USN | | | | | | | | | | |

17CS82

Eighth Semester B.E. Degree Examination, Feb./Mar. 2022
Big Data Analytics

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. What is HDFS? With a neat diagram explain the components of HDFS (Hadoop Distributed File Systems) **(10 Marks)**

   b. With a neat diagram, discuss the steps MapReduce parallel data flow with example of word count. **(10 Marks)**

OR

2   a. Explain Block replication in HDFS and its advantages. **(05 Marks)**

   b. Explain the following roles in HDFS deployment with a diagram:
   (i) High Availability   (ii) Name Node Federation. **(10 Marks)**

   c. With example, explain the following general HDFS commands:
   (i) HDFS version   (ii) List files   (iii) Make directory
   (iv) Copy files   (v) Delete a file **(05 Marks)**

Module-2

3   a. What is the significance of Apache pig in Hadoop context? Describe the main components and the working of Apache pig with a simple example. **(10 Marks)**

   b. Explain Apache squoop import and export method with neat diagrams. **(10 Marks)**

OR

4   a. With a neat diagram, explain Oozie DAG workflow and its types of nodes. **(10 Marks)**

   b. Describe the various features of hadoop YARN administration. **(05 Marks)**

   c. Discuss the three components of Apache frame. **(05 Marks)**

Module-3

5   a. Discuss how the data contributes to decision making in business intelligence. **(05 Marks)**

   b. Justify the differences between datamart and data warehouse based on following :
   (i) Scope   (ii) Target organization   (iii) Cost   (iv) Approach   (v) Time. **(10 Marks)**

   c. Consider three dimensions of data warehouse:
   Bank branch, time period, Loans and two measures accounts and Total balance, where total balance is outstanding loan amount from customers. Sketch star schema for above model. **(05 Marks)**

OR

6   a. Explain cross-industry standard process for data mining with a neat diagram. **(10 Marks)**

   b. With a neat block diagram, describe the architecture of data warehouse. **(10 Marks)**

Module-4

7   a. Differentiate between Linear, Non-linear and Logistic Regression models. **(10 Marks)**

b. Employ decision tree learning (Total error based) for the following dataset where the objective is to predict the Class Category-Loan approved or not (C_0 & C_1). Find out class for

M	Luxury	Medium	?

Customer Id	Gender	Car Type	Shirt Size	Class
1	M	Family	Small	C_0
2	M	Sports	Medium	C_0
3	M	Sports	Medium	C_0
4	M	Sports	Large	C_0
5	M	Sports	Extra Large	C_0
6	M	Sports	Extra Large	C_0
7	F	Sports	Small	C_0
8	F	Sports	Small	C_0
9	F	Sports	Medium	C_0
10	F	Luxury	Large	C_0
11	M	Family	Large	C_1
12	M	Family	Extra Large	C_1
13	M	Family	Medium	C_1
14	M	Luxury	Extra Large	C_1
15	F	Luxury	Small	C_1
16	F	Luxury	Small	C_1
17	F	Luxury	Medium	C_1
18	F	Luxury	Medium	C_1
19	F	Luxury	Medium	C_1
20	F	Luxury	Large	C_1

(10 Marks)

OR

8 a. Explain the design principles of ANN by constructing a model for multilayer ANN. (07 Marks)

b. What is unsupervised learning? Describe 3 applications of cluster analysis. (06 Marks)

c. How does the Apriori algorithm for association rule mining works? Explain with example. (07 Marks)

Module-5

9 a. Discuss the importance of term document matrix in text mining with a neat diagram of Text Mining architecture. (08 Marks)

b. Explain the advantages and disadvantages of Naïve-Bayes classifier. (04 Marks)

c. What is support vector machine? Explain its model. (08 Marks)

OR

10 a. Discuss web structure mining and compute the rank values for the following network in Fig.Q10(a). Which is the highest ranked node?
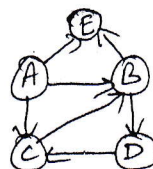

Fig.Q10(a) (12 Marks)

b. Discuss the application and practical consideration of social network analysis. (08 Marks)

* * * * *

Eighth Semester B.E. Degree Examination, Feb./Mar. 2022
Internet of Things and Applications

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Explain simplified IOT Architecture.   (12 Marks)
   b. What does IOT and digitization mean, elaborate on this concept?   (08 Marks)

OR

2 a. Explain the main drivers behind new IOT Architecture.   (08 Marks)
   b. Discuss IOT challenges.   (04 Marks)
   c. Explain core IOT functional stack.   (08 Marks)

Module-2

3 a. Explain one M2M IOT standardized architecture?   (12 Marks)
   b. With examples, explain 5 different types of sensor.   (08 Marks)

OR

4 a. What is SANET? Explain some advantages and disadvantages that a wireless based solution
      offers?   (08 Marks)
   b. Write short notes on wireless sensor Networks.   (06 Marks)
   c. Briefly explain protocol stack utilization in IEE 802.15.4.   (06 Marks)

Module-3

5 a. Explain with example MQTT protocol? What is the role of MQTT protocol IOT
      applications?   (12 Marks)
   b. Explain adapting SCADA for IP with DNP3 as a representative use case.   (08 Marks)

OR

6 a. List the categories of IOT application protocols and their transport methods. (04 Marks)
   b. Write short note on COAP, REST and XMPP.   (12 Marks)
   c. What are the differences between adaptation and adoption of the internet protocols?
                                                                                 (04 Marks)

Module-4

7 a. List and explain the Comparison between Big Data, Edge Analytics and Network analytics.
                                                                                 (12 Marks)
   b. What are the common applications of machine learning in IOT?   (08 Marks)

OR

8 a. What are the common challenges in OT security?   (06 Marks)
   b. Explain the Purdue model for control Hierarchy.   (07 Marks)
   c. Explain the functions of Edge Analytics.   (07 Marks)

Module-5

9 a. Explain with an example a basic structure of Arduino programming.   (10 Marks)
   b. Write a note on DS 18B20 temperature sensor?   (05 Marks)
   c. Explain general commands for raspberry Pi?   (05 Marks)

OR

10 a. With a neat sketch, explain street lighting system?   (10 Marks)
   b. With a neat diagram, explain smart parking system.   (10 Marks)