

New Horizon College of Engineering, Bangalore

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

Semester End Examinations Nov/Dec 2019

WEB TECHNOLOGIES

Duration: 3 hrs

Max. Marks: 100

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

Module 1

- | | | | |
|---|-----------|-----------|------------|
| 1 a) Explain the Uniform Resource Locator along with suitable example. | 5 | L2 | CO1 |
| b) What is the Hypertext Transfer Protocol? Also brief out the format of HTTP. | 10 | L1 | CO1 |
| c) Analyze the following table and design the HTML document to get the same output | 5 | L4 | CO1 |

Specification Table with Hours and Marks

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Introduction to Internet Technology	2	4	4	0	8
II	Basics of HTML & CSS	6	0	2	6	8
III	Active Server Pages 3.0	6	4	8	0	12
IV	Server Side Coding with VBScript and XML	8	2	4	8	14
V	ASP Objects & Components	10	4	4	6	14
VI	Accessing database with ASP & ADO	10	4	4	6	14
Total		42	18	26	26	70

OR

- | | | | |
|--|-----------|-----------|------------|
| 2 a) Explain the Multipurpose Internet Mail Extension? | 5 | L2 | CO1 |
| b) State the uses of following tags with examples i) <select> ii) <div> iii) <blockquotes> iv) <pre> v) <sub> <sup> | 10 | L1 | CO1 |
| c) Analyze the following table and design the HTML document to get the same output | 5 | L4 | CO1 |

HTML List: Ordered, Unordered & Definition List

Following is the list of proposed student activities like:

1. Develop programs related with unit vice topics in computer laboratory.
 2. Develop any module of to be useful in real life application.
 3. Multimedia presentation of module developed by students.
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List of Software/Learning Websites

- [ASP Tutorial - Google](http://www.google.com/asp)
www.google.com/asp
 - [Classic ASP Tutorials & Articles - Web Wiz](http://www.webwiz.co.uk/Knowledgebase)
[www.webwiz.co.uk - Knowledgebase](http://www.webwiz.co.uk/Knowledgebase)
 - [VBScript Tutorial - Tutorials Point](http://www.tutorialspoint.com/vbscript/index.htm)
www.tutorialspoint.com/vbscript/index.htm
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HTML

Hyper Text Markup Language

XML

eXtensible Markup Language

Module 2

- | | | | | |
|-------------|---|-----------|-----------|------------|
| 3 a) | Justify the importance of text decoration properties in Web Technology using sample examples. | 5 | L5 | CO2 |
| b) | Show with examples how different levels of style sheets in CSS can be used. | 10 | L2 | CO2 |
| c) | State the different types of pseudo-classes used in CSS along with examples. | 5 | L1 | CO2 |

OR

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|-------------|--|-----------|-----------|------------|
| 4 a) | Evaluate the different List properties in terms of CSS. | 5 | L5 | CO2 |
| b) | Explain with examples the different selector forms in CSS. | 10 | L2 | CO2 |
| c) | What is the Box Model? | 5 | L1 | CO2 |

Module 3

- | | | | | |
|-------------|--|-----------|-----------|------------|
| 5 a) | Examine the JavaScript Array methods with examples. | 5 | L4 | CO3 |
| b) | Create a HTML5 program with Javascript script to take a telephone number from the user as input. The phone number should be in the format: ddd-dddd-ddd. Validate the input string and display message. Discuss the validation method used in the program. | 10 | L6 | CO3 |

-
- c) Evaluate with example split, charAt, indexOf, substr and substring methods used in Javascript Strings **5 L5 CO3**

OR

- 6 a) Examine with diagrams Keyboard input and Screen Output in Javascript **5 L4 CO3**
- b) Develop a XHTML Program with Javascript script for validation of Email. **10 L6 CO3**
Discuss the method used in the program.
- c) Evaluate the different Primitive types used in javascript. Give examples. **5 L5 CO3**

Module 4

- 7a) Write a dynamic XHTML Program with Javascript script to illustrate the dynamic stacking of paragraphs **10 L3 CO4**
- b) Develop a dynamic XHTML Program with Javascript script, to do the following : (i) Change the background color of a paragraph on clicking a button. (ii) Change the visibility of a paragraph with click of a button **10 L6 CO4**

OR

- 8 a) Write an XHTML document to display a paragraph and three buttons. The buttons should be labeled 1, 2, and 3. When button 1 is pressed, it should change the content of the paragraph. Button 2 should make the paragraph invisible. Button 3 should increase and font size and change the foreground color of the paragraph. **10 L3 CO4**
- b) Design HTML5 program to move a paragraph from one position to another on click of a button. The user needs to give X and Y coordinates in a form and then click the button. The final position of the paragraph should be displayed on the screen. **10 L6 CO4**

Module 5

- 9 a) With a diagram explain the logical internal structure of array in PHP **5 L2 CO5, CO6**
- b) Write a program using PHP to store student name and age in the database. **10 L3 CO5, CO6**
Finally display all records with a specific name.
- c) Describe how session tracking is done in PHP **5 L1 CO5,**

OR

- 10a** Explain 5 different Array methods in PHP **5 L2 CO5,**
CO6
- b)** Write a program using PHP for Sports Registration application with participants name, phone number and email taken as input. Store the data in a database and display all records. **10 L3 CO5,**
CO6
- c)** What is a cookie? How can it be created in PHP script? **5 L1 CO5,**
6

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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

- | | |
|---|--|
| 1 a) Define the following :i)Error ii)Fault iii)Failure iv)Test v)Test case
b) Draw the flowchart for the traditional triangle program implementation.
c) Draw and explain the SATM problem. | 5 L1 CO1
5 L1 CO1
10 L3 CO1 |
|---|--|

OR

- | | |
|--|--|
| 2 a) List the faults classified by severity.
b) Draw the Data flow diagram for a structured triangle program.
c) Illustrate with a diagram the currency converter and Garage Door opener. | 5 L1 CO1
5 L1 CO1
10 L3 CO1 |
|--|--|

Module 2

- | | |
|--|--|
| 3 a) Explain the importance of decision table and its techniques to solve triangle problem
b) Justify the usage of BVA and its types to uncover errors. | 10 L2 CO2
10 L5 CO2 |
|--|--|

OR

- | | |
|--|--|
| 4 a) Explain how weak normal and strong robust equivalence classes techniques with an example text cases.
b) Determine the types of BVA that can be generated for triangle problem. | 10 L2 CO2
10 L5 CO2 |
|--|--|

Module 3

- | | |
|---|--|
| 5 a) How test coverage metrics can be devised after computing dd -paths from the program graph as per Miller.
b) Analyze any program graph G(P) and set of program variables V and examine how these terms can be defined
a)defining node of a variable
b)usage node of a variable | 10 L6 CO3
10 L4 CO3 |
|---|--|

-
- c)definition use path with respect to variable
 d)definition clear path with respect to variable
 e)p-use and c-use

OR

- 6 a)** Construct various du-paths for the variables totalstocks, total locks ,sales, commission variables. **10** **L6** **CO3**
- b)** Examine the importance of the du path test coverage metrics with a hierarchy diagram. **10** **L4** **CO3**

Module 4

- 7a)** Using Next date problem examine is Leap method and derive the results **10** **L3** **CO5**
- b)** How different kinds of mutant can be generated from the original commission problem? **10** **L2** **CO4**

OR

- 8 a)** Identify the stages in industrial strength inspection process and explain the same **10** **L3** **CO5**
- b)** Explain the following **10** **L2** **CO5**
- i)roles and responsibilities of personnel involve in review
 - ii)types of review and its outcomes

Module 5

- 9 a)** Illustrate the different types of TestNG annotations. **10** **L3** **CO6**
- b)** Identify and explain the features of Selenium IDE. **10** **L4** **CO6**

OR

- 10a)** Illustrate the steps involved in Selenium WebDriver Installation. **10** **L3** **CO6**
- b)** Identify and explain the features of TestNG. **10** **L4** **CO6**

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MOBILE APPLICATION DEVELOPMENT

Duration: 3 hrs

Max. Marks: 100

Answer FIVE full questions choosing ONE complete question from each module.

Module 1

- | | | | |
|-------------|---|---|-----------|
| 1 a) | Explain android architecture with diagram. | 7 | L2 |
| b) | Identify the use of android emulator. | 6 | L3 |
| c) | Analyze the functioning of dalvik virtual machine with diagram. | 7 | L4 |

OR

- | | | | |
|-------------|--|---|-----------|
| 2 a) | Explain android project structure. | 7 | L2 |
| b) | Apply the use of different views for an application and draw the layout. | 6 | L3 |
| c) | Analyze the use of debug tools and profilers. | 7 | L4 |

Module 2

- | | | | |
|-------------|---|---|-----------|
| 3 a) | Develop an application that uses spinner , draw the layout and write the java code. | 8 | L6 |
| b) | Apply the use of relative layout for a simple calculator and draw the layout. | 8 | L3 |
| c) | Interpret the different phases of an activity life cycle in android with diagram. | 4 | L5 |

OR

- | | | | |
|-------------|--|---|-----------|
| 4 a) | Develop an application that uses radio button ,draw the layout and write the java code. | 8 | L6 |
| b) | Apply the use of linear layout for an application that has employee details and draw the layout. | 8 | L3 |
| c) | Justify the importance of customizing toast in android. | 4 | L5 |

Module 3

- | | | | |
|-------------|---|---|-----------|
| 5 a) | Explain Service life cycle with a neat diagram | 7 | L2 |
| b) | Examine implicit and explicit intents | 7 | L4 |
| c) | Create a mobile app using Implicit intent to display the Browser and Dial buttons. On clicking these buttons, it should go to the respective pages. | 6 | L6 |

Write the Java file and draw the layout for same

OR

- 6 a)** Explain Broadcast receiver 7 L2
b) Examine native Android actions 7 L4 CO3
c) Create a mobile app using Explicit intent to display the login page. On giving the wrong credentials it should display the toast message and if credentials are correct it should display Welcome and the username.
Write the Java file and draw the layout for same

Module 4

- 7a)** Explain Async Task 6 L2
b) Evaluate the types of data storages in Android 8 L5 CO4,
c) Create a Mobile App for smart phones The College details using Android. The app should store the college name, college code and location in a file 6 L6 CO5

OR

- 8 a)** Explain preferences activity 6 L2
b) Interpret the importance of Shared preferences 8 L5 CO4,
c) Create a Mobile App for smart phones Book details using Android. The app should store the Book code, book name and publisher code in SQLite database 6 L6 CO5

Module 5

- 9 a)** Illustrate the uses of distributing the app using Google play 6 L3
b) Evaluate the process of Signing and versioning the app 8 L5 CO6
c) Analyze the best practices for security 6 L4

OR

- 10a)** Illustrate the uses of building apps with camera 6 L3
b) Evaluate the process of Building apps with location based services and google maps 8 L5 CO6
c) Analyze the best practices for privacy 6 L4

method is superior to other. Give reasons

Module 4

- 7a) Examine the difference between decision tree approach and random forest 10 L4 CO4
 b) Compile the steps to be followed by K nearest neighbor algorithm for classification. 10 L6 CO4

OR

- 8 a) Examine the difference between linear regression and logistic regression 10 L4 CO4
 b) Compile the iterative method followed by k means algorithm to partition the data set into k clusters 10 L6 CO4

Module 5

- 9 a) Evaluate the why / how/ what strategy of presenting. 10 L5 CO5
 b) Explain correlation and causation with an example 10 L2 CO5

OR

- 10a) Evaluate the phenomenon in probability and statistics by Simpson's Paradox. 10 L5 CO5
 b) Write short notes with proper examples and diagrams on
 i) bar chart
 ii) histogram 10 L2 CO5

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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

- 1 a) Describe how data science is related to mathematics, computer science and domain knowledge. 10 L1 CO1
 b) Analyze the case study where job descriptions have been scraped from the website indeed.com for companies actively hiring data scientists. Explain the steps to be followed in order to find the most common keywords people use in their job description. 10 L4 CO1

OR

- 2 a) Define data and data science. Describe the evolution of data science and why is it considered as a necessary domain in this era? 10 L1 CO1
 b) Analyze the importance of exploratory data analysis and also the role of machine learning and data mining in data science. 10 L4 CO1

Module 2

- 3 a) Analyze and discover the level of measurement being used in each scenario. Give reasons for your findings. 10 L4 CO2
 a) The number of motor-vehicle accidents on a particular stretch of the Pacific Highway in a week.
 b) Heat measured in degree Celsius.
 c) Children in elementary school are evaluated and classified as non-readers (0), beginning readers (1), grade level readers (2), or advanced readers (3).
 d) Your local police force wants to install cameras that can "catch" drivers who run red lights. They choose a busy intersection, install a test camera, and determine whether each car stops safely or "runs" the light.
 e) The teacher of a class of third graders records the eye color of each student.

- b) Providing examples, illustrate the differences between different types of data – structured, semi structured and unstructured data.

OR

4 a)

country	beer_servings	spirit_servings	wine_servings	total_litres_of_pure_alcohol	continent
0 Afghanistan	0	0	0	0.0	AS
1 Albania	89	132	54	4.9	EU
2 Algeria	25	0	14	0.7	AF
3 Andorra	245	138	312	12.4	EU
4 Angola	217	57	45	5.9	AF

Given is the world alcohol consumption dataset released by WHO. Compare and analyze the output of Pandas describe() function when applied on the columns ‘beer_servings’ and ‘continent’. Give reasons.

- b) The table below displays a selection of variables from a study dataset.

10 L3 CO2

ID	Age	Gender	Height	Blood group	LDL†	Feeling happy?	Number of children	Smoke?	Social class
1	25	F	1.62	B	150	Agree	0	No	I
2	35	F	1.58	O	123	Strongly agree	1	Yes	II
3	44	M	1.35	A	178	Disagree	3	Yes	I
4	28	F	1.54	AB	205	Disagree	0	No	III
5	35	M	1.35	O	229	Indifferent	2	Yes	I
6	42	M	1.21	B	215	Agree	2	Yes	IV
7	36	F	1.76	A	130	Strongly disagree	1	No	IV
8	38	M	1.57	A	175	Disagree	1	Yes	V
9	30	M	1.47	AB	240	Indifferent	0	No	III
10	40	F	1.18	B	167	Strongly agree	6	No	I
:	:	:	:	:	:	:	:	:	:

† LDL =Low Density Lipoprotein

Categorize the variables in the given dataset

- i) the quantitative variables
- ii) the qualitative variables
- iii) the continuous variables
- iv) the discrete variables
- v) the nominal variables
- vi) the ordinal variables
- vii) the interval variables
- viii) the ratio variables

Module 3

- 5 a) Box P has 2 red balls and 3 blue balls. Box Q has 3 red balls and 1 blue ball. Selecting a ball includes 2 steps – selecting a box in the first place and then choosing a ball from the selected box such that each ball in the box is equally likely to be chosen. The probabilities of selecting boxes P and Q are $1/3$ and $2/3$ respectively. Given that a ball selected in the above process is a red ball, apply Bayes theorem to find the chance that it came from box P. Give proper explanation on the concept used to solve the problem.

- 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.
- i) Choose the type of random variable X. Give valid proof to defend your answers.
 - ii) Solve to find the probability of having 7 successes in 10 attempts.
 - iii) Compute the expected value and variance of the variable X

OR

- 6 a) Identify the application, probability function, expected value and variance for the binomial, geometric, poisson and continuous random variable
- b) Identify the differences between point estimates and confidence interval methods of inferential statistics and choose which of the

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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

- | | | | | |
|-------------|---|-----------|----|-----|
| 1 a) | Describe about Artificial Intelligence. | 5 | L1 | CO1 |
| b) | Illustrate about Hill climbing problem. | 10 | L3 | CO1 |
| c) | Characterize about best first search. | 5 | L4 | CO1 |

OR

- | | | | | |
|-------------|---------------------------------------|-----------|----|-----|
| 2 a) | Describe about Problem Solving. | 5 | L1 | CO1 |
| b) | Illustrate about spaces and search. | 10 | L3 | CO1 |
| c) | Characterize about problem reduction. | 5 | L4 | CO1 |

Module 2

- | | | | | |
|-------------|---|-----------|----|-----|
| 3 a) | Describe about Knowledge-based agents. | 5 | L1 | CO2 |
| b) | Illustrate about Reasoning patterns in propositional logic. | 10 | L3 | CO2 |
| c) | Justify about propositional logic. | 5 | L5 | CO2 |

OR

- | | | | | |
|-------------|--|-----------|----|-----|
| 4 a) | Describe about first order logic. | 5 | L1 | CO2 |
| b) | Illustrate about Knowledge engineering in first-order logic. | 10 | L3 | CO2 |
| c) | Justify about semantics of first-order logic. | 5 | L5 | CO2 |

Module 3

- | | | | | |
|-------------|--|-----------|----|-----|
| 5 a) | Explain about Symbolic Reasoning. | 5 | L2 | CO3 |
| b) | Characterize about implementation of BFS. | 10 | L4 | CO3 |
| c) | Justify about Statistical reasoning-Bayes theorem. | 5 | L5 | CO3 |

OR

- | | | | | |
|-------------|---|-----------|----|-----|
| 6 a) | Explain about Non monotonic reasoning. | 5 | L2 | CO3 |
| b) | Characterize about implementation of DFS. | 10 | L4 | CO3 |
| c) | Justify about Bayesian networks. | 5 | L5 | CO3 |

Module 4

- | | | | | |
|------------|---|-----------|-----------|------------|
| 7a) | Illustrate about Filter Structures. | 5 | L3 | CO4 |
| b) | Compose about semantic nets and frames. | 10 | L6 | CO4 |
| c) | Characterize about conceptual dependency. | 5 | L4 | CO4 |

OR

- | | | | | |
|-------------|--|-----------|-----------|------------|
| 8 a) | Illustrate about Forms of learning. | 5 | L3 | CO4 |
| b) | Compose about Learning decision trees. | 10 | L6 | CO4 |
| c) | Characterize about Ensemble learning. | 5 | L4 | CO4 |

Module 5

- | | | | | |
|-------------|---|-----------|-----------|----------------|
| 9 a) | Explain about mini-max search procedure. | 5 | L2 | CO5,CO6 |
| b) | Characterize about additional refinements. | 10 | L4 | CO5,CO6 |
| c) | Illustrate about reference on specific games. | 5 | L3 | CO5,CO6 |

OR

- | | | | | |
|-------------|--|-----------|-----------|----------------|
| 10a) | Explain about Components of a planning system. | 5 | L2 | CO5,CO6 |
| b) | Characterize about goal stack planning. | 10 | L4 | CO5,CO6 |
| c) | Illustrate about reactive systems. | 5 | L3 | CO5,CO6 |

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CYBER CRIME, FORENSICS AND LAW

Duration: **3 hrs**

Max. Marks: **100**

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

Module 1

- 1 a)** Define the terms cybercrime and information security. 5 L1 CO1
- b)** Discuss who are the cybercriminals? 5 L2 CO1
- c)** Illustrate in detail the classification of cybercrimes. 10 L3 CO1

OR

- 2 a)** List the cybercrimes from the Indian perspective. 5 L1 CO1
- b)** Explain Email spoofing and spamming. 5 L2 CO1
- c)** Define cyber defamation? Illustrate the types of defamation. 10 L3 CO1

Module 2

- 3 a)** Define phishing? Describe the various phishing techniques. 5 L1 CO2
- b)** List and explain the types of DoS attacks. 5 L2 CO2
- c)** Illustrate the following: proxy server, Anonymizers, Trojan horse and steganography. 10 L3 CO2

OR

- 4 a)** What is buffer overflow? Describe the types of buffer overflow. 5 L1 CO2
- b)** Differentiate between virus and worms 5 L3 CO2
- c)** Illustrate the SQL injection attack and describe steps to prevent SQL injection attack. 10 L3 CO2

Module 3

- 5 a)** Identify the different challenges to Indian law and cybercrime scenario in India 10 L3 CO3
- b)** Examine the key points of punishment to cybercriminals. 10 L4 CO3

OR

- 6 a)** Identify the need for cyber laws and also the key points of Indian IT act 10 L3 CO4
- b)** Examine the impact of oversights in ITA 2000 regarding digital signatures? 10 L4 CO4

Module 4

- | | | | | |
|------------|--|-----------|-----------|------------|
| 7a) | Examine the relevance of OSI 7 layer model to computer forensics. | 10 | L4 | CO5 |
| b) | Assess how chain of custody can be applied for a real life scenario. | 5 | L5 | CO5 |
| c) | Compare the different types of attackers who hack networks. | 5 | L6 | CO5 |

OR

- | | | | | |
|-------------|---|-----------|-----------|------------|
| 8 a) | Analyze an email from forensics investigation perspective. | 10 | L4 | CO5 |
| b) | Assess the different strategies in solving a real life computer forensics case. | 5 | L5 | CO5 |
| c) | Discuss on antiforensics | 5 | L6 | CO5 |

Module 5

- | | | | | |
|-------------|--|-----------|-----------|------------|
| 9 a) | Analyze the different iPod forensics approaches. | 10 | L4 | CO6 |
| b) | Justify the importance of iPhone forensics. | 5 | L5 | CO6 |
| c) | Discuss on real life use of forensics | 5 | L6 | CO6 |

OR

- | | | | | |
|-------------|---|-----------|-----------|------------|
| 10a) | Examine the cell phone tools based on its features. | 10 | L4 | CO6 |
| b) | Justify the importance of principles which are accepted in forensics community. | 5 | L5 | CO6 |
| c) | Discuss the organizational guidelines on Cell phone forensics | 5 | L6 | 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) Describe why IOT required for real world? | 5 | L1 | CO1 |
| b) Distinguish some of the differences between IT and OT networks and their various challenges. | 5 | L2 | CO1 |
| c) Illustrate the IoT World Forum (IoTWF) Standardized Architecture with a neat block diagram and explain each layer. | 10 | L3 | CO1 |

OR

- | | | | |
|---|-----------|-----------|------------|
| 2 a) List and explain a few of the most significant challenges and problems that IoT is currently facing. | 5 | L1 | CO1 |
| b) Explain a framework for the digital ceiling in IOT flat-form. | 5 | L2 | CO1 |
| c) Illustrate with a diagram to show how Fog Computing layer is useful in IoT Data Management and Stack Computing. | 10 | L3 | CO1 |

Module 2

- | | | | |
|---|-----------|-----------|------------|
| 3 a) Explain the different criteria for connecting Smart objects. | 5 | L2 | CO2 |
| b) Describe the four characteristics of Smart Objects with suitable diagram. | 5 | L1 | CO2 |
| c) Identify the different IOT access technologies of the Zigbee | 10 | L4 | CO2 |

OR

- | | | | |
|---|-----------|-----------|------------|
| 4 a) Explain the topologies for connecting IoT | 5 | L2 | CO2 |
| b) List the different sensor types with examples. | 5 | L1 | CO2 |
| c) Identify the different IOT access technologies of the IEEE 802.15.4 | 10 | L4 | CO2 |

Module 3

- | | | | |
|--|----------|-----------|------------|
| 5 a) Illustrate CoAP Message format and their fields with a diagram | 6 | L3 | CO3 |
| b) Categorize and explain the key advantages of Internet Protocol | 6 | L3 | CO3 |
| c) Describe with a neat diagrams the header stacks of 6LoWPAN | 8 | L4 | CO3 |

OR

- | | | | |
|--|----------|-----------|------------|
| 6 a) Use 6TiSCH architecture to define four schedule management mechanism and three forwarding models | 6 | L3 | CO3 |
| b) Classify various factors between CoAP and MQTT | 6 | L3 | CO3 |

-
- c) Identify the three levels of MQTT QoS with the diagram explain each level 8 L4 CO3

Module 4

- 7a) Derive a graph of value and complexity based on different types of data analytics and explain each type 6 L4 CO4
b) Illustrate with a flow chart to show how the neural networks mimic the way human brain works with an example 8 L3 CO4
c) Identify the common security challenges faced in IOT industries and explain 6 L4 CO4

OR

- 8 a) Identify few scenarios why security is important for IoT devices 6 L4 CO4
b) Illustrate with an example the Purdue Model for control hierarchy 8 L3 CO4
c) Organize Lambda architecture for data streaming and batch processing. 6 L4 CO4

Module 5

- 9 a) Choose an IoT architecture to make Smart city and Explain in detail 10 L5 CO5
b) Develop a circuit and write a program for Arduino/ Raspberry Pi to interface temperature /humidity Sensor (DHT11) 10 L6 CO5

OR

- 10a) Choose an IoT architecture to make Smart parking and Explain in detail 10 L5 CO5
b) Develop a circuit and write a program for Arduino/ Raspberry Pi to interface TCRT 5000 IR Sensor module 10 L6 CO5

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DATA ANALYTICS

Duration: 3 hrs

Max. Marks: 100

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

Module 1

- | | |
|---|---|
| 1 a) Discuss Data analytics. Explains different phases and challenges of data analytics.
b) Illustrate how data is stored and analyzed in data warehouses with different architecture design. Classify how each architecture design is different from each other in its use, characteristics and advantages.
c) Illustrate how snowflake schema is created from fact and dimension tables with an example. | 7 L2 CO1
7 L3 CO1
6 L3 CO1 |
|---|---|

OR

- | | |
|--|---|
| 2 a) Discuss Fact table in detail with its types, characteristics, advantages and explain the steps in designing a fact table with an example.
b) Categorize different types of data analytics to draw a clear idea on how different they are from each other.
c) Illustrate the Fact Constellation schema with an example. | 7 L2 CO1
7 L3 CO1
6 L3 CO1 |
|--|---|

Module 2

- | | |
|--|------------------------------------|
| 3 a) Explain in detail high availability with 3-node and 5-node cluster in Vertica with neat diagrams.
b) Hotel(code, name, address, established_date)
Customer (cid, cname, address, age, checkin_date, checkout_date, hotel_code, amount_paid) | 6 L2 CO2
7 L3 CO2 |
|--|------------------------------------|

Solve the following Queries:

- | | |
|---|-----------------|
| <ol style="list-style-type: none"> 1) Find out no:of customers who have booked the hotel with hotel_code "H-01". 2) Remove the hotel details who was established in the year 1990. 3) Change the data type of column "address" to string of length 30. 4) Find out the customer name and their corresponding hotel name who has payed the bill more than rs10000 , on or before 10th September 2017. 5) Display the checkout_date and total amount paid by the customers on each checkout_date in the month of august 2017.
c) Assume your own employee table with four columns and 7 rows of data. Construct the corresponding projection for above table after applying advance encoding and compression technique on each column. Draw neat diagram and discuss the techniques used for encoding and compression | 7 L6 CO2 |
|---|-----------------|

OR

- | | |
|--|------------------------------------|
| 4 a) Explain Massively parallel processing in Vertica with a neat diagram and explain how processing of data is achieved.
b) Book(ISBN, title, Price, category, Lno, publisher)
Library(Lno, Lname, location, Rating, estb_year)
Where category values are: Science, Fiction, Engg books | 6 L2 CO2
7 L3 CO2 |
|--|------------------------------------|

Common

Solve the following Queries:

- i) Change the column name of estb_year to start_year
 ii) Update the price of book published by 'Pearson' by 10%.
 iii) Display the details of the non-fiction books whose price is in the range Rs 1000-2000(inclusive on both side).
 iv) Display the library number and no:of books in each library that have been published by 'Pearson' or 'McGraw' or 'Peter' in decreasing order of the count.
 v) Display ISBN, title, publisher name of the book along with their respective library name, estb_year and its location that has been established in the location 'HSR', 'Koramangala', 'whitefield' before the year 2012 and that stores books of price less than Rs 2000.

- c) Draw the following: 7 L6 CO2
 i) 5-node cluster for ksafety-1 and
 ii) 5-node cluster for ksafety-2.

Predict the consequences of one-node failure and two-node failures for each of the above with neat diagrams.

Module 3

- 5 a) Examine on the different projection fundamentals with a diagram. 6 L4 CO3
CO4
 b) Classify on Super projection and query specific projections. 7 L3 CO3
CO4
 c) Explain the functions supporting the live aggregate projections. 7 L3 CO3
CO4

OR

- 6 a) Investigate on two methods used to distribute the data evenly in a cluster. 6 L4 CO3
CO4
 b) Compute on the working of tuple mover operations. 7 L3 CO3
CO4
 c) Illustrate on (i) Partitioning (ii) ROS pushback (iii) Merge 7 L3 CO3
CO4

Module 4

- 7 a) Summarize on Web analytics and its process. 6 L3 CO5
 b) Justify on (i) Google Analytics (ii) Audience Analytics. 7 L5 CO5
 c) Examine on KISSMETERICS and its advantages. 7 L4 CO5

OR

- 8 a) Illustrate on Acquisition analysis and behavior analysis. 6 L3 CO5
 b) Evaluate the Dashboards and their metrics used. 7 L5 CO5
 c) Organize and explain the four major steps involved in Closed loop. 7 L4 CO5

Module 5

- 9 a) Organize the three steps involved for Marketing Analytics. 6 L4 CO6
 b) Compute on Segmentation, A priori, Attitudinal of marketing. 7 L3 CO5
 c) Explain the Stages in target marketing strategy development. 7 L2 CO5

OR

- 10 a) Analyze the methods of Marketing Analytics. 6 L4 CO6
 b) Illustrate about Segmenting the audience in marketing. 7 L3 CO6
 c) Explain on Demographics and Psychographics. 7 L2 CO6