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New Horizon College of Engineering, Bangalore

Autonomous College affiliated to VTU, Accredited by NAAC with 'A' Grade & NBA

Semester End Examinations Jan - Feb 2021

WEB TECHNOLOGIES

Duration: 3 hrs

Max. Marks: 100

Answer five full questions choosing one complete question from each module.

Module 1

- | | | | | |
|------|--|---|----|-----|
| 1 a) | Write about internet, its origin and internet protocol addresses | 6 | L1 | CO1 |
| b) | Explain importance of security in web with public key encryption | 7 | L2 | CO1 |
| c) | Illustrate http protocol with request and response phase | 7 | L3 | CO1 |

OR

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|------|---|---|----|-----|
| 2 a) | Write about cell padding and cell spacing with example | 6 | L1 | CO1 |
| b) | Explain about forms with input type text, radio button and checkboxes | 7 | L2 | CO1 |
| c) | Illustrate nested lists with example | 7 | L3 | CO1 |

Module 2

- | | | | | |
|------|--|---|----|-----|
| 3 a) | Illustrate different text decoration with examples | 6 | L3 | CO2 |
| b) | List different conflict resolution methods | 7 | L1 | CO2 |
| c) | Explain different levels of style sheet | 7 | L2 | CO2 |

OR

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|------|--|---|----|-----|
| 4 a) | Illustrate ordered list with any two sequencing | 6 | L3 | CO2 |
| b) | List different border styles and show how they can be created | 7 | L1 | CO2 |
| c) | Explain simple selector, class selector and generic selectors in CSS | 7 | L2 | CO2 |

Module 3

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|------|---|----|----|-----|
| 5 a) | Analyze different ways to have element access with example | 10 | L4 | CO3 |
| b) | Develop a page using Javascript, a XHTML document that collect USN(the valid format is: A digit from 1 to 4 followed by two uppercase characters followed by two digits followed by two uppercase character followed by three digits) | 10 | L6 | CO3 |

OR

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|------|---|----|----|-----|
| 6 a) | Identify solution to validate given two passwords using Javascript | 10 | L4 | CO3 |
| b) | Develop a page to demonstrate event handling for displaying message on choosing any radio button option | 10 | L6 | CO3 |

Module 4

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|------|--|----|----|-----|
| 7 a) | Justify how reacting to mouse click can be created with example | 10 | L5 | CO4 |
| b) | Develop a web page to display message when a mouse button is pressed. Use display on onmousedown and hide on onmouseup | 10 | L6 | CO4 |

OR

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|------|--|----|----|-----|
| 8 a) | Justify how color of text and background can be changed for a web application. | 10 | L5 | CO4 |
| b) | Develop page to display using events grab, drag, and drop words | 10 | L6 | CO4 |

Module 5

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|------|---|---|----|-----|
| 9 a) | Explain how to read from file in PHP | 6 | L2 | CO5 |
| b) | Write program to show square root, square, cube, quad using for loop | 7 | L1 | CO6 |
| c) | Illustrate sort, asort, ksort for array
[Father]=>31,[Mother]=>27,[Son]=>8,[Daughter]=>29,[Brother]=>9 | 7 | L3 | CO5 |

OR

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|-------|--|---|----|-----|
| 10 a) | Explain how to use mysql_query, mysql_num_rows, mysql_num_fields | 6 | L2 | CO5 |
| b) | Write internal structure of array and explain | 7 | L1 | CO6 |
| c) | Illustrate different loop statements available in PHP with example | 7 | L3 | CO5 |

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SOFTWARE TESTING

Duration: 3 hrs

Max. Marks: 100

Answer five full questions choosing one complete question from each module.

		Module 1	Marks	RBT	CO
1 a)	State the currency converter problem along with its features		5	L1	CO1
b)	Draw the flowchart for the traditional implementation of the triangle problem.		5	L1	CO1
c)	Develop the Improved version of next date problem with help of simple version.		10	L3	CO1
		OR			
2 a)	Write the structured implementation of triangle problem.		5	L1	CO1
b)	How faults can be categorized based on severity levels?		5	L1	CO1
c)	Use the SATM problem as an example, draw the various communication screens and describe the problem statement.		10	L3	CO1
		Module 2			
3 a)	Demonstrate the types of equivalence class with examples focused on weak normal and strong robust classes.		10	L2	CO2
b)	Deduce the decision table for next date problem by considering suitable equivalence classes and illustrate using extended entry decision table.		10	L5	CO2
		OR			
4 a)	Illustrate the optimized decision table for triangle problem by considering suitable equivalence classes.		10	L2	CO2
b)	Determine the normal and worst case boundary value test cases for the triangle problem.		10	L5	CO2
		Module 3			
5 a)	How du-path influences the dataflow testing and derive the du paths for stocks, locks sales, commission variables.		10	L6	CO3
b)	Examine the need for basis path testing and analyze the same with McCabe's basis path graph.		10	L4	CO3
		OR			
6 a)	Construct the program graph and DD-paths graphs for triangle problem.		10	L6	CO3
b)	How du-path test coverage metrics helps in forming test cases to analyze the program using structural testing?		10	L4	CO3
		Module 4			
7 a)	Categorize and explain different types of software reviews.		10	L3	CO5
b)	Examine isLeap method from NextDate and derive the results.		10	L4	CO4
		OR			
8 a)	What is mutant? Illustrate the idea of Fuzzing and Fishing creel counts and fault insertion in testing.		10	L3	CO5
b)	Identify and explain the different stages of industrial strength inspection process.		10	L4	CO4
		Module 5			
9 a)	Illustrate the different types of TestNG annotations.		10	L3	CO6
b)	Identify and explain the features of TestNG.		10	L4	CO6
		OR			
10 a)	Illustrate the steps involved in Selenium WebDriver Installation.		10	L3	CO6
b)	Identify and explain the features of Selenium IDE.		10	L4	CO6

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Module 2				
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FUNDAMENTALS OF DATA SCIENCE

Duration: 3 hrs

Max. Marks: 100

Answer five full questions choosing one complete question from each module.

Module 1

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|--|----|----|-----|
| 1 a) Why data science is important? Show the relevance of the statement with a case study "Data science is moving decision making from gut feeling and guesstimates to better more informed ones driven by data" | 10 | L1 | CO1 |
| b) Summarize the importance of exploratory data analysis and also role of machine learning and data mining in data science. | 10 | L2 | CO1 |

OR

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|---|----|----|-----|
| 2 a) Define and explain the following terminologies i) Machine learning ii) Probabilistic Models iii) Statistical Models iv) Exploratory data analysis v) Artificial intelligence | 10 | L1 | CO1 |
| b) Summarize the steps to be followed in order to find the most common keywords people use in their job description. Assume the job descriptions have been scraped from the website indeed.com for companies actively hiring data scientists. | 10 | L2 | CO1 |

Module 2

- | | | | |
|---|----|----|-----|
| 3 a) For the given data set, exploratory data analysis revealed that there are duplicate entries in the text field of the given dataset. Apply your knowledge to identify the rows with duplicate text. | 10 | L3 | CO2 |
|---|----|----|-----|

	business_id	date	review_id	stars	text	type	user_id	cool	useful	funny
0	9yKzy9PApeIppOUJEtrvkg	2011-01-26	fWKvX83p0-ka4JS3dc6E5A	5	My wife took me here on my birthday for breakf...	review	rLt1BZxDX5vH5nAx9C3q5Q	2	5	0
1	ZRJwVLyzEJq1VAihDhYiow	2011-07-27	ljZ33sJrzXqU-0X6UBNwyA	5	I have no idea why some people give bad review...	review	0a2KyEL0d3Yb1V6aivbluQ	0	0	0
2	6oRAC4uyJCsj1X0WZpVSA	2012-06-14	IESLBzqUCLdSzSqm0eCSxQ	4	love the gyro plate. Rice is so good and I als...	review	0hT2KtflLioBpvh6cDC8JQg	0	1	0
3	_1QQZu/4zZOyFCvXc0o6Vg	2010-05-27	G-WvGalSbqqaMHIInByodA	5	Rosie, Dakota, and I LOVE Chaparral Dog Park!!...	review	uZet19T0NcROGOyFlughhg	1	2	0
4	6ozycU1RpktNG2-1BroVtw	2012-01-05	1uJFq2r5QJG_6ExMRCaGw	5	General Manager Scott Petello is a good egg!!!!...	review	vYmM4KTsC8ZIQBg-j5MWkw	0	0	0

b) Analyze each of the following data elements as N, nominal; O, ordinal; or I/R, interval/ratio data: 10 L4 CO2

- i). zip code of your local address
- ii) letter grade you will receive in this class
- iii) country you were born in
- iv) amount of money you have with you
- v) mileage (miles per gallon) your car gets

OR

4 a) For the given data, exploratory data revealed that there are missing data values in the 'Age' column of the given dataset. Apply your knowledge to find missing values and also the steps for replacing the missing values with the mean value for the attribute. 10 L3 CO2

	Survived	Pclass	Name	Sex	Age
0	0	3	Braund, Mr. Owen Harris	male	22
1	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38
2	1	3	Heikkinen, Miss. Laina	female	26
3	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35
4	0	3	Allen, Mr. William Henry	male	35

- b) What is data pre-processing? Examine the steps in data pre-processing that can be used on the given tweet and also explain the steps. "This Wednesday morn, are you early to rise? Then look East. The Crescent Moon joins Venus & Saturn. Afloat in the dawn skies." 10 L4 CO2

Module 3

- 5 a) A company buys 70% of its computers from company X and 30% from company Y. Company X produces 1 faulty computer per 5 computers and Company Y produces 1 faulty computer per 20 computers. A computer is found faulty, apply Bayes theorem to examine the chances that it was bought from company X. Give proper reasons for each part of your answer. 10 L3 CO3
- b) Compare and contrast discrete and continuous random variables 10 L4 CO4

OR

- 6 a) Identify the steps in the process of conducting a hypothesis test. Illustrate how hypothesis test can be concluded using one sample t test. 10 L3 CO3
- b) In the olden days there was a probability of 0.8 of success in any attempt to make a telephone call. Let X denotes the success in getting through. 10 L4 CO4
- i) Analyze the problem to come to a conclusion regarding the type of random variable X. Give valid proof to defend your answers.
- ii) Examine the probability of having 7 successes in 10 attempts.
- iii) Analyze the expected value and variance of the variable X

Module 4

- 7a) Determine the procedure to be followed during the decision tree construction using an example 10 L5 CO5
- b) Consider the following data table, Construct a data model using Naïve Bayes classifier to predict whether a Red colour, Domestic SUV would be stolen or not 10 L6 CO5

COLOR	TYPE	ORIGIN	STOLEN?
Red	Sports	Domestic	Yes
Red	Sports	Domestic	No
Red	Sports	Domestic	Yes
Yellow	Sports	Domestic	No
Yellow	Sports	Imported	Yes
Yellow	SUV	Imported	No
Yellow	SUV	Imported	Yes
Yellow	SUV	Domestic	No
Red	SUV	Imported	No
Red	Sports	Imported	Yes

OR

- 8 a) Interpret the importance and defend the procedure of SVM algorithm in comparison with other linear classifiers using an example 10 L5 CO5
- b) Construct 3 clusters out of the given data points using k-means algorithm. Use Euclidean distance to cluster the following 8 examples into 3 clusters: $A1=(2,10)$, $A2=(2,5)$, $A3=(8,4)$, $A4=(5,8)$, $A5=(7,5)$, $A6=(6,4)$, $A7=(1,2)$, $A8=(4,9)$. Suppose that the initial seeds (centers of each cluster) are $A1$, $A4$ and $A7$. Run the k-means algorithm for 1 epoch and show updated clusters and the new centroid. 10 L6 CO5

Module 5

- 9 a) Identify the strategy involved in verbal communication 10 L3 CO6
- b) Compare line graphs, bar charts and histograms with proper example and diagram 10 L4 CO6
- OR
- 10a Identify the why / how/ what strategy of presenting 10 L3 CO6
- b) Compare correlation and causation with an example 10 L4 CO6

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ARTIFICIAL INTELLIGENCE

Duration: 3 hrs

Max. Marks: 100

Answer five full questions choosing one complete question from each module.

		Module 1	Marks	RBT	CO
1 a)	Define AI. List out the disciplines involved in AI and also provide real time applications of AI		10	L1	CO1
b)	Explain the state space representation by using water jug problem		10	L2	CO1
		OR			
2 a)	Define heuristic search and also explain generate and test algorithm and simulated annealing algorithm		10	L1	CO1
b)	Demonstrate different characteristics of problems with example		10	L2	CO1
		Module 2			
3 a)	How would you construct the sentence using first order logic		10	L3	CO2
b)	Analyze the inference rules for reasoning patterns in propositional logic		10	L4	CO2
		OR			
4 a)	Identify the steps involved in knowledge engineering process to construct the knowledgebase with example		10	L3	CO2
b)	Analyze the steps to convert the wffs to Clause form with proper example		10	L4	CO2
		Module 3			
5 a)	Apply non monotonic reasoning for ABC murder story example		10	L3	CO3
b)	Identify the syntax of FOL and also write about quantifiers available in FOL		10	L6	CO3
		OR			
6 a)	How will you apply first order logic in kinship domain		10	L3	CO3
b)	Decide who has committed crime in ABC murder story using JTMS		10	L6	CO3
		Module 4			
7a)	How will you interpret the complex facts using conceptual dependency? Explain with minimum 5 different examples.		10	L5	CO4
b)	Max went out to a shopping mall last night. When he paid for it he noticed that the he was running out money and left the ATM card at home itself. Analyze the scenes involved in the script		10	L4	CO4
		OR			
8 a)	Justify your answer to represent partitioned semantic networks.		10	L5	CO4
b)	Analyze the concept of conceptual dependency with the set of primitive acts, primitive categories and rules with proper examples		10	L4	CO4
		Module 5			
9 a)	Illustrate the planning concept with the help of block world problem		10	L3	CO5
b)	Analyze all the methods to improve the performance of minimax procedure.		10	L4	CO6
		OR			
10a)	How will you apply iterative deepening for single agent heuristic search? Explain with the algorithm		10	L3	CO5
b)	Compare constraint posting and state space search.		10	L4	CO6

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INTERNET OF THINGS

Duration: 3 hrs

Max. Marks: 100

Answer five full questions choosing one complete question from each module.

Module 1

- | | | | | |
|------|---|----|----|-----|
| 1 a) | Define IOT and Digitization. Describe the impact of IOT | 5 | L1 | CO1 |
| b) | Explain the challenges and problems faced by IOT | 5 | L2 | CO1 |
| c) | Draw a neat diagram of one M2M IOT standardized architecture and discuss the architecture.. | 10 | L3 | CO1 |

OR

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|------|--|----|----|-----|
| 2 a) | List the components of the core IoT Functional stack that have to work together for an IoT network to be operational | 5 | L1 | CO1 |
| b) | Discuss briefly Simplified Architecture of IOT | 5 | L2 | CO1 |
| c) | Explain how the unique requirements of IoT to distribute data management throughout the IoT system is solve using Fog and Edge computing | 10 | L3 | CO1 |

Module 2

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|------|---|----|----|-----|
| 3 a) | Explain the basic building blocks of IOT. How are they classified? Give examples for each. | 5 | L2 | CO2 |
| b) | Describe the communication criterion for connecting and communication of smart objects | 5 | L1 | CO2 |
| c) | Identify the topology schemes dominant based on the access technologies available for connecting IoT devices and explain. | 10 | L4 | CO2 |

OR

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|------|--|----|----|-----|
| 4 a) | Discuss the Protocol Stacks Utilizing IEEE 802.15.4 | 5 | L2 | CO2 |
| b) | Draw and describe in brief LoRaWAN Architecture | 5 | L1 | CO2 |
| c) | With the protocol stack of Zigbee IP and frame formats explain the PHY and MAC layer | 10 | L4 | CO2 |

Module 3

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|------|--|---|----|-----|
| 5 a) | Identify the key advantages of the IP suite as a solution to the requirements for Internet of Things | 6 | L3 | CO3 |
| b) | Categorize various factors between CoAP and MQTT | 6 | L3 | CO3 |
| c) | Analyze why optimization is necessary for IP. | 8 | L4 | CO3 |

OR

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|------|--|---|----|-----|
| 6 a) | Use 6TiSCH architecture to define four schedule management mechanism and three forwarding models | 6 | L3 | CO3 |
|------|--|---|----|-----|

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|----|--|---|----|-----|
| b) | Categorize the IoT Protocol Stack Utilizing 6LoWPAN and an IP Protocol Stack | 6 | L3 | CO3 |
| c) | Identify the main factors applicable to IPv4 and IPv6 to support in an IoT solution. | 8 | L4 | CO3 |

Module 4

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|-----|---|----|----|-----|
| 7a) | Identify major types of machine learning that are used to gain business insights From IoT data. | 10 | L4 | CO4 |
| b) | Illustrate the three stages in streaming flows of data in motion and the functions of edge analytics processing unit. | 10 | L3 | CO4 |

OR

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|------|---|----|----|-----|
| 8 a) | In the IoT world examine some of the most common technologies used in big data and discuss them. | 10 | L4 | CO4 |
| b) | Illustrate the frame works of Formal Risk Analysis Structures for securing the operational environment. | 10 | L3 | CO4 |

Module 5

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|------|---|----|----|-----|
| 9 a) | Justify how IoT technologies can be leveraged to improve the lives of citizens and the efficient management of urban centers. | 10 | L5 | CO5 |
| b) | Design a circuit and develop a program for Arduino/ Raspberry Pi to interface temperature /humidity Sensor(DHT11) to record room temperature. | 10 | L6 | CO5 |

OR

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|------|---|----|----|-----|
| 10a) | Choose an IoT architecture to make Smart city. Justify the chosen architecture with suitable explanation. | 10 | L5 | CO5 |
| b) | Design a circuit and develop a program to interface stepper motor to interface with Arduino/ Raspberry | 10 | L6 | CO5 |

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DATA ANALYTICS

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			Marks	RBT	CO
Module 1					
1	a)	Describe snowflake schema for Microsoft company / Indigo airlines.	10	L1	CO1
	b)	Explain types of Data Analytics	10	L2	CO1
OR					
2	a)	Write a note on fundamentals of data analytics.	10	L1	CO1
	b)	Explain Characteristics of Dimensional modeling	10	L2	CO1
Module 2					
3	a)	Illustrate aggregate functions with examples	10	L3	CO2
	b)	Illustrate the concept of advanced compression.	10	L3	CO2
OR					
4	a)	Draw the process of high availability in vertica with example	10	L3	CO2
	b)	Illustrate the various types of SQL with commands and description	10	L3	CO2
Module 3					
5	a)	Describe Merging and Partitioning in HP Vertica	10	L1	CO3
	b)	Differentiate between different projection types	10	L2	CO4
OR					
6	a)	Find the importance of Database Designer and draw it with suitable examples	10	L1	CO3
	b)	Explain different Projection types with suitable examples	10	L2	CO4
Module 4					
7	a)	Analyze the different process of web analytics	10	L4	CO5
	b)	Evaluate the different steps of closed loop model with an example	10	L5	CO5
OR					
8	a)	Examine the methods involved in Marketing Analytics in detail.	10	L4	CO5
	b)	Interpret the different reports generated on Google Analytics.	10	L5	CO5
Module 5					
9	a)	Identify the different steps to be followed in marketing Analytics	10	L4	CO6
	b)	Evaluate the different strategies followed by Xerox corporation to become a leading success company.	10	L5	CO6
OR					
10a)		Analyze the different steps in segmenting the audience	10	L4	CO6
	b)	Recommend the different types of steps to formulate the audience and describe any three steps in details with an example	10	L5	CO6