CBCS SCHEME

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22SCS21

Second Semester M.Tech. Degree Examination, June/July 2024
Big Data Analytics

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Discuss the dimensionalities of HDFS design.	6	L2	CO1
	b.	With neat diagram, explain MapReduce dataflow to illustrate the task of finding the maximum temperature for every year using the NCDC data.	8	L3	CO2
	c.	Differentiate between Relational database and Schemaless database.	6	L3	CO2
		OR			
Q.2	a.	Write a note on following : i) HDFS federation ii) HDFS high availability.	8	L2	CO2
	b.	Describe the anatomy of file. Write in HDFS.	6	L2	CO2
	c.	Compare Grid computing and Volunteer computing.	6	L3	CO1
		Module – 2			
Q.3	a.	Summarize the anatomy of YARN application run, with neat diagram.	8	L2	CO2
	b.	Outline the limitations of MapReduce that are overcome by YARN.	6	L2	CO2
	c.	Demonstrate the role of delay scheduling to increase efficiency of the cluster.	6	L3	CO2
		OR			
Q.4	a.	Infer how data integrity is ensured in HDFS.	8	L2	CO2
	b.	Illustrate the process of serialization and deserialization in Hadopp. What is desired RPC serialization format?	6	L2	CO2
	c.	With neat diagram describe the internal structure of sequence file, with block compression.	6	L2	CO2
		Module – 3			
Q.5	a.	Explain how Hadoop runs a MapReduce job with neat diagram.	10	L2	CO4
	b.	Given the problem to count the number of words in a text file, illustrate MapReduce shuffle and sort steps in detail, with neat diagram.	10	L3	CO4
		OR			

Q.6	**a.**	Interpret the different types of failures in MapReduce.	**10**	**L2**	**CO2**
	b.	Demonstrate the need for speculative execution for optimization of MapReduce model. Mention its properties that tasks can enable and disable.	**10**	**L3**	**CO3**
		Module – 4			
Q.7	**a.**	Classify and explain the following : i) File input format ii) Sequence file input format.	**8**	**L2**	**CO2**
	b.	Describe Text output and Binary output formats.	**6**	**L2**	**CO3**
	c.	Explain how Flume uses transactions to guarantee delivery.	**6**	**L2**	**CO4**
		OR			
Q.8	**a.**	Illustrate Flume configuration using spooling diagram and logger sink with neat diagram.	**8**	**L2**	**CO4**
	b.	Describe how aggregating flume is achieved.	**6**	**L2**	**CO4**
	c.	Explain the role of multiple sinks for load balancing or failover.	**6**	**L2**	**CO4**
		Module – 5			
Q.9	**a.**	Illustrate different types of execution for PIG.	**6**	**L2**	**CO4**
	b.	Mention PIG latin Relational operators.	**8**	**L3**	**CO4**
	c.	Outline the concept of functions for Pig.	**6**	**L2**	**CO4**
		OR			
Q.10	**a.**	Interpret the need for Apache Spark for large scale data processing.	**6**	**L2**	**CO5**
	b.	Write a note on three ways to create RDDs.	**9**	**L2**	**CO5**
	c.	What are the different aspects of serialization in Spark?	**5**	**L2**	**CO5**

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22SCN/SCS22

Second Semester M.Tech. Degree Examination, June/July 2024
Artificial Intelligence and Machine Learning

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	What is state-space search method for problem solving?	10	L2	CO1
	b.	Give the problem statement for the eight puzzle problem and give the partial search tree for the eight puzzle problem.	10	L2	CO1
		OR			
Q.2	a.	List and explain the AI problem characteristics.	10	L2	CO1
	b.	State and explain Best-first search algorithm.	10	L2	CO1
		Module – 2			
Q.3	a.	Explain Nim Game problem with complete game tree for "Nim" with MAX playing first.	10	L2	CO1
	b.	Explain the problem reduction with respect to AND-OR graph for a three-disk problem with an example.	10	L3	CO2
		OR			
Q.4	a.	Prove the following theorem : Infer $((Q \rightarrow P) \wedge (Q \rightarrow R)) \rightarrow (Q \rightarrow (P \wedge R))$	10	L3	CO2
	b.	Explain MINMAX procedure, MINIMAX strategy and MINMAX algorithm.	10	L2	CO1
		Module – 3			
Q.5	a.	Explain any five conceptualization dependency rules with examples.	10	L2	CO1
	b.	Explain knowledge representation with frames with an example of frame network.	10	L3	CO2
		OR			
Q.6	a.	State and explain an algorithm on GOAL-STACK.	10	L2	CO1
	b.	Write predictions and descriptions of operations used in Block World Problem.	10	L2	CO1
		Module – 4			
Q.7	a.	Explain the concept of Bayes theorem with an example. Derive Bayes rule expression.	10	L3	CO3
	b.	Explain Inference using Bayesian Belief Network with its advantages and disadvantages.	10	L3	CO3
		OR			
Q.8	a.	Explain Supervised and Unsupervised learning. Explain any two examples of each.	12	L2	CO2
	b.	Explain any two clustering mechanisms.	8	L2	CO1
		Module – 5			
Q.9	a.	Explain the concept of support Vector machines, derive necessary expressions.	10	L3	CO2
	b.	What are fundamentals of case based reasoning and learning?	10	L3	CO2
		OR			
Q.10	a.	Explain RBF functions and network architecture with relevant diagram and formulas.	10	L3	CO2
	b.	Derive necessary expression for Back Propagation Rule in Artificial Neural Networks.	10	L3	CO2

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22SCS/SCN/SAM234

Second Semester M.Tech. Degree Examination, June/July 2024
Cyber Security and Cyber Law

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	List and explain the various phases involved in planning a cyber crime.	10	L2	CO1
	b.	Outline the significance of IT Act 2000 with respect to cybercrimes in India.	10	L3	CO1
		OR			
Q.2	a.	Analyze and give critical study on how botnets are used in cybercrime.	10	L3	CO1
	b.	Compare and contrast the Human based versus computer based cybercrimes with respect to social engineering.	10	L3	CO1
		Module – 2			
Q.3	a.	List and explain the techniques used in credit card fraud cyber crimes.	10	L2	CO2
	b.	With the help of examples, explain the possible attacks on mobile phones with respect to cyber crimes.	10	L2	CO2
		OR			
Q.4	a.	Consider an organization which is involved in storage of data for other clients/organization. List the security measures to be implemented in the organization with an example.	10	L3	CO2
	b.	Briefly discuss about the types of measures to be taken for protection of laptops through physical/logical access with respect to cybercrimes.	10	L2	CO2
		Module – 3			
Q.5	a.	Justify the role of proxy servers and anonymizers in reduction of cyber attacks. Explain with an example.	10	L2	CO2
	b.	Compare the DOS and DDOS attacks with a suitable example.	10	L3	CO2
		OR			
Q.6	a.	Briefly discuss about the phishing attack and identify theft attack with an example.	10	L2	CO3
	b.	Differentiate between virus and worms, Trojan horse and back door in cyber security.	10	L2	CO3

Module – 4					
Q.7	**a.**	Outline the various key steps involved in tracing of email for forensics purpose.	**10**	**L3**	**CO3**
	b.	Justify the need for computer forensics, cyber forensics and Digital Evidence Act.	**10**	**L2**	**CO3**
OR					
Q.8	**a.**	List and explain the various activities involved in the life cycle of a forensics investigation process.	**10**	**L2**	**CO3**
	b.	Briefly discuss about the relevance of OSI 7 layer model to computer forensics.	**10**	**L2**	**CO2**
Module – 5					
Q.9	**a.**	Discuss the various standards and regulations available for information security.	**10**	**L2**	**CO3**
	b.	What is the significance of cyber law? How it is useful in India computer field.	**10**	**L1**	**CO3**
OR					
Q.10	**a.**	List and outline the different categories of Intellectual Properties (IPR) defined in India.	**10**	**L1**	**CO3**
	b.	Write short notes on: (i) Patents (ii) Copy Right Law (iii) Software License (iv) Cyber laws	**10**	**L1**	**CO3**

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22SCS/SAM/SAD244

Second Semester M.Tech. Degree Examination, June/July 2024
Agile Technologies

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	What do Organization value?	5	L1	CO2
	b.	Mention Manifesto for Agile Software Development.	5	L1	CO2
	c.	Agile development focus on achieving personal and organizational success. Explain.	10	L2	CO2
		OR			
Q.2	a.	What are the advantages of XP programming and how to master Agile development?	10	L1	CO1
	b.	What is the working principle of Agile? List out the points.	10	L1	CO2
		Module – 2			
Q.3	a.	Discuss the functions of Domain Experts, Interaction designers and Programmers in XP team.	10	L1	CO2
	b.	What is the role of testers in XP team?	5	L1	CO1
	c.	Define XP concepts such as : i) Refactoring ii) Timeboxing iii) Stories iv) Iterations v) Mindfulness.	5	L1	CO1
		OR			
Q.4	a.	What are Prerequisite to practice XP?	10	L1	CO1
	b.	How XP can be applied in a Phase – Based organization? Explain.	10	L2	CO1
		Module – 3			
Q.5	a.	Discuss team strategy and organizational strategy to generate trust in XP team.	10	L2	CO1
	b.	Explain how to practice continuous integration and how to integrate it.	10	L2	CO2
		OR			
Q.6	a.	Describe when stories can be marked as "DONE DONE".	10	L2	CO2
	b.	How do you perform Release planning and Customer tests?	10	L2	CO2
		Module – 4			
Q.7	a.	"Let the Right people do Right Things". Explain.	10	L2	CO2

	b.	How simplicity is the art of maximizing the work not done? Explain.	10	L1	CO3
		OR			
Q.8	a.	What is the process to understand the project? Explain.	10	L1	CO2
	b.	When do you think its time to tune and adapt the process for a project?	10	L1	CO2
		Module – 5			
Q.9	a.	How do you justify the agility is related to deliver value?	10	L1	CO3
	b.	What is meant by QWAN?	5	L1	CO3
	c.	"Quality with a Name". Explain.	5	L2	CO3
		OR			
Q.10	a.	"Clarify Simplicity and define Good design of a project". Explain.	5	L3	CO3
	b.	"Eliminate Technical Debt" in a project. Explain.	5	L2	CO3
	c.	Explain only Releasable code has value.	10	L2	CO3

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