(Time: 3 Hrs)   **Marks: 80**

N.B. : 1. Question no. 1 is **compulsory**.
　　　 2. Solve any **Three** questions out of remaining Five questions.

Qu-1	a)	Explain the differences between BI and Data Science.	5
	b)	Which function can be used to fit a non-linear line to the data?	5
	c)	What are the main challenges of text analysis?	5
	d)	How many sections does a box-and-whisker divide the data into? Explain with example.	5
Qu-2	a)	How does Data Science Actually Work? In short, explain the Data Science with Four Key Activities (Acquire, Prepare, Analyze and Act).	10
	b)	Justify the term 'Thinking Data-Analytically, Redux'.	10
Qu-3	a)	Explain ARIMA model in detail.	10
	b)	Explain plot() and pairs() function in R. Suppose you are using the plot() function to produce scatterplots of the quantitative variables. When it will produce an error message, 'Error in plot(abc , xyz) : object 'abc' not found?'	10
Qu-4	a)	Explain k-NN with suitable example.	10
	b)	Describe how logistic regression can be used as a classifier?	10
Qu-5	a)	How to achieve and sustain competitive advantage with Data Science?	10
	b)	Explain in detail data analytics life cycle.	10
Qu-6		Write short notes on:	
	a)	TFIDF in text analysis.	5
	b)	Data Journalism.	5
	c)	Core components of Hadoop.	5
	d)	Global Innovation Network and Analysis.	5

Q.P. Code : 862800

(3 Hours) [Total Marks : 80

N.B. : (1) Questions **No.1** is **compulsory**.
(2) Solve **any three** questions from remaining **five** questions.
(3) Assume suitable **data** if **necessary**.

1. In the Hospital there is a main block and three wards in the campus. The **20** main block is the administrative block where registration of new patients takes place. The main block has 5 floors. The hospital has identified hospital management software, which should be accessible by the employees. The software is installed on a server at the administrative block. At the ground floor, there are 15 computers at the billing section. At other floors, there is one computer user each. The farthest distance between the computer on the top most floor and the ground floor is less than 70 meters. The wards have 5 floors each, with 10 computers in the ground floor of each ward. The distance between the wards and the blocks are less than 80 Meters. The computers in the wards may be increased based on future expansion plans.
   Questions :
   1. Hardware requirement analysis in main block with quantity.
   2. Hardware requirements analysis in wards.
   3. The employees should receive dynamic IP addressing from a central server.
   4. Network should be loop free at Layer 2.
   5. Every computer should be able to access the hospital management software from each of the location using a fixed IP address.
   6. IP Network design table.
   7. Identify configurations on the hardware wherever appropriate.
   8. Network topology diagram with necessary equipment's.

2. (a) Select a routing protocol that interests you, whether it's RIPv2, OSPF, **10** EIGRP, BGP or a different routing protocol. Research any security issues associated with this routing and write two or three paragraphs about what you discovered.
   (b) Modern campus networks are almost always built with Ethernet technology **10** these days. What is that? Why did Ethernet outlast older technologies such as Token Ring, FDDI and ATM LAN Emulation (LANE).

TURN OVER

3. (a) What are the most important criteria for selecting a WAN service provider. 10
   (b) Explain the service level model of cloud computing. 10

4. (a) Explain the cloud data center technology architecture. 10
   (b) Explain the wireless network component architecture. 10

5. (a) Explain the need and architecture of SAN. 10
   (b) Explain the network virtualization techniques in software defined networks? 10

6. (a) Explain how SDN changed traditional enterprise network design? 10
   (b) Explain designing campus network design topology. Why it is difficult to 10
       archive true load balancing in most networks?

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(3 Hours)　　　**[Total Marks : 80**

N.B. : (1) Question number 1 is compulsory.
　　　　(2) Write any **three** questions out of remaining.
　　　　(3) Assume suitable data if required.

1. a) What is agility? Describe extreme programming process?　　　　5
   b) Explain interaction model for Web application.　　　　5
   c) What are quality guidelines to evaluate design ?　　　　5
   d) Explain debugging tactics.　　　　5

2. a) What are limitations of waterfall model? When you will use waterfall, 10
      incremental, prototype model ?
   b) Online student attendance system is to be developed. Identify stakeholders 10
      for the system. Identify use cases. For any identified use case draw interaction
      and activity diagram.

3. a) What is architecture? Why is it important? Explain architectural styles with 10
      example.
   b) Explain basic design principles.　　　　10

4. a) What are different debugging techniques? Give situation when you will use 10
      each of them.
   b) Draw CFG for the following PDL. Identify all the individual paths　　10
      if(cl)
      　　　if(c2) sl;
      　　else if(c3) s2
      　　　　else s3
      else if(c4) s4;
      　　else s5;

5. a) Explain different size oriented metrics. What are the drawbacks of LOC 10
      and advantages of FP over LOC.
   b) Identify risks associated with your PG study and prepare RMMM plan.　　10

6. a) Explain distributed version control using GITHUB. Give architecture and 10
      commands of GTHUB.
   b) Explain with example how development life cycle can be managed with 10
      DevOps.

(3 Hours) [Total Marks : 80

N.B. : (1) Question No.1 is **compulsory**.
   (2) Attempt any **three** questions out of remaining questions.
   (3) Assume suitable data if required.

1. (a) Explain Ubiquitous Interactions? 5
   (b) What is User Experience Engineering? Why is it Important? 5
   (c) Explain different User Models with example. 5
   (d) Compare Data driven vs Model driven inquiry? 5

2. (a) Explain User Requirements Analysis for UXE projects 10
   (b) Explain UX process Activities in detail. 10

3. (a) What are Task Models? Draw Hierarchal Task Inventory model for Selling 10
       Airline ticket service?
   (b) What are Mental Models? Explain with Example 10

4. (a) Explain UX evaluation techniques. 10
   (b) Describe UX design guidelines. 10

5. (a) Explain User Action Framework in detail. 10
   (b) What is Wire framing? Create Wireframe for online Music Store 10

6. Write short notes on (any **two**) 20
   (a) Usage Models
   (b) Ideation and Critiquing
   (c) Types of Prototyping and Advantages
   (d) Role of Affordance in UX Design.

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Q. P. Code : 855301

(3 Hours) [Total Marks : 80

N.B. : (1) Question **No.1** is **Compulsory**.

    (2) Attempt any 3 questions out of rest.

    (3) Figure to the right indicate full marks.

    (4) All questions carry equal marks.

1.   College wants to design database for examination system.

  a)   Design tables with assuming suitable attributes and normalize the database.   5

  b)   Define primary key, foreign key with its importance in database design. List Primary and foreign key in each table of above tables.   5

  c)   Draw Star schema and Snowflake schema for above design.   5

  d)   Explain difference between star schema and snowflake schema with purpose of normalization.   5

2. a)   Explain Several ways in which IT impacts employees at work. Also explain how IT might change manager's job.   10

  b)   Explain E-Commerce with its various types.   10

3. a)   Explain Characteristics of data warehouse. Differentiate between data warehouse and data marts.   10

  b)   Explain Customer relationship Management with its various types.   10

4. a)   Define Big Data. Explain various characteristics and issues in Big Data.   10

  b)   Explain various Business intelligence Applications for presenting Results.   10

5. a)   Explain traditional system development life cycle.   10

  b)   Explain various threats to information system.   10

6.   Write short notes on any two   20

  a)   Enterprise Resource planning

  b)   Pervasive Computing

  c)   Cloud computing model