University of Mumbai
Examinations: Summer 2022

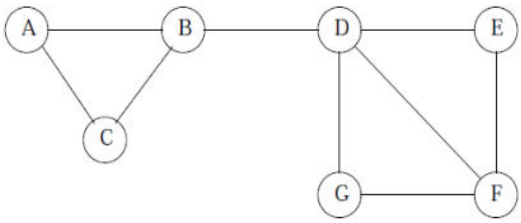
Time: **2 hour 30 minutes** Max. Marks: **80**

==========

Q1	**Choose the correct option for following questions. All the Questions carry equal marks. (2 Marks each) Total Marks - 20**
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	The original purpose of creation of Google implementation of MapReduce was to
Option A:	Perform matrix-vector multiplications for calculating PageRank
Option B:	Count number of keywords on webpages
Option C:	Count maximum number of keywords
Option D:	Find minimum keywords required on web page
3	Which of the following phases occur simultaneously?
Option A:	Map and combining
Option B:	Reduce and partitioning
Option C:	Shuffle and sort
Option D:	Map and Reduce
4	In DGIM algorithm, bucket cannot _____in size as we move to the left (back in time).
Option A:	increase
Option B:	decrease
Option C:	big
Option D:	small
5	Taxation assumes:
Option A:	A random surfer has a finite probability of leaving the Web at any step
Option B:	A random surfer has an infinite probability of leaving the Web at any step
Option C:	A random surfer has zero probability of leaving the Web at any step
Option D:	A random surfer has 50% probability of leaving the Web at any step
6	Following are the NoSql Business Drivers
Option A:	Data, Supply, Information, Idea
Option B:	Demand, Supply, Trends, Data
Option C:	Volume, Velocity, Agility, Variability
Option D:	Data, Information, Knowledge, Idea
7	Multistage algorithm uses
Option A:	1 hash functions in 2 different passes

Option B:	1 hash functions in 1pass
Option C:	2 hash functions in 1pass
Option D:	2 hash functions in 2 different passes
8	Two k-cliques are adjacent when they share
Option A:	2*k nodes
Option B:	k+1 nodes
Option C:	k-1 nodes
Option D:	k nodes
9	Assume that a text file contains the following text. In a map-reduce logic of finding frequency of occurrence of each word in this file, what is the output of map function? This is a exam Yes it is exam
Option A:	(This,1), (is, 2), (a, 1), (exam, 2), (Yes, 1), (it, 1)
Option B:	(This,1), (is, 1), (a, 1), (exam, 1), (Yes, 1), (it, 1), (is, 1), (exam,1)
Option C:	(This,1), (is, 1), (a, 1), (exam,1)
Option D:	(This,1), (is, 1), (a, 1), (exam, 2), (Yes, 1), (it, 1), (is, 1)
10	In a map-reduce logic of finding Matrix-Vector Multiplication, what is the output of the map function? 3 4 1 5 6 * 2 7 8
Option A:	(1,11), (2,17), (3,23)
Option B:	(1,1,3), (1,2,4), (2,1,5), (2,2,6), (3,1,7),(3,2,8)
Option C:	(1,1,3), (1,2,4), (2,1,5), (2,2,6), (3,1,7),(3,2,8), (1, 1), (2, 2)
Option D:	(1, 3), (1, 8), (2, 5), (2, 12), (3, 7), (3, 16)

Q 2.		**Attempt ANY TWO QUESTIONS out of THREE** **Each question is for 10 marks**
	A	Recall all NoSQL design patterns with examples. Justify CAP with suitable examples.
	B	Explain with example Collaborative based filtering in a recommendation system.
	C	Apply Matrix - Matrix Multiplication using MapReduce model and solve the following example 1 2 3 4 1 2 * 3 4
Q 3.		**Attempt ANY TWO QUESTIONS out of THREE** **Each question is for 10 marks**
	A	Apply PCY algorithm to find frequent itemset for the given dataset with minimum support 50% with hash function h(ij)= i*j % 8 T1-- 1,2,4,5 T2-- 2,4,5

		T3-- 1,2,4 T4-- 1,2,5
	B	Figure is an example of a social-network graph. Use the Girvan-Newman approach to find the between-ness of every edge. 
	C	Discuss all phases of the CURE algorithm for clustering with suitable example.
Q 4.		**Attempt any FOUR Questions out of SIX** **Each question is for 5 marks**
	A	What are the five Vs of Big Data? Explain.
	B	Recall Hadoop architecture with diagrams and give its advantages.
	C	Discuss any 5 different relational algebra operations with examples.
	D	Mention problems of PageRank along with its solution.
	E	State Bloom filter and explain with the help of an example.
	F	Explain KNN with proper example.

University of Mumbai
Examination 2022

Program: Information Technology
Examination: BE Semester VIII
Course Code: ITC802 and Course Name: **Internet of Everything**

Time: 2 hour 30 minutes Max. Marks: 80

==========

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	---------- act as primary devices to collect data from the environment.
Option A:	Machines
Option B:	Antenna
Option C:	Sensors
Option D:	Switch
2.	Which RFID tag does not need an embedded power?
Option A:	Active
Option B:	Passive
Option C:	Semi-Passive
Option D:	Semi-Active
3.	Pure ALOHA is based on
Option A:	CDMA
Option B:	TDMA
Option C:	FDMA
Option D:	SDMA
4.	MQTT topics are
Option A:	Simple floating point
Option B:	Simple integer
Option C:	Simple symbol
Option D:	Simple string
5.	CoAP provides which of the following requirements?
Option A:	Multicast support, Low overhead and Simplicity
Option B:	Low overhead and multicast support
Option C:	Simplicity and low overhead
Option D:	Multicast support and simplicity
6.	X-MAC differs MFP – Micro frame preambling with respect to:
Option A:	Receiver cuts the preamble into micro-frames, and listens between each micro-frame.
Option B:	S (sender) cuts the preamble into a series of micro frames.
Option C:	S (sender) cuts the preamble into micro-frames, and listens between each micro-frame.
Option D:	Senders listen to the remainder of the preamble, which costs energy and Increases collision probability.

7.	_____ localization algorithm works according to the last known or estimated location by using velocity or acceleration.
Option A:	Dead reckoning
Option B:	Scene analysis
Option C:	Proximity
Option D:	Hybrid
8.	Link-Layer Handover process follows three steps: two modes of scanning:
Option A:	active and passive
Option B:	active and semi-passive
Option C:	semi-active and passive
Option D:	semi active and semi passive
9.	Oozie workflow jobs are directed _____ graphs of actions.
Option A:	Linear
Option B:	Elliptical
Option C:	Cyclic
Option D:	Acyclic
10.	Hadoop Ecosystem does not include ----------.
Option A:	Oozie
Option B:	Yarn
Option C:	Hive
Option D:	Zoo

Q2.		
A	**Solve any Two**	**5 marks each**
i.	Discuss the technical challenges in RFID.	
ii.	Sketch the Hadoop architecture and explain its different components.	
iii.	Explain 10 most emerging technologies in IoT	
B	**Solve any One**	**10 marks each**
i.	List the features of CoAP and explain the different messaging modes of CoAP.	
ii.	Draw the RFID based architecture for supply chain management application.	

Q3.		
A	**Solve any Two**	**5 marks each**
i.	Explain the architecture of MQTT protocol with its selection criteria.	
ii.	Explain different Identifiers in IOT.	
iii.	Explain the Types of Wireless Sensor Network?	
B	**Solve any One**	**10 marks each**
i.	What does NETCONF-YANG mean, explain the device managements of the same.	
ii.	Discuss the RFID enabled handoff management process in Localization and Mobility management.	

Q4.	
A	**Solve any Two** **5 marks each**
i.	List and explain the components of RFID
ii.	Illustrate how Energy-efficiency in MAC protocols is maintained.
iii.	Suggest the IoT Framework for Home Automation application.
B	**Solve any One** **10 marks each**
i.	Differentiate between the various conventional localization techniques. Explain any one detail.
ii.	Discuss the need of the Chef and Puppet tools with their benefits. List the industries using them.

University of Mumbai

Examinations Summer 2022

Time: 2 hour 30 minutes Max. Marks: 80

==========

Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	The Design Council of the UK proposed the double-diamond of design which has four phases. Their sequential steps are
Option A:	Define -> Discover -> Develop -> Deliver
Option B:	Discover -> Define -> Develop -> Deliver
Option C:	Discover -> Develop -> Define -> Deliver
Option D:	Define -> Develop -> Discover -> Deliver
2.	Which of these is not a usability goal?
Option A:	Effectiveness
Option B:	Safety
Option C:	Learnability
Option D:	Portability
3.	An outline of what people can do with a product and which concepts are needed for the user to understand how to interact with it is known as:
Option A:	Concept
Option B:	Conceptual Design
Option C:	Conceptual Model
Option D:	Conceptual list
4.	_____ is what goes on in our heads when we carry out our everyday activities.
Option A:	Interaction
Option B:	Cognition
Option C:	Motivation
Option D:	Conceptualization
5.	Operations like Selecting, dragging, opening, closing, zooming in and out using touch gestures on a smartphone are all examples of which type of interaction
Option A:	Instructing
Option B:	Manipulation
Option C:	Conversing
Option D:	Exploring
6.	According to UID Theory, What is pilot study?
Option A:	study done before the main study
Option B:	study done after main study
Option C:	study done with main study
Option D:	study done after feedback
7.	_____ means to employ different data gathering techniques.
Option A:	Triangulation of data
Option B:	Investigator triangulation
Option C:	Triangulation of theories
Option D:	Methodological triangulation

8.	A Prototype is important as it provides a …...
Option A:	Mini-Model of existing System
Option B:	Manifestation of a design that allows stakeholders to interact with it and to explore its suitability
Option C:	Working Model of existing System
Option D:	can be applied only to the newly created product
9.	Which of the following does not include in Shneiderman's 8 golden rules?
Option A:	Support internal locus of control
Option B:	Permit easy reversal actions
Option C:	Offer informative feedback
Option D:	Maintain the System frequently
10.	In a heuristic evaluation:
Option A:	A group of psychologists administer a questionnaire
Option B:	A group of usability experts review a user interface according to a small set of principles
Option C:	A group of test users conduct a formal experiment
Option D:	A group of usability experts judge an interface with a detailed checklist of guidelines

Q2. **(20 Marks)**	**Solve any Two Questions out of Three** **10 marks each**
A	Describe four basic activities of Interaction Design.
B	Compare Controlled Setting, Natural Setting, and Any Setting Evaluation.
C	What do you mean by low-fidelity and high-fidelity prototyping? Explain with examples.

Q3. **(20 Marks)**	**Solve any Two Questions out of Three** **10 marks each**
A	Write a note on 10 heuristics by Nielsen.
B	List various usability inspection methods and summarize cognitive walkthrough techniques.
C	Describe in detail Cognitive Frameworks.

Q4 **(20 Marks Each)**	
A	**Solve any Two** **5 marks each**
i.	Write a note on Good Error Messages with examples
ii.	Explain Wireframe with suitable example.
iii.	What is DECIDE framework? Explain.
B	**Solve any One** **10 marks each**
i.	Define usability and identify the most relevant usability goals for Ecommerce website. Also Justify.
ii.	Write a note on different interview styles.