SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF ARTIFICIAL INTELLIGENCE & DATA SCIENCE

QUESTION BANK

V SEMESTER

1922301 - COMPUTATIONAL INTELLIGENCE ESSENTIALS

Regulation – 2019

Academic Year 2022 – 2023(ODD)

Prepared by

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SUBJECT : 1922301 - Computational Intelligence Essentials
SEM / YEAR: V Sem/ III Year

UNIT-I WEB ESSENTIALS			
Creating a Website - Working Principle of a Website - Browser Fundamentals - Authoring Tools - Types of Servers: Application Server - Web Server - Database Server			
PART – A			
Q.No.	**Questions**	**BT Level**	**Competence**
1	Define Authoring tool and Webserver.	**BTL1**	**Remembering**
2	Define HTTP?	**BTL1**	**Remembering**
3	List any two functions of web browser.	**BTL1**	**Remembering**
4	What is URL?	**BTL1**	**Remembering**
5	What is meant by web browser?	**BTL1**	**Remembering**
6	State the role of WWW.	**BTL1**	**Remembering**
7	Label the uses of cache.	**BTL2**	**Understanding**
8	Write an information about Website	**BTL2**	**Understanding**
9	Outline the uses of IP address	**BTL2**	**Understanding**
10	Infer GET and POST request?	**BTL2**	**Understanding**
11	Enlist the Web Development Platforms.	**BTL2**	**Understanding**
12	Build the reason for which people tend to visit the website	**BTL3**	**Applying**
13	Identify the HTTP Protocols?	**BTL3**	**Applying**
14	Organize the factors that need to be considered while testing the web site?	**BTL3**	**Applying**
15	Compare Client and Server.	**BTL3**	**Applying**
16	Analyze the function of rendering engine?	**BTL4**	**Analyzing**
17	Differentiate server and web server.	**BTL4**	**Analyzing**
18	Examine various functions of web browser.	**BTL4**	**Analyzing**
19	Analyze Domain Registration and Website Hosting.	**BTL4**	**Analyzing**
20	Judge HTTP stateless Protocol?	**BTL5**	**Evaluating**
21	Assess how to reduce the page load time.	**BTL5**	**Evaluating**
22	Evaluate the role of application server.	**BTL5**	**Evaluating**
23	Formulate the issues to be considered while building a website for common user.	**BTL6**	**Creating**
24	Predict the steps for creating the web sites.	**BTL6**	**Creating**
PART – B			
1	Describe the procedure to create a website.(13)	**BTL1**	**Remembering**
2	State the following in brief. (i) Domain Registration (7) (ii) Website Hosting (6)	**BTL1**	**Remembering**

3	Explain the Working Principle of a Website. (13)	**BTL1**	**Remembering**
4	State the role of HTTP Communication Request and Response Messages. (13)	**BTL1**	**Remembering**
5	Summarize some important features of a website. (13)	**BTL2**	**Understanding**
6	Discuss about the role of Web Servers in Internet. (13)	**BTL2**	**Understanding**
7	Illustrate about the following servers. (i) Apache (7) (ii) IIS (6)	**BTL2**	**Understanding**
8	Explain the working of Database Server in detail. (13)	**BTL2**	**Understanding**
9	Identify the phases available in Website development? Explain each phase briefly. (13)	**BTL3**	**Applying**
10	Write a HTML Code for demonstrating the use of Basic HTML Tags. (13)	**BTL3**	**Applying**
11	Identify Website design issues in detail. (13)	**BTL3**	**Applying**
12	Analyze the Working principle of a Web Server. (13)	**BTL4**	**Analyzing**
13	Investigate in detail about the different types of Servers. (13)	**BTL4**	**Analyzing**
14	Illustrate the operation of a Web Brower in detail. (13)	**BTL4**	**Analyzing**
15	Assess the Evolution of World Wide Web (WWW). (13)	**BTL5**	**Evaluating**
16	Evaluate some of the Web Authoring Tools. (13)	**BTL5**	**Evaluating**
17	Develop HTML/PHP Code for creating Event Registration form. (13)	**BTL6**	**Creating**
	PART – C		
1	Do you need individuals to log in to the website using either a user name and password or social logins? Why? Justify an answer? (15)	**BTL5**	**Evaluating**
2	Evaluate the features and its application for the following: (i) Application Server (8) (ii) Web Server (7)	**BTL5**	**Evaluating**
3	Create your own concept for creating a professional education website. (15)	**BTL6**	**Creating**
4	Formulate the preparation approaches used to develop and maintain a website using Web Authoring Tools. (15)	**BTL6**	**Creating**
5	Develop a PHP program for Connecting the MySQL Database using WAMP Server. Write the code snippet for storing and retrieving the data. (13)	**BTL6**	**Creating**

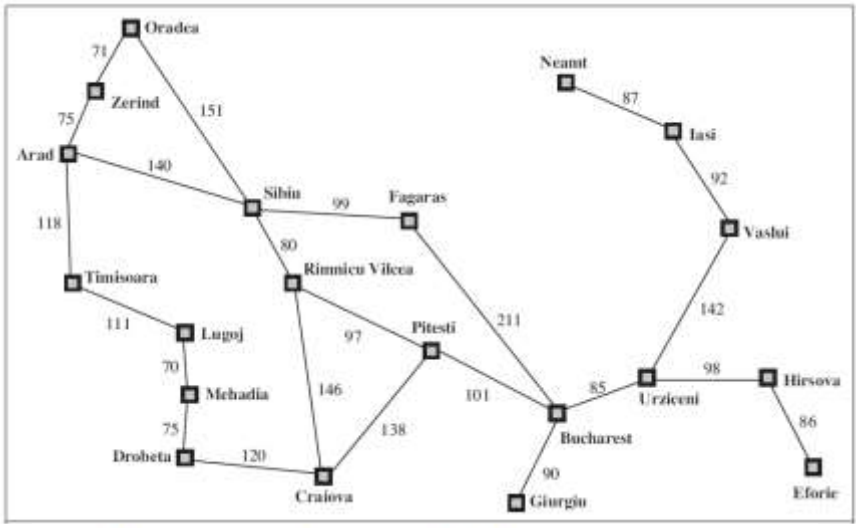
UNIT-II NETWORKING ESSENTIALS			
Fundamental computer network concepts - Types of computer networks - Network layers - TCP/IP model - Wireless Local Area Network - Ethernet - WiFi -Network Routing - Switching - Network components.			
PART – A			
Q.No.	**Questions**	**BT Level**	**Competence**
1	Define a Computer Networks.	**BTL1**	**Remembering**
2	What are the Hardware requirements to set up a computer?	**BTL1**	**Remembering**
3	List the uses of Ethernet port?	**BTL1**	**Remembering**
4	What is network Topology?	**BTL1**	**Remembering**

5	State the difference between LAN and WAN.	**BTL1**	**Remembering**
6	State Ring and Star Topology.	**BTL1**	**Remembering**
7	Summarize the Gateway and Terminal of Computer network.	**BTL2**	**Understanding**
8	Outline some basic network components?	**BTL2**	**Understanding**
9	Classify the TCP / IP Protocol.	**BTL2**	**Understanding**
10	Classify the network types.	**BTL2**	**Understanding**
11	Compare Network Switch and Router.	**BTL2**	**Understanding**
12	Identify an example for an Application Layer.	**BTL3**	**Applying**
13	Organize the Characteristics of Computer networks.	**BTL3**	**Applying**
14	Identify the layers in OSI layer.	**BTL3**	**Applying**
15	Enlist the applications of Computer Networks.	**BTL3**	**Applying**
16	Examine the Transport Layer and Application Layer	**BTL4**	**Analyzing**
17	Analyze about the Firewall and modem.	**BTL4**	**Analyzing**
18	Distinguish about the WIFI, Ethernet and LAN	**BTL4**	**Analyzing**
19	Analyze the functions of Transport Layer.	**BTL4**	**Analyzing**
20	Draw the network layers and assess their function.	**BTL5**	**Evaluating**
21	Interpret the three types of address in TCP/IP.	**BTL5**	**Evaluating**
22	Assess the role of Data Link Layer.	**BTL5**	**Evaluating**
23	Give the name of a protocol used in each layer of the network	**BTL6**	**Creating**
24	Formulate the responsibilities of a network layer.	**BTL6**	**Creating**
PART – B			
1	Define computer networks. Explain the types of computer networks with neat examples. (13)	**BTL1**	**Remembering**
2	Describe the fundamental network concepts with neat examples. (13)	**BTL1**	**Remembering**
3	List the basic network components and Write about the network components. (13)	**BTL1**	**Remembering**
4	What are the services provided by DNS server? Explain in detail. (13)	**BTL1**	**Remembering**
5	Demonstrate the network routing and packet switching with neat diagram. (13)	**BTL2**	**Understanding**
6	Summarize briefly about switching with all the types with appropriate example. (13)	**BTL2**	**Understanding**
7	Outline the Importance of TCP / IP and compare with OSI. (13)	**BTL2**	**Understanding**
8	Draw the OSI reference model and explain the functionalities of each layer in detail. (13)	**BTL2**	**Understanding**
9	Organize the different Network Topologies and apply them for appropriate scenarios with suitable diagram. (13)	**BTL3**	**Applying**
10	Identify the network layer and its applications. (13)	**BTL3**	**Applying**
11	Examine the architecture of a Switch and Router. State the fundamental differences between them. (13)	**BTL3**	**Applying**
12	What are the major difference between Distance Vector Routing and Link State Routing? Discuss how these routing techniques work. (13)	**BTL4**	**Analyzing**
13	Explain about the following (i) Wi-Fi Architecture (7) (ii) Bluetooth Architecture (6)	**BTL4**	**Analyzing**
14	Analyze about Access method, Frame Format and Architecture of IEEE 802.3 Standard. (13)	**BTL4**	**Analyzing**

15	Draw the neat diagram about OSI network architecture with neat explanation. (13)	**BTL5**	**Evaluating**
16	Asses the architecture of IEEE 802.11 Standard. (13)	**BTL5**	**Evaluating**
17	Formulate in detail about the TCP/IP Protocol architecture. (13)	**BTL6**	**Creating**
PART – C			
1	Assess the use of three common media used in computer networks? Write down the benefits and drawbacks. (15)	**BTL5**	**Evaluating**
2	Explain the need of Layering in network models. Briefly explain about the different layers in OSI Reference model. (15)	**BTL5**	**Evaluating**
3	Formulate the issues in network topologies in detail. (15)	**BTL6**	**Creating**
4	Create a Comparison between Wired LAN and Wireless LAN. Briefly explain any network of your own choice. (15)	**BTL6**	**Creating**
5	Assemble the functionalities of Hub, Switch and Router in Computer Networks. (15)	**BTL6**	**Creating**

UNIT- III ARTIFICIAL INTELLIGENCE ESSENTIALS			
Introduction to Artificial Intelligence, Search-Heuristic Search, A* algorithm-Game Playing, Alpha-Beta Pruning, Expert systems, Inference-Rules, Forward Chaining and Backward Chaining, Genetic Algorithms, Proposition Logic, First Order Predicate Logic.			
PART – A			
Q.No.	**Questions**	**BT Level**	**Competence**
1	What do you understand by Artificial Intelligence?	**BTL1**	**Remembering**
2	Define Heuristic function.	**BTL1**	**Remembering**
3	Write the term Genetic Algorithms?	**BTL1**	**Remembering**
4	What is the inference engine?	**BTL1**	**Remembering**
5	What are the different components of the Expert System?	**BTL1**	**Remembering**
6	What is alpha-beta pruning?	**BTL1**	**Remembering**
7	What is backward chaining? Give examples.	**BTL2**	**Understanding**
8	Why do we need Artificial Intelligence?	**BTL2**	**Understanding**
9	Express Forward chaining.	**BTL2**	**Understanding**
10	Give example problems for Artificial Intelligence	**BTL2**	**Understanding**
11	Enlist the Steps in Genetic Algorithm.	**BTL2**	**Understanding**
12	Choose which programming language is used for AI?	**BTL3**	**Applying**
13	Identify game playing techniques in artificial intelligence?	**BTL3**	**Applying**
14	Show the characteristics of expert system	**BTL3**	**Applying**
15	Express the statement in FOPL. “All Children likes Ice-cream”.	**BTL3**	**Applying**
16	Distinguish between prepositional versus first order logic	**BTL4**	**Analyzing**
17	Point out the applications of AI.	**BTL4**	**Analyzing**
18	List the types of proposition in logic?	**BTL4**	**Analyzing**
19	Analyze the Types of AI Systems.	**BTL4**	**Analyzing**
20	Why inference engine is used in AI? Justify.	**BTL5**	**Evaluating**
21	Rule on steps for A* algorithm?	**BTL5**	**Evaluating**
22	Asses the need of Resolution Proof in FOPL.	**BTL5**	**Evaluating**
23	How is AI related to game theory?	**BTL6**	**Creating**
24	How can the effectiveness of Alpha Beta pruning be increased?	**BTL6**	**Creating**

PART – B			
1	Describe in detail about genetic algorithms with example(13)	**BTL1**	**Remembering**
2	Which method is used for optimizing a MiniMax based game and explain? (13)	**BTL1**	**Remembering**
3	Explain A* search algorithm with an example. (10) Write advantage and disadvantage of A* search algorithm (3)	**BTL1**	**Remembering**
4	Describe in detail about Forward chaining with example.(13)	**BTL1**	**Remembering**
5	Discuss in detail about forward chaining with suitable example (13)	**BTL2**	**Understanding**
6	Write short notes on (i) Inference rules (7) (ii) Expert systems (6)	**BTL2**	**Understanding**
7	Discuss in detail about Quantifiers in First-order logic. (13)	**BTL2**	**Understanding**
8	Formulate A* Search to find the minimum cost to reach the Goal State Bucharest from the Initial State Arad using the given map and Straight Line Distance Heuristics h_{SLD}. (13)	**BTL2**	**Understanding**
9	Demonstrate alpha-beta pruning and its effectiveness. (13)	**BTL3**	**Applying**
10	Illustrate MiniMax algorithm in artificial intelligence? (13)	**BTL3**	**Applying**
11	Explain the propositional logic with an example and Point out Limitations of Propositional logic(13)	**BTL3**	**Applying**
12	Distinguish between the forward chaining and backward chaining. (13)	**BTL4**	**Analyzing**



Arad	366	**Mehadia**	241
Bucharest	0	**Neamt**	234
Craiova	160	**Oradea**	380
Drobeta	242	**Pitesti**	100
Eforie	161	**Rimnicu Vilcea**	193
Fagaras	176	**Sibiu**	253
Giurgiu	77	**Timisoara**	329
Hirsova	151	**Urziceni**	80
Iasi	226	**Vaslui**	199
Lugoj	244	**Zerind**	374

Values of h_{SLD}—straight-line distances to Bucharest.

13	Analyze the use of first-order-logic to represent the knowledge. (13)	**BTL4**	**Analyzing**
14	Prove that "Fido will die" from the following statements that "Fido is a dog. All dogs are animals. All animals will die." (13)	**BTL4**	**Analyzing**
15	(i) How can MiniMax also be extended for game of chance? (5) (ii) Compare MiniMax and Alpha-Beta pruning. (8)	**BTL5**	**Evaluating**
16	Evaluate Greedy Best First Search with an example.(Refer the Map, Table in Q.No:8, Part-B) (13)	**BTL5**	**Evaluating**
17	Build the use of Resolution in predicate logic to represent and infer knowledge with Suitable example. (13)	**BTL6**	**Creating**
PART – C			
1	Consider the following Knowledge Base: 1. The humidity is high or the sky is cloudy. 2. If the sky is cloudy, then it will rain. 3. If the humidity is high, then it is hot. 4. It is not hot. Goal: 5. It will rain. Use propositional logic and apply resolution method to prove that the goal is derivable from the given knowledge base. (15)	**BTL5**	**Evaluating**
2	Evaluate the Categories of the Systems of Artificial Intelligence. (15)	**BTL5**	**Evaluating**
3	Formulate the Characteristics and Importance of Expert Systems. Explain the architecture of any one of the Expert System. (15)	**BTL6**	**Creating**
4	Create how Inference can be made through the process of Forward and Backward Chaining with suitable examples. (15)	**BTL6**	**Creating**
5	Consider the following sentences ❖ John likes all kinds of food ❖ Apples are food ❖ Chicken is food ❖ Anything anyone eats and isn't killed by is food. ❖ Bill eats peanuts and is still alive ❖ Sue eats everything bill eats (i) Translate these sentences into formulas in predicate logic (ii) Convert the formulas of a part into clause form (iii) Prove that john likes peanuts using Resolution (15)	**BTL6**	**Creating**

UNIT- IV DATA SCIENCE ESSENTIALS			
Introduction to Data Science, Revolution of technology, Need of Data Science, Data Science roles, Applications of data science, Life Cycle of Data Science, Data Models in Organizations, Data types and storage, Data Resources, processes, Standards and tools, Impact of Data Science on society, Case Studies on Data Science.			
PART – A			
Q.No.	**Questions**	**BT Level**	**Competence**
1	Define Data Science.	**BTL1**	**Remembering**
2	What is the main role of a Data Scientist?	**BTL1**	**Remembering**

3	What is data processing in Data Science?	**BTL1**	**Remembering**
4	List application of Data Science.	**BTL1**	**Remembering**
5	What is data modeling?	**BTL1**	**Remembering**
6	What are data science tools and methodologies?	**BTL1**	**Remembering**
7	Show Data science resolution.	**BTL2**	**Understanding**
8	Give the five stage life cycle in data science?	**BTL2**	**Understanding**
9	Show the different types of data in data science?	**BTL2**	**Understanding**
10	Where is data science used?	**BTL2**	**Understanding**
11	Enlist some Standards and Tools for Data Science.	**BTL2**	**Understanding**
12	How is Data Science different from traditional application programming?	**BTL3**	**Applying**
13	Why are standards needed in the data science process?	**BTL3**	**Applying**
14	Which language is best for data science?	**BTL3**	**Applying**
15	How Data Science and Machine Learning are related?	**BTL3**	**Applying**
16	Why do we need data science?	**BTL4**	**Analyzing**
17	Point out Advantages of Data Science	**BTL4**	**Analyzing**
18	Point out the roles in data science?	**BTL4**	**Analyzing**
19	Analyze some Data Visualization Tools.	**BTL4**	**Analyzing**
20	How many steps are in data science process?	**BTL5**	**Evaluating**
21	Is data science the same as AI?	**BTL5**	**Evaluating**
22	Asses the role of Data Science in making Business decisions.	**BTL5**	**Evaluating**
23	How can data science help society?	**BTL6**	**Creating**
24	How Data Science is used in healthcare?	**BTL6**	**Creating**
	PART – B		
1	Describe Data Types in Statistics for Data Science in detail.(13)	**BTL1**	**Remembering**
2	Briefly discuss about data models in organizations.(13)	**BTL1**	**Remembering**
3	Describe in detail about data science roles.(13)	**BTL1**	**Remembering**
4	Describe standard and tools in data science. (13)	**BTL1**	**Remembering**
5	Write short notes on (i) Data storage (7) (ii) Data resources (6)	**BTL2**	**Understanding**
6	Distinguish between business intelligence and data science(13)	**BTL2**	**Understanding**
7	Discuss major application of data science. (13)	**BTL2**	**Understanding**
8	What are the Prerequisites for Data Science? (13)	**BTL2**	**Understanding**
9	Illustrate Roles and Responsibilities of a Data Scientist.(7) Examine main components of Data Science (6)	**BTL3**	**Applying**
10	Illustrate case for Data Science with a social impact. (13)	**BTL3**	**Applying**
11	Examine the application areas of Data Science. (13)	**BTL3**	**Applying**
12	Distinguish between Data Scientist, Data Analyst, and Data Engineer.(13)	**BTL4**	**Analyzing**
13	Discover what skills needed are in data science. (13)	**BTL4**	**Analyzing**
14	(i) Differentiate data science and artificial intelligence. (7) (ii) Why Data Scientists are called 'Data Scientists'?(6)	**BTL4**	**Analyzing**
15	Explain how to become data scientist. (13)	**BTL5**	**Evaluating**
16	Asses the role and impact of Data Science in Business domain.	**BTL5**	**Evaluating**
17	Prepare the steps that occur in Data science lifecycle. (13)	**BTL6**	**Creating**
	PART – C		
1	Explain about overview of data science. (15)	**BTL5**	**Evaluating**

2	Explain steps involved in the data science process. (15)	**BTL5**	**Evaluating**
3	How has data science impacted on society? (15)	**BTL6**	**Creating**
4	How to Build an Effective Data Science Model? (15)	**BTL6**	**Creating**
5	Formulate the importance Data Science Standards and Tools in Analysis and prediction of Data patterns. (15)	**BTL6**	**Creating**

UNIT V APPLICATION ESSENTIALS			
Creation of simple interactive applications - Simple database applications - Multimedia applications - Design and development of information systems – Personal Information System – Information retrieval system – Social networking applications.			
PART – A			
Q.No.	**Questions**	**BT Level**	**Competence**
1	Define interactive application.	**BTL1**	**Remembering**
2	List the different type of information system.	**BTL1**	**Remembering**
3	State the importance of data model?	**BTL1**	**Remembering**
4	Define Supply Chain. What is role of SCM?	**BTL1**	**Remembering**
5	Specify any two desirable characteristics of information system	**BTL1**	**Remembering**
6	What is web crawler?	**BTL1**	**Remembering**
7	Outline about information system. List its types.	**BTL2**	**Understanding**
8	Infer why personal information system is needed.	**BTL2**	**Understanding**
9	Summarize the concept ERP in organization.	**BTL2**	**Understanding**
10	Illustrate the term Multimedia.	**BTL2**	**Understanding**
11	What is role of CRM in any Business?	**BTL2**	**Understanding**
12	Construct the steps used in design and development of information system.	**BTL3**	**Applying**
13	Examine about E-Business and E-Commerce.	**BTL3**	**Applying**
14	Identify the need of search engine and list few popular search engines.	**BTL3**	**Applying**
15	Enlist the Components of Information Retrieval.	**BTL3**	**Applying**
16	Analyze the rules used in table event.	**BTL4**	**Analyzing**
17	Categorize the components of Personal Information System.	**BTL4**	**Analyzing**
18	Classify the two desirable character of information system.	**BTL4**	**Analyzing**
19	Analyze the need for Multimedia Database.	**BTL4**	**Analyzing**
20	Criticize about popular search engine.	**BTL5**	**Evaluating**
21	Assess the role of Social Computing in business.	**BTL5**	**Evaluating**
22	Assess the importance of Sentiment Analysis.	**BTL5**	**Evaluating**
23	Predict the social networks and its uses.	**BTL6**	**Creating**
24	Compose the steps involved in a typical application development life cycle.	**BTL6**	**Creating**
PART – B			
1	What is an information system? What are the steps involved in the design and development of an information system? (13)	**BTL1**	**Remembering**

2	List the steps involved in mobile application development. If you have to design a mobile app for Technical Symposium - give details of all events - show the UI design. (13)	**BTL1**	**Remembering**
3	Describe the architecture, of a text search system. How would this have to be modified for music search? (13)	**BTL1**	**Remembering**
4	Describe the social network application with neat example. (13)	**BTL1**	**Remembering**
5	Discuss personal information system and explain the applications. (13)	**BTL2**	**Understanding**
6	Outline the important features and characteristics of information system. (13)	**BTL2**	**Understanding**
7	Summarize the simple database application or two tier architecture. (13)	**BTL2**	**Understanding**
8	Identify the five factors that contribute to the increasing vulnerability of information resources, and provide a specific example of each one. (13)	**BTL2**	**Understanding**
9	Construct a sample multimedia application and identify the steps with neat explanations. (13)	**BTL3**	**Applying**
10	Build a website for Employee information system using PHP/ HTML/MySQL Student Information are stored in Database. (13)	**BTL3**	**Applying**
11	Examine the steps involved for creating simple interactive web application. (13)	**BTL3**	**Applying**
12	Explain about the information retrieval system. (13)	**BTL4**	**Analyzing**
13	Explain the advantage and disadvantage of three types of Data models. (13)	**BTL4**	**Analyzing**
14	Describe the benefits and challenges of implementing Information management systems in organizations. (13)	**BTL4**	**Analyzing**
15	Consider a multinational company which sells different electronic gadgets such as desk tops, lap tops, tablets, cameras, mobile, phones, etc. through online or various dealers. Dealers are registered with the company. Customers can buy through online or dealers. Delivery of electronic goods will be through various agencies. Every shipment of goods will be insured through insurance company. Consider this as an Information System project; describe the various requirements for building this Information System. (13)	**BTL5**	**Evaluating**
16	Assess the reasons why Big Data needs to be managed. Also explain why information Systems are important in today's world. (13)	**BTL5**	**Evaluating**
17	Design a simple social-media application to pass on messages to friends whenever two people come in contact with (within range of) one another. Assume that you are using devices with Blue-tooth support to transfer messages(13)	**BTL6**	**Creating**
PART – C			
1	Justify the digital mediums that are available to transfer the data and others work? Explain in detail. (15)	**BTL5**	**Evaluating**

2	Explain the basic block diagram of the payroll architecture and explain in brief. (15)	**BTL5**	**Evaluating**
3	Construct the benefits and risks of social commerce to companies. Also describe how social computing improves customer service. (15)	**BTL6**	**Creating**
4	Formulate the world impacts of social media like Facebook, WhatsApp, twitter, and Instagram. (15)	**BTL6**	**Creating**
5	Develop the details of various online services of Business-to-Consumer (B2C) Commerce, providing specific examples of each. (15)	**BTL6**	**Creating**

Staff In-charege(s) **Course Coordinator** **HOD**