN sends in additional PROBE broadcast packets on each channel and receives probe responses from AP
Option B:	the MN sends in additional PROBE broadcast packets on each channel and receives probe responses from AP.
Option C:	the MN listens for beacon messages (sent periodically by the AP), on assigned channels.
Option D:	the MN terminates upon the reception of an ASSOCIATION RESPONSE message.
15.	The link layer handoff comprises four steps: 1. Recognizing the loss of the connection 2. Re-/Authentication with the newly discovered AP 3. Search for and detection of a new adequate AP 4. Re-/Association with the newly discovered AP
Option A:	1-2-3-4
Option B:	1-3-2-4
Option C:	4-3-2-1
Option D:	2-1-3-4
16.	In L3 handover, movement detection mechanisms is divided into:
Option A:	advertisement based and hidden based
Option B:	advertisement based and on demand hint based
Option C:	advertisement based and hint based
Option D:	Computing based and hint based
17.	In MIP the main issue when transmitting real-time traffic is non-synchronization of the handover process at the -----
Option A:	Link and network layers
Option B:	Link and application layers
Option C:	datalink and network layers
Option D:	Physical and network layers
18.	Which of the following features you will use for accessing third-party jars during the execution of MapReduce job?
Option A:	Distributed cache
Option B:	Speculative execution
Option C:	Data locality
Option D:	Erasures coding

19.	_____ is a Java web application used to schedule Apache Hadoop jobs.
Option A:	Oozie
Option B:	Impala
Option C:	storm
Option D:	Mahout
20.	-----is a parallel processing framework that is used for in-memory processing to boost big data applications.
Option A:	Apache Oozie
Option B:	Apache Storm
Option C:	Apache Spark
Option D:	Apache Hadoop

Q2.	Attempt both the sections 2A and 2B	20 marks
A	Solve any Two	5 marks each
i.	Explain different Identifier in IOT	
ii.	Draw Hadoop architecture and explain its different components.	
iii.	Describe STT protocol.	
B	Solve any One	10 marks each
i.	Explain in detail the working of Gradient Based Routing protocol.	
ii.	Discuss in detail the design and working of Mobile IP (MIP) – IETF communication protocol - IEEE 802.11 - along with its issues.	

Q3.	Attempt both the sections 3A and 3B	20 marks
A	Solve any Two	5 marks each
i.	Describe the functional architecture of Puppet.	
ii.	State the factors that need to be taken care of while designing an RFID.	
iii.	Describe BAT protocol.	
B	Solve any One	10 marks each
i.	What do you mean by Resource in the REST framework? What are the tools used for creating RESTFull web services?	
ii.	Explain the process of Network layer handoff in MIP along with the working of passive and active scanning in the same.	

University of Mumbai
Examination June 2021

Examinations Commencing from 1st June 2021

Program: **Information Technology**

Curriculum Scheme: Rev 2016

Examination: BE Semester VIII

Course Code: ITDLO8041 and Course Name: User Interaction Design

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 a design principle that allows the user to maintain control?
Option A:	Provide for flexible interaction
Option B:	Allow user interaction to be interrupt-able and undo-able
Option C:	Show technical internals from the casual user
Option D:	Design for direct interaction with objects that appear on the screen
2.	A central concern of interaction design is to develop interactive products that are:
Option A:	Usable
Option B:	Adaptable
Option C:	Maintainable
Option D:	Scalable
3.	Which of these activities is not a part of interaction design process
Option A:	Identifying needs and establishing requirements.
Option B:	Developing alternative designs that meet those requirements.
Option C:	Building interactive versions of the designs so that they can be communicated and assessed.
Option D:	Maintaining the design over the years
4.	Which of these is not an usability goal
Option A:	Safety
Option B:	Learnability
Option C:	Utility
Option D:	Fault Tolerance
5.	_____ occurs when we use a tool or device in conjunction with an external representation to help us carry out a computation.
Option A:	Cognitive Thinking
Option B:	Computational Offloading
Option C:	Memorability
Option D:	Internal offloading
6.	Studying for an exam, learning a foreign language, and learning to cook are an example of
Option A:	Incidental learning
Option B:	Intentional learning

Option C:	Perception
Option D:	Attention
7.	Issuing commands and selecting options is a _____ interaction type.
Option A:	Instructing
Option B:	Conversing
Option C:	Manipulating
Option D:	Exploring
8.	_____ refers to how good a system is at doing what it is supposed to do.
Option A:	Utility
Option B:	Efficiency
Option C:	Memorability
Option D:	Effectiveness
9.	What are rich descriptions of typical users of the product under development on which the designers can focus and for which they can design products.
Option A:	Personas
Option B:	Scenarios
Option C:	Use cases
Option D:	Design fiction
10.	Identify the task description which focuses on functional requirements and capture interaction and can be used in design or to capture requirements
Option A:	Personas
Option B:	Scenarios
Option C:	Use cases
Option D:	Design fiction
11.	_____ Requirements refer to the circumstances in which the interactive product will operate.
Option A:	Functional
Option B:	Data
Option C:	Usability goals
Option D:	Environmental
12.	Small pieces of cardboard about 3 × 5 inches is a successful and simple way to prototype an interaction which is called as
Option A:	Storyboard
Option B:	Sketch
Option C:	Index Cards
Option D:	System
13.	Which of the following is the most likely interface metaphor used by a smart phone calendar function?
Option A:	Restaurant menu
Option B:	Touch-screen interface
Option C:	A paper diary
Option D:	Mobile technology.

14.	A prototype that evolves into the final product and is built with these engineering principles in mind is called _____.
Option A:	Throwaway prototyping
Option B:	Evolutionary prototyping
Option C:	Paper prototyping
Option D:	Low-fidelity prototyping
15.	Users would appreciate a “Thank You” message and a proof of purchase receipt when they’ve completed an online purchase. This follows which of the 8 Golden rules of interface design.
Option A:	Strive for consistency
Option B:	Enable frequent users to use shortcuts
Option C:	Design dialogue to yield closure
Option D:	Permit easy reversal of action
16.	"Dialogs should not contain information that is irrelevant or rarely needed" is mapped by which heuristic?
Option A:	Aesthetic and Minimalist Design
Option B:	Help and Documentation
Option C:	Consistency and Standards
Option D:	User Control and Freedom
17.	Which of the following is a usability guideline for navigation?
Option A:	Using sitemaps
Option B:	Use appropriate page and line lengths
Option C:	Avoid horizontal scrolling
Option D:	Avoid using too many image links
18.	A method that does not require human participants serving as test users is the
Option A:	Usability test
Option B:	Experiments
Option C:	In-the-wild studies
Option D:	Heuristic evaluation
19.	It provides a way of examining the performance of an already existing product, such as a website, so that it can be improved.
Option A:	Requirements Gathering
Option B:	Analytics
Option C:	Prototyping
Option D:	Designing
20.	Evaluations that are carried out to assess the success of a finished product are known as
Option A:	formative evaluations
Option B:	analytics
Option C:	heuristic evaluation
Option D:	summative evaluations

Q2 (20 Marks)	
A	Solve any Two 5 marks each
i.	What is Usability? Explain different usability goals.
ii.	What is Prototyping? Why is it needed?
iii.	What care will you take while designing an interface for a blind person?
B	Solve any One 10 marks each
i.	Illustrate the concept of heuristic evaluation.
ii.	Explain different interview styles

Q3. (20 Marks)	Solve any Two Questions out of Three 10 marks each
A	Summarize Principles of good UI Design.
B	Write a note on Good Error Messages with examples
C	Explain Experimental Design and its types.

University of Mumbai
Examination June 2021

Examinations Commencing from 1st June 2021

Program: **IT01028**

Curriculum Scheme: Rev2016

Examination: BE Semester VIII

Course Code: 52965 and Course Name: Environmental Management

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 salts is the main cause of permanent hardness of water?
Option A:	Magnesium sulphate
Option B:	Magnesium bicarbonate
Option C:	Magnesium carbonate
Option D:	Potassium sulphate
2.	Which of the following is incorrect, if we only achieve two out of three pillars of Sustainable Development?
Option A:	Social + Economic Sustainability = Equitable
Option B:	Social + Environmental Sustainability = Bearable
Option C:	Economic + Environmental Sustainability = Viable
Option D:	Political + Environmental Sustainability = Bearable
3.	In a food chain animals constitute the:
Option A:	First trophic level
Option B:	Second trophic level
Option C:	Intermediate trophic level
Option D:	Ultimate trophic level
4.	What are the Primary Goals of Sustainability? i. The end of poverty and hunger ii. Better standards of education and healthcare - particularly as it pertains to water quality and better sanitation iii. To bring about a gradual and sometimes catastrophic transformation of the environment iv. Sustainable economic growth while promoting jobs and stronger economies
Option A:	i,ii,iv
Option B:	i,ii,iii
Option C:	i,iii,iv
Option D:	ii,iii,iv
5.	How many percentage of fissionable U-235 occurring in uranium?
Option A:	0.20%
Option B:	0.70%
Option C:	1.00%

Option D:	1.50%
6.	Which of the following is NOT a problem caused by deforestation?
Option A:	Loss of biodiversity
Option B:	Hurting the economy
Option C:	The harming of many indigenous peoples
Option D:	Creating political and social issues
7.	Biodiversity is important for a variety of reasons i. promotes healthier, maintained ecosystems that provide services to us ii. genetic variety of crops, livestock, and marine organisms iii. There are too many animal species on the world iv. ensures that humans are provided with a healthy, nutrient rich diet
Option A:	i,ii,iv
Option B:	i,ii,iii
Option C:	i,iii,iv
Option D:	ii,iii,iv
8.	The reason of Arc blast is
Option A:	Poor contact within electrical wire splices
Option B:	Radio frequency emissions from high-power transmitters
Option C:	Discharge of high electrical current through open air
Option D:	Failure to lock-out and tag-out electrical breakers
9.	Match the following: Earth Spheres Characteristics a. Hydrosphere 1. It lies above 50 km which coincides with the thermosphere b. Lithosphere 2. Earth's crust and a lower portion of the mantle c. Biosphere 3. Earth's water which exists in both fresh and saline form d. Ionosphere 4. Zone incorporating elements of the hydrosphere, lithosphere and atmosphere
Option A:	a= 1 b=2 c=3 d=4
Option B:	a= 4 b=23 c=2 d=1
Option C:	a= 3 b=2 c=4 d=1
Option D:	a= 1 b=4 c=2 d=3
10.	Plant species with a wide range of genetic distribution evolve into a local population known as
Option A:	Ecotype
Option B:	population
Option C:	Ecosystem
Option D:	Biome
11.	Name the group of species which exploit the abiotic and biotic resources in a similar way?

Option B:	ISO 9001
Option C:	ISO 9002
Option D:	ISO 19011
19.	Within ISO 14001, what do “can” refer to?
Option A:	A requirement
Option B:	A recommendation
Option C:	A permission
Option D:	A possibility or a capability
20.	Which is the most recent pronouncement of the government’s commitment to improving environmental conditions?
Option A:	National Environmental Policy
Option B:	National Water Policy
Option C:	Environment Act
Option D:	Air Policy

Q2 (20 Marks)	
A	Solve any Two 5 marks each
i.	What is meant by disaster? Differentiate between Industrial disaster and Manmade disaster.
ii.	Explain food chain with respect to four major parts. Give examples of food chain
iii.	What are the stages of the EMS lifecycle process?
B	Solve any One 10 marks each
i.	Discuss the consequences of deteriorating air quality on humans, plants and animals.
ii.	What all are components of environment? Define each component.

Q3 (20 Marks)	
A	Solve any Two 5 marks each
i.	Explain Global warming. How does it take place?
ii.	Explain in detail what is Environmental Quality Management?
iii.	Give a brief account of Air (P&CP Act).
B	Solve any One 10 marks each
i.	What is meant by habitat? What are its types? Elaborate on them.
ii.	Classify Ecosystems and explain them in detail.

University of Mumbai
Examination June 2021

Examinations Commencing from 1st June 2021

Program: **Mechanical Engineering**

Curriculum Scheme: Rev 2016

Examination: BE Semester VIII

Course Code: ILO 8021 and Course Name: Project Management

Time: 2 hour

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	Projects are unique and temporary, while operations are
Option A:	Specific And Targeted
Option B:	Ongoing and Permanent with a Repetitive Output
Option C:	Unique And Permanent With Non-Repetitive Outputs
Option D:	Ongoing And Temporary
2	From a practical perspective, what is the most important element of a good project communication management approach?
Option A:	Setup a regular and frequent method for communicating with team members and stakeholders and then follow it.
Option B:	Conduct one-on-one meetings (face-to-face or virtual) with project team members every week.
Option C:	Ensure all project communication between team members and stakeholders goes through the Project Leader so that there is no opportunity for misunderstanding.
Option D:	Telephonic conversation, and Emails
3.	The lowest element in the hierarchical breakdown of the WBS is
Option A:	Work package
Option B:	Responsibility matrix
Option C:	Bottoms up budget
Option D:	Deliverable
4.	Use of PMIS is comparatively less in this process group of project management
Option A:	Initiating
Option B:	Executing
Option C:	Monitoring and Controlling
Option D:	Planning
5.	Which of the following represents the estimated value of the work actually accomplished?
Option A:	Earned value (EV)
Option B:	Planned value (PV)
Option C:	Actual cost (AC)
Option D:	Cost variance (CV)
6.	_____ is the discounting rate, which delivers a Net Present Value equal to zero
Option A:	ARR

Option B:	IRR
Option C:	NPV
Option D:	Profitability Index
7.	Project is stopped due to either its successful or unsuccessful conclusion. Auditing, team on new assignment, assets transferred as per policy is known as :
Option A:	Extinction
Option B:	Addition
Option C:	Integration
Option D:	Starvation
8.	The process of partnering is an attempt to mitigate the risk associated with
Option A:	Networking
Option B:	Uncertainty
Option C:	Risks
Option D:	Subcontracting
9	Project Risk = _____* Consequences of Event. None of the above
Option A:	Loss
Option B:	Outcomes of Event
Option C:	Probability of Event
Option D:	Profit
10.	What is the correct sequence of stages in group development
Option A:	Forming, Norming, Performing, Storming, Adjourning
Option B:	Forming, Norming, Storming, Performing , Adjourning
Option C:	Forming, Storming, Norming, Performing , Adjourning
Option D:	Forming, Performing, Norming, Storming , Adjourning
11.	An activity has an optimistic time 11 days, a most likely time of 15 days, and a pessimistic time of 23 days. What is its variance?
Option A:	15.6
Option B:	16.33
Option C:	4
Option D:	2
12.	What are the determinants of project success as per Iron Triangle?
Option A:	Resources, Cost, Performance
Option B:	Knowledge, Time, Resources
Option C:	Cost, Skills, Performance
Option D:	Cost, Performance, Time
13	What is the correct sequence for the following processes of Project Risk Management: 1. Plan Risk Management; 2. Perform Qualitative Risk Analysis; 3. Identify Risks; 4. Perform Quantitative Risk Analysis; 5. Plan Risk Responses;

	6. Control Risks
Option A:	1-2-3-4-5-6
Option B:	1-3-2-4-5-6
Option C:	1-3-4-2-5-6
Option D:	3-1-2-4-5-6
14.	Arrange the following elements of the Project Cycle in the right order: A- Project Appraisal B- Feasibility Analysis C- Negotiation D- Project Selection
Option A:	A-B-C-D
Option B:	B-A-C-D
Option C:	B-A-D-C
Option D:	B-C-A-D
15.	An activity takes 4 days to complete at a normal cost of Rs.500. If it is possible to complete the activity in 2 days with an additional cost of Rs.700, what is the incremental cost of activity.
Option A:	100
Option B:	125
Option C:	1000
Option D:	250
16.	In PERT/CPM, slack time is :
Option A:	Is the amount of time a task may be delayed without changing the overall project completion time
Option B:	Is the latest time an activity can be started without delaying the entire project
Option C:	Is a task or subproject that must be completed
Option D:	Marks the start or completion of a task
17.	The review of the successes and the mistakes is normally held during _____ phase.
Option A:	Initiation
Option B:	Planning
Option C:	Execution
Option D:	Closure
18.	Cost performance index value is less than 1 indicates :
Option A:	Cost under run
Option B:	Cost overrun
Option C:	Cost average
Option D:	Cost Variance
19.	Why does scope creep cause a delay on a project?
Option A:	The project resources are doing the scope creep work and not the originally planned work, causing the originally planned tasks to be delayed.
Option B:	Project work is postponed until the magnitude of scope creep is defined.
Option C:	Scope creep causes task estimates to increase.
Option D:	Scope creep causes cost estimates to increase.

20.	Goldratt's critical chain method is based on																																																							
Option A:	Theory of constraints																																																							
Option B:	Critical path method																																																							
Option C:	Supply of raw material in time																																																							
Option D:	Use of concurrent engineering principle																																																							
Q.2	Solve any Four out of Six . 5 Marks Each																																																							
A	What are the knowledge areas and process groups in Project Management as per PMI?																																																							
B	Explain various project selection models.																																																							
C	What is Goldratt's critical chain method?																																																							
D	<p>Determine the net present value for a project that costs Rs. 2,40,000/- would yield after tax cash flows as follows. Assume cost of capital is 10%</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Year</th> <th>CASH Flow in Rs.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>25,000</td> </tr> <tr> <td>2</td> <td>75,000</td> </tr> <tr> <td>3</td> <td>80,000</td> </tr> <tr> <td>4</td> <td>100,000</td> </tr> </tbody> </table> <p>Comment on feasibility of project based on NPV</p>	Year	CASH Flow in Rs.	1	25,000	2	75,000	3	80,000	4	100,000																																													
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E	Explain importance of ethics in projects.																																																							
F	What are the different ways of closing the project?																																																							
Q.3	Solve any Two Questions out of Three 10 Marks Each																																																							
A	<p>a. A consulting project has an actual cost of Rs. 45000, Scheduled cost Rs. 35000, and value of completed work is Rs. 40000. Find the Schedule and Cost Variance. Also find SPI and CPI.</p> <p>b. What is a contract? Explain different types of contracts.</p>																																																							
B	<p>R & D project has a list of tasks to be performed whose time estimates are given in the as follows.</p> <p style="text-align: center;">Table-1-Time Estimation for R &D Project</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Activity <i>i</i> <i>j</i></th> <th>Activity Time</th> <th>t_o</th> <th>t_m</th> <th>t_p</th> </tr> </thead> <tbody> <tr> <td>1-2</td> <td>A</td> <td>4</td> <td>6</td> <td>8</td> </tr> <tr> <td>1-3</td> <td>B</td> <td>2</td> <td>3</td> <td>10</td> </tr> <tr> <td>1-4</td> <td>C</td> <td>6</td> <td>8</td> <td>16</td> </tr> <tr> <td>2-4</td> <td>D</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>3-4</td> <td>E</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>3-5</td> <td>F</td> <td>6</td> <td>7</td> <td>14</td> </tr> <tr> <td>4-6</td> <td>G</td> <td>3</td> <td>5</td> <td>7</td> </tr> <tr> <td>4-7</td> <td>H</td> <td>4</td> <td>11</td> <td>12</td> </tr> <tr> <td>5-7</td> <td>I</td> <td>2</td> <td>4</td> <td>6</td> </tr> <tr> <td>6-7</td> <td>J</td> <td>2</td> <td>9</td> <td>10</td> </tr> </tbody> </table> <p>a. Draw the project network. b. Find the critical path. c. Find the probability that the project is completed in 19 days. If the probability is less than 20%, find the probability of completing it in 24 days.</p>	Activity <i>i</i> <i>j</i>	Activity Time	t_o	t_m	t_p	1-2	A	4	6	8	1-3	B	2	3	10	1-4	C	6	8	16	2-4	D	1	2	3	3-4	E	6	7	8	3-5	F	6	7	14	4-6	G	3	5	7	4-7	H	4	11	12	5-7	I	2	4	6	6-7	J	2	9	10
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C	<p>Write short notes on.</p> <p>a. Work Breakdown Structure b. Project Procurement Management,</p>																																																							

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