

Seventh Semester B.E. Makeup Examination, January 2020
EMBEDDED SYSTEMS & INTERNET OF THINGS

Time: 3 Hours

Max. Marks: 100

- Instructions:** 1. Answer one full question from each of the units
 2. Assume any Missing Data

UNIT - I

- 1 a. Define Embedded Computing System. Discuss the Characteristics of Embedded Computing Applications. L CO PO M
(1) (1) (1) (10)
- b. List the challenges in Embedded computing System Design & Discuss any two in detail. (1) (1) (2) (10)

OR

- 2 a. Give an overview of embedded system design process with a case study. (2) (1) (1) (10)
- b. Illustrate ARM assembly code to implement the following C assignments (2) (1) (1) (10)
- a. $z = a * (b + c) - d * e$
 b. if ($i == 0$)
 {
 i = i + 10;
 }

UNIT - II

- 3 a. Define IoT & explain its characteristics. L CO PO M
(2) (2) (2) (10)
- b. Discuss in detail a generic block diagram of an IoT Device (3) (2) (1) (10)

OR

- 4 a. List the various IoT Protocols & explain any five in brief (1,2) (2) (1) (10)
- b. With a neat diagram explain & analyze the various communication models. (4) (2) (2) (10)

UNIT - III

- 5 a. Identify IoT key features. List advantages and disadvantages of IoT. L CO PO M
(2) (2) (1) (08)
- b. Explain IoT Hardware and Software. (2) (2) (1) (06)
- c. Explain IoT Technology , Protocols, and Common applications of IoT (2) (2) (1) (06)

OR

- 6 a. Explain six Smart City concepts using IoT. (2) (2) (1) (08)
- b. Explain three Environment concepts using IoT. (2) (2) (1) (06)
- c. Explain three Energy concepts using IoT. (2) (2) (1) (06)

UNIT - IV

- 7 a. Explain in brief steps involved in IoT System design methodology with a neat diagram L CO PO M
(2) (4) (2) (10)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

- b. What is an IoT Device; discuss the Basic building blocks of an IoT device. (3) (4) (5) (10)

OR

- 8 a. Explain in brief Case Study on IoT System for Weather Monitoring (2) (4) (2) (10)
b. Explain with a neat block diagram Home Automation web application (2) (4) (5) (10)

UNIT -V

- 9 a. Discuss the key concepts of Web Application Messaging Protocol (WAMP) (2) (4) (2) (10)
b. Explain with a neat block diagram, WAMP Session between client & router (2) (4) (5) (10)

OR

- 10 a. Explain in detail the salient features of Xively Cloud for IoT (2) (4) (5) (10)
b. Discuss the key features of Python Web Application Framework-Django (2) (4) (5) (10)

Seventh Semester B.E. Makeup Examination, January 2020
DATA SCIENCE

Time: 3 Hours

Max. Marks: 100

- Instructions:**
1. Non-programmable calculators are allowed
 2. Answer any one full question from each unit.

UNIT - I

L	CO	PO	M
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1. a. Explain the different sources of Big Data deluge. (2) (1) (1) (06)
 b. Define Data Science. Explain its goal. Give any two real life examples for applications of data science. (2) (1) (1) (06)
 c. List the different steps of data science life cycle. Briefly explain each one of them. (2) (1) (1) (08)

OR

- a. Briefly explain the classification of big data with examples. (2) (1) (1) (07)
 b. What is Datafication? Explain it with any two examples. (2) (1) (1) (06)
 c. Define Data Scientist? Illustrate the five main sets of skill sets of Data Scientist. (2) (1) (1) (07)

UNIT - II

L	CO	PO	M
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3. a. Explain the importance of exploratory data analysis in data science. (2) (1) (5) (06)
 b. Define the terms Populations and Samples. Explain the two with examples. (2) (1) (5) (06)
 c. What is the meaning of model? Explain the statistical model. How do you build a model? (2) (1) (5) (08)

OR

4. a. Explain the different methods of Sampling. (2) (1) (5) (06)
 b. Define the term Inference. Illustrate the different types of Inferential Statistics. (2) (1) (5) (06)
 c. Explain the steps in Data Science process with the help of a block diagram. (2) (1) (5) (08)

UNIT - III

L	CO	PO	M
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5. a. Demonstrate the use of linear regression for predicting house price with suitable snippets. (3) (3) (4) (10)
 b. Illustrate K Nearest Neighbor (KNN) algorithm with an example. List the modeling assumptions considered while using KNN (3) (3) (4) (10)

OR

6. a. Illustrate the importance of least squared methods in fitting the model (2) (3) (2) (08)
 b. Write a note on K means clustering algorithm. (2) (3) (1) (08)
 c. What is Machine learning? Explain the classification of machine learning algorithms (2) (3) (1) (04)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

UNIT - IV

L CO PO M

- 7 a. Why linear regression cannot be used for spam filtering? (1) (2) (2) (06)
- b. Analyze the following raw dataset with y as response and x_1 & x_2 as predictor variables to estimate the three coefficients, β_0 , β_1 and β_2 , using logistic regression.

x_1	x_2	y
2.7810836	2.550537003	0
1.465489372	2.362125076	0
3.396561688	4.400293529	0
1.38807019	1.850220317	0
3.06407232	3.005305973	0
7.627531214	2.759262235	1
5.332441248	2.088626775	1
6.922596716	1.77106367	1
8.675418651	-0.2420686549	1
7.673756466	3.508563011	1

(4) (2) (4) (08)
(2) (3) (1) (06)

OR

- 8 a. Explain the Bayes Law with meaning of terms used. (2) (1) (1) (06)
- b. Explain the spam classification using Naïve Bayes technique. (2) (3) (4) (08)
- c. Apply Bayes law to find the probability that the patient is actually infected? Given that 1% of the population is infected. A highly sensitive and specific medical test shows 99% of sick patients test positive and 99% of healthy patients test negative. (3) (1) (2) (06)

UNIT - V

L CO PO M
(2) (1) (5) (10)
(2) (1) (5) (10)

- 9 a. Explain the MapReduce technique with a suitable example (2) (1) (5) (10)
- b. Explain the term Hadoop and how to get started with Hadoop. (2) (1) (5) (10)

OR

- 10 a. Explain Word frequency problem in detail. (2) (1) (2) (10)
- b. Explain what MapReduce can do? And what it can't. (2) (1) (5) (10)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

Seventh Semester B.E. Makeup Examination, January 2020
SOFTWARE TESTING

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Answer one full question from each of the units.

UNIT - I

- 1 a. List and explain IEEE error and fault taxonomy
 b. With a neat diagram explain A testing life cycle.
 c. With a neat diagram explain levels of testing.

L	CO	PO	M
(2)	(1)	(1)	(06)
\	(2)	(1)	(07)
(2)	(1)	(1)	(07)

OR

- 2 a. Construct the flowchart for traditional triangle program implementation.
 b. Explain i)Specification -Based testing ii)Code-based testing.

(3)	(2)	(2)	(10)
(2)	(2)	(1)	(10)

UNIT - II

- 3 a. With a neat sketch summarize currency convertor graphical user interface.
 b. Illustrate the usage of boundary value analysis with function of two variables .
 c. Explain robustness test cases for a function of two variables.

L	CO	PO	M
(2)	(2)	(1)	(06)
(2)	(2)	(2)	(07)
(2)	(2)	(1)	(07)

OR

- 4 a. Generate Normal boundary value test cases for triangle problem.(minimum 10)
 b. Generate Worst-Case Test cases for NextDate function. (minimum 10)

(3)	(2)	(2)	(10)
(3)	(2)	(2)	(10)

UNIT - III

- 5 a. Design the test cases in a appropriate format for a commission problem using equivalence class testing approach.
 b. Explain the decision-table approach for the triangle program to device test cases.
 c. List the guidelines and observations of a equivalence class testing.

(3)	(3)	(2)	(10)
(2)	(2)	(2)	(07)
(1)	(1)	(1)	(03)

OR

- 6 a. Design the test cases in a appropriate format for a next date function using equivalence class testing approach.
 b. Explain the decision-table approach for the commission problem to device test cases.
 c. List the guidelines and observations of a decision table approach.

(3)	(3)	(2)	(10)
(2)	(2)	(2)	(07)
(1)	(1)	(1)	(03)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

UNIT - IV

- 7 a. What is DD-path. Explain (2) (3) (1) (07)
b. Identify and explain Graph-based Coverage metrics. (2) (2) (1) (07)
c. Explain i) statement testing ii)DD-path testing. (2) (2) (1) (06)

OR

- 8 a. List and explain Define/Use Test coverage metrics. (2) (2) (1) (10)
b. Generate Du-path for the following locks
13 Input(locks)
14 while NOT(locks=-1)'locks=-1 signals end of data
15 Input(stocks,barrels)
16 totalLocks= totalLocks+locks
17 totalStocks= totalStocks+stocks
18 totalBarrels =totalBarrels+barrels
19 Input(locks)
20 Endwhile

UNIT - V

- 9 a. Explain good styles for generating slices. (3) (3) (2) (10)
b. Generate slices for Commission problem. (minimum 10) (2) (2) (1) (10)

OR

- 10 a. Explain Rapps-Weyuker hierarchy of data flow coverage metrics. (3) (3) (2) (10)
b. Explain slice 1 of commission problem. (2) (2) (5) (10)

L CO PO M

(2) (3) (1) (07)

(2) (2) (1) (07)

(2) (2) (1) (06)

(2) (2) (1) (10)

(3) (3) (2) (10)

(2) (2) (1) (10)

(3) (3) (2) (10)

(2) (2) (5) (10)

(2) (2) (2) (10)

Seventh Semester B.E. Makeup Examination, January 2020
CLOUD COMPUTING

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Answer any one full question from each unit.

UNIT - I

- 1 a. Draw the block diagram of standard grid architecture. List the benefits of grid computing when deployed for infrastructure management? (2) (1) (1) (05)
- b. List the benefits of cloud dynamic infrastructure and the barriers of cloud computing. (2) (1) (1) (10)
- c. Draw the block diagram of basic Cloud Computing Model. List the various reasons for adopting the cloud. (2) (1) (1) (05)

OR

- 2 a. Define Cloud computing. Discuss how security is maintained in public cloud. (2) (1) (1) (10)
- b. Name the workloads which are suitable and not suitable for public clouds. (2) (1) (1) (10)

UNIT - II

- 3 a. Differentiate among PaaS, SaaS, and IaaS models. (2) (2) (2) (06)
- b. List and explain the attributes of a cloud infrastructure. Explain how cloud infrastructure can deliver 'IT-as-a-Service' to the end users? (2) (1) (2) (06)
- c. With a block diagram discuss the conceptual cloud model. (3) (1) (1) (08)

OR

- 4 a. With the help of neat diagram explain the cloud eco-system. Identify the various reasons for which cloud-based environment is handy for development and testing application. (3) (2) (2) (08)
- b. List and describe the characteristics of cloud key solutions. (2) (2) (1) (12)

UNIT - III

- 5 a. Explain the following related to Virtualization use cases.
 i. Availability of Machines
 ii. Dynamic Allocation and De-Allocation (2) (3) (2) (10)
- b. With a neat block diagram explain the concept of virtual machines (2) (3) (2) (10)

OR

- 6 a. Explain Storage Area Networks (SAN) with neat diagram. (2) (3) (1) (10)
- b. Explain with a neat diagram Cloud Server Virtualization. (2) (3) (2) (10)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

UNIT - IV

- | | | | | | |
|---|---|-----|-----|-----|------|
| 7 | a. Explain the provisioning process in cloud management
b. Discuss the concepts of High availability and Disaster Recovery of cloud computing. | (2) | (4) | (8) | (10) |
| | | (3) | (4) | (2) | (10) |

OR

- | | | | | | |
|---|--|-----|-----|-----|------|
| 8 | a. Discuss the basic requirements of charge back model.
b. With a neat diagram explain the cloud charge back model. | (2) | (4) | (1) | (10) |
| | | (2) | (4) | (2) | (10) |

UNIT - V

- | | | | | | |
|---|--|-----|-----|-----|------|
| 9 | a. Mention the need for Cloud Offerings. Explain the specific objectives that support & improve Information management.
b. With a neat block diagram explain the various fields in which cloud analytics can be applied.
c. Describe the challenges and benefits of storage cloud. | (2) | (5) | (2) | (08) |
| | | (2) | (5) | (2) | (07) |
| | | (2) | (5) | (1) | (05) |

OR

- | | | | | | |
|----|---|-----|-----|-----|------|
| 10 | a. With a neat diagram explain the cloud Orchestration workflow.
b. With a neat diagram of virtual desktop infrastructure explain architecture and enterprise level. | (2) | (5) | (1) | (10) |
| | | (2) | (5) | (2) | (10) |

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

Seventh Semester B.E. Makeup Examination, January 2020
MOBILE COMPUTING AND APPLICATIONS

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Answer one full question from each of the units.

UNIT - I

1. a. Define mobile computing. Explain mobile computing in different context with different names. (2) (1) (1) (08)
- b. List and explain the characteristics of mobile computing. (2) (1) (1) (07)
- c. Summarize the functions of mobile computing.
Summarize the mobile computing functions (2) (1) (1) (05)

OR

2. a. With a neat diagram explain Three-tier architecture for mobile computing. (2) (1) (1) (10)
- b. List and explain major categories of middleware. (2) (1) (1) (10)

UNIT - II

3. a. List and describe IEEE 802.16 standards. (2) (1) (1) (06)
- b. With a neat diagram explain WiMAX protocol stack. (2) (1) (1) (07)
- c. Illustrate tunneling operation in Mobile IP with a suitable diagram. (2) (1) (1) (07)

OR

4. a. Explain i)Mobile base station ii)base station subsystem (2) (1) (1) (08)
- b. With a neat sketch explain sequence of operation from speech to radio wave conversion. (2) (1) (1) (07)
- c. List and explain GSM Addresses and Identifiers. (2) (2) (1) (05)

UNIT - III

5. a. List out and explain the unique characteristics of SMS. (1,2) (2) (1) (10)
- b. With a neat diagram explain the SMS architecture. List out some popular value added services w.r.t. SMS. (1,2) (2) (1) (10)

OR

6. a. With a neat diagram explain the GPRS system architecture. (2) (2) (1) (10)
- b. Explain the GPRS network operations. (2) (2) (1) (10)

UNIT - IV

7. a. Illustrate with an suitable diagram of smart client architecture. (2) (3) (2) (07)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

- b. With a neat diagram explain Synchronization architecture. (2) (3) (2) (07)
- c. Summarize need analysis phase of smart client development cycle. (2) (3) (2) (06)

OR

- 8 a. With a neat diagram explain wireless internet architecture. (2) (3) (2) (07)
- b. Explain WAP 2.x protocol layers. (2) (3) (2) (06)
- c. With a neat diagram explain WAP programming model using a wireless gateway. (2) (3) (2) (07)

UNIT -V

- 9 a. What is provisioning? Explain provisioning a MIDP application with suitable diagram. (2) (4) (2) (10)
- b. With a neat sketch explain MIDlet Lifecycle. (2) (4) (2) (10)

OR

- 10 a. Explain record management system. (2) (4) (2) (10)
- b. Identify and explain security consideration in MIDP. (3) (4) (2) (10)

Seventh Semester B.E. Makeup Examination, January 2020
BIG DATA MANAGEMENT

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Draw diagrams wherever applicable
 2. Answer any one question from each unit.

UNIT - I

L	CO	PO	M
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- 1 a. What is Big Data? Distinguish between different types of Big Data with examples. (1,4) (1) (1) (10)
- b. Explain the common types of financial frauds. Discuss how application of Big Data helps to detect fraud in organizations and in real time scenario. (2,3) (1) (1) (10)

OR

- 2 a. Compare the three types of Big Data Analytics and its role in retail industry.. (2) (1) (1) (10)
- b. Discuss the applications of Big Data in Business Intelligence and Marketing. (2) (1) (1) (10)

UNIT - II

L	CO	PO	M
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- 3 a. Discuss the concepts of HDFS and its architecture with the help of a neat diagram. (2) (2) (1) (10)
- b. List and explain the various HDFS commands and their use. (2) (2) (1) (10)

OR

- 4 a. Explain five interfaces and any five classes in the org.apache.hadoop.io package along with a brief description (2) (2) (1) (10)
- b. Discuss the features of HDFS in detail. (2) (2) (1) (10)

UNIT - III

L	CO	PO	M
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- 5 a. Compare RDBMS with NoSQL databases. (2) (3) (1) (10)
- b. With a neat diagram, explain the different distribution models. (2) (3) (1) (10)

OR

- 6 a. What is CAP theorem? Explain the importance of CAP theorem. (2) (3) (1) (10)
- b. Compare the different NoSQL data models. (4) (3) (1) (10)

UNIT - IV

L	CO	PO	M
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- 7 a. Explain the features and Limitations of MapReduce. (2) (4) (1) (10)
- b. Explain YARN architecture in detail with the help of neat diagram. (2) (4) (1) (10)

OR

- 8 a. Discuss working of MapReduce approach with the help of a diagram along with the logical flow of data. (2) (4) (1) (10)
- b. Explain the role of Map function, Reduce Function and hence the entire process of data analysis in MapReduce Model. (2) (4) (1) (10)

UNIT -V

		L	CO	PO	M
9	a. With a neat diagram explain the architecture of Hive.	(2)	(5)	(1)	(10)
	b. Explain any five Hive commands used in Shell interactive mode and any five services provided by Hive.	(2)	(5)	(1)	(10)
10	OR	(2)	(5)	(1)	(10)
	a. Discuss the Built-in functions available in Hive.	(2)	(5)	(1)	(10)
	b. List and explain important properties of Pig.	(2)	(5)	(1)	(10)

Seventh Semester B.E. Semester End Examination, Dec./Jan. 2019-20
SOFTWARE TESTING

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Answer one full question from each unit.
 2. Assume missing data, if any

UNIT - I

L CO PO M

- Q1 a. Define the following terms with respect to testing.
 i) Fault ii) Incident iii) Test (1) (1) (1) (03)
- b. Explain the levels of abstractions and testing in the waterfall model with neat diagram. (2) (2) (1) (07)
- c. Explain in detail the functional and structural testing. (2) (2) (1) (10)

OR

- Q2 a. List out the six logical faults. (1) (1) (1) (03)
- b. Explain testing life cycle with a neat diagram. (2) (5) (1) (07)
- c. State the definition of triangle problem. Explain the flow chart for the traditional triangle program implementation. (2) (2) (2) (10)

UNIT - II

L CO PO M

- Q3 a. Describe the features of SATM System with the appropriate display screens. (2) (1) (2) (10)
- b. Explain the boundary value analysis for the followings with graph
 i) Input domain of a function of two variables
 ii) BVA test cases for a function of two variables. (2) (2) (2) (10)

OR

- a. Explain the boundary value analysis for the followings with graph
 i) Robustness test cases for a function of two variables
 ii) Worst case test case for a function of two variables (2) (2) (2) (10)
- b. Design the test cases in an appropriate format for a triangle problem using BVA approach. (3) (3) (2) (05)
- c. Explain the currency converter program with a proper GUI. (2) (2) (2) (05)

UNIT - III

L CO PO M

- Q5 a. Illustrate the Traditional equivalence class test cases with function of two variables. (2) (2) (1) (07)
- b. Illustrate with examples Equivalence Class Test Cases for the Commission Problem. (2) (2) (1) (07)
- c. Explain weak normal equivalence class test cases. (2) (2) (1) (06)

OR

- 6 a. Explain the portions of a decision table. (2) (2) (1) (07)
 b. Generate test cases for the Triangle problem using decision table. (3) (3) (2) (07)
 c. List the guidelines and observations for decision table testing. (2) (3) (1) (06)

UNIT - IV

- 7 a. Define D-D path graph. Write a structured triangle program and draw the D-D path graph. (3) (3) (5) (12)
 b. Illustrate the McCabe's basis path method using graph theory. (2) (2) (2) (08)

OR

- 8 a. Write the binary search algorithm and carry out the basis path testing. (3) (3) (2) (12)
 b. List and give the description of structural test coverage metrics of E.F.Miller. (2) (2) (2) (08)

UNIT - V

- 9 a. Write a pseudocode for a commission problem and draw corresponding D-D graph. (3) (3) (2) (12)
 b. Explain about slice-based testing in a dataflow testing. (2) (2) (1) (08)

OR

- 10 a. Write a pseudo code for a commission problem and explain the followings:
 i) du-path for stocks ii)du-paths for locks iii) du-paths for total Locks. (3) (3) (2) (12)
 b. List the guidelines and observations of a data flow testing method. (2) (2) (1) (08)

7th CS

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

Seventh Semester B.E. Semester End Examination, Dec./Jan. 2019-20
DATA SCIENCE

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Answer any one full question from each unit.
 2. Use diagrams and examples wherever necessary.

UNIT - I

- 1 a. What is data science? Summarize the similarities and differences in big data and data science
 (2) (1) (1) (10)
- b. Illustrate the Discovery phase and Data preparation phase of data science life cycle with a neat diagram.
 (2) (1) (1) (10)

OR

- 2 a. What is datafication? Write a note on the applications of data science in different fields of applications
 (2) (1) (1) (08)
- b. List and explain the different challenges that arise in processing big data.
 (2) (1) (4) (04)
- c. Write a brief note on
 (a) Current landscape of data science.
 (b) Skill set required for a data scientist
 (2) (1) (1) (08)

UNIT - II

- 3 a. Illustrate the data science process with a neat diagram
 (2) (1) (1) (10)
- b. What is a model? Explain the process of modeling using exploratory data analysis
 (2) (2) (2) (10)

OR

- 4 a. Explain the following terms
 (a) Population
 (b) Sample
 (c) Parameter
 (d) Estimate of parameter
 (e) Probability distributions
 (2) (2) (1) (10)
- b. What is hypothesis testing? Explain any three hypothesis test methods
 (2) (2) (1) (10)

UNIT - III

- 5 a. What is Linear Regression? Briefly explain any two applications of Linear Regression.
 (2) (3) (2) (06)
- b. Analyze the following raw dataset with y as response and x as predictor variables to estimate the two coefficients, β_0 and β_1 , using linear regression. Dataset x : 1, 2, 3, 4, 5, 6 y : 1, 3, 3, 2, 5
 (4) (2) (4) (08)
- c. Distinguish K-means from KNN machine learning algorithm.
 (2) (3) (2) (06)

OR

- 6 a. Explain the various Similarity or Distance metric that are used in KNN algorithm
 (2) (3) (2) (06)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

- b. Explain the Evaluation metrics used and their interpretation for evaluating the model. (2) (2) (2) (08)
- c. Explain the various steps involved in K means algorithm. (2) (3) (1) (06)

UNIT - IV

- 7 a. Demonstrate the use of naive bayes classifier to classify the messages as spam or ham. (3) (3) (2) (10)
- b. Write a brief note on:
- (i) Newton's method for maximum likelihood
 - (ii) Stochastic Gradient Descent

(2) (3) (1) (10)

OR

- 8 a. Illustrate the use of Logistic regression for classification. (2) (3) (2) (10)
- b. Contrast between the use of Naïve bayes and KNN for classification of the texts. (2) (3) (2) (10)

UNIT -V

- 9 a. What is map reduce? Illustrate the use of map reduce in word frequency count problem. (3) (2) (1) (08)
- b. Explain handling of data abundance and data scarcity in data engineering. (2) (2) (1) (06)
- c. Explain how modeling is done in data engineering. (2) (2) (5) (06)

OR

- 10 a. Write a note on
- (a) Hadoop
 - (b) Cloudera
- b. Explain map reduce with an example. (2) (2) (1) (10)
- (3) (2) (1) (10)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

Seventh Semester B.E. Semester End Examination, Dec./Jan. 2019-20
EMBEDDED SYSTEMS AND INTERNET OF THINGS

Time: 3 Hours

Max. Marks: 100

- Instructions:*
1. Answers must be brief and to the point.
 2. Suitable data may be assumed, with better reasoning.
 3. Draw diagrams, wherever necessary.
 4. Write question number properly.

UNIT - I

1. a. What is an embedded computing system? Describe the design of BMW 850i Brake and Stability Control System. (1) (1) (1) (06)
- b. Summarize the characteristics of embedded computing applications and the Challenges involved in the design of such system (2) (1) (1) (06)
- c. Explain the process of embedded system design with an example of a GPS Moving Map. (2) (1) (1) (08)

L	CO	PO	M
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(1)	(1)	(1)	(06)
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(2)	(1)	(1)	(06)
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(2)	(1)	(1)	(08)
-----	-----	-----	------

OR

2. a. Solve $x = (a + b) - c$ using C assignments using ARM instruction. (3) (1) (2) (06)
- b. What is the necessity of power consumption embedded system design? List and review the power characteristics of C-MOS. (2) (1) (1) (06)
- c. Demonstrate how the CPU performance can be enhanced using
 1. Pipelined execution of ARM instructions.
 2. Pipelined execution of multi-cycle ARM instructions.
 (2) (1) (1) (08)

L	CO	PO	M
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(1)	(1)	(1)	(08)
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UNIT - II

3. a. Explain IoT Link Layer Protocols, with its stack diagram. (2) (3) (1) (08)
- b. Compare Microprocessor and Microcontroller. (2) (2) (1) (06)
- c. Explain the basics fundamentals of Sensors and actuators. (2) (2) (1) (06)

L	CO	PO	M
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(1)	(1)	(1)	(08)
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OR

4. a. Illustrate IoT Communication Models, with a neat block diagrams. (1) (4) (1) (10)
- b. Contrast all 6 IoT Levels, with sketches and features. (2) (3) (1) (10)

L	CO	PO	M
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(1)	(1)	(1)	(10)
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UNIT - III

5. a. IoT Key Features, Advantages & Disadvantages (2) (3) (2) (10)
- b. List & explain the following in brief a) IoT Hardware b) IoT Software (1,2) (3) (2) (10)

L	CO	PO	M
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(1)	(1)	(1)	(10)
-----	-----	-----	------

OR

6. a. Explain Technologies & Protocols of IoT (2) (3) (1) (10)
- b. Illustrate the Home Automation IoT application (3) (3) (2) (10)

UNIT - IV

- | | L | CO | PO | M |
|---|-----|-----|-----|------|
| 7 a. Explain the purpose and requirement specification in IoT design process considering Home automation as an example. | (3) | (1) | (1) | (08) |
| b. Explain the domain model specification in IoT design process considering Home automation as an example. | (2) | (1) | (1) | (06) |
| c. Describe IoT Design Methodology for information model specification | (2) | (1) | (1) | (06) |

OR

- | | | | | |
|--|-----|-----|-----|------|
| 8 a. Illustrate IoT Design Methodology with respect to Logistics applications | (3) | (1) | (1) | (08) |
| b. Explain IoT Design Methodology with respect to Retail applications. | (2) | (1) | (1) | (06) |
| c. What is an IoT Device? Explain Basic building blocks of an IoT Device, with neat diagram. | (2) | (2) | (3) | (06) |

UNIT - V

- | | | | | |
|--|-----|-----|-----|------|
| 9 a. What is Xively Cloud? Explain how data can be uploaded to Xively Cloud with a documented python code: | (2) | (3) | (2) | (10) |
| b. Explain WAMP AutoBahn for IoT. | (2) | (3) | (2) | (10) |

OR

- | | | | | |
|---|-----|-----|-----|------|
| 10 a. What is Django Architecture? Explain briefly how you create a Django project. | (2) | (3) | (2) | (08) |
| b. Illustrate Designing a RESTful Web API. | (2) | (3) | (2) | (06) |
| c. Rewrite the python program for stopping an EC2 instance. | (2) | (3) | (2) | (06) |

Seventh Semester B.E. Semester End Examination, Dec./Jan. 2019-20
BIG DATA MANAGEMENT

Time: 3 Hours

Max. Marks: 100

Instructions: - I. Answer any one question from each unit.

UNIT - I

1. a. What is Big Data? List and discuss the elements of Big Data.
 b. Explain how Big Data can be used to prevent fraudulent activities.

L	CO	PO	M
(2)	(1)	(1)	(10)
(2)	(1)	(1)	(10)

OR

2. a. Discuss the use of Big Data in Social networking.
 b. What is Big Data analytics? Compare the different types of Big Data analytics.

(2)	(1)	(1)	(10)
(2)	(1)	(1)	(10)

UNIT - II

3. a. Explain the architecture of HDFS.
 b. Briefly explain the different commands of HDFS.

L	CO	PO	M
(2)	(2)	(1)	(10)
(2)	(2)	(1)	(10)

OR

4. a. With a neat diagram, explain the different components of the Hadoop Ecosystem.
 b. Describe the concept of blocks in HDFS architecture.

(2)	(2)	(1)	(10)
(2)	(2)	(1)	(10)

UNIT - III

5. a. Discuss the concept of Graph Databases with the help of neat diagram.
 b. Explain CAP theorem with the help of a neat diagram.

(2)	(3)	(1)	(10)
(2)	(3)	(1)	(10)

OR

6. a. Discuss ACID property and explain how throughput and overall performance can be improved by applying the concept of sharding?
 b. Explain Key value data model, Column-oriented data model and Document data model with a neat diagrams.

(2,3)	(3)	(2)	(10)
(2)	(3)	(1)	(10)

UNIT - IV

L	CO	PO	M
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7. a. With an example, discuss the working of the MapReduce framework.
 b. What are the limitations of MapReduce? How does YARN overcome these limitations?

(2)	(4)	(1)	(10)
(2)	(4)	(1)	(10)

OR

8. a. Describe the features of MapReduce.
 b. Explain the architecture of YARN with a neat diagram.

(2)	(4)	(1)	(10)
(2)	(4)	(1)	(10)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

UNIT -V

- | | L | CO | PO | M |
|--|-----|-----|-----|------|
| 9 a. Explain any five HIVE services. | (2) | (5) | (1) | (10) |
| b. What are the benefits of Pig? With a neat diagram, explain the architecture of Pig. | (2) | (5) | (1) | (10) |
| OR | | | | |
| 10 a. With a neat diagram, explain the architecture of Hive. | (2) | (5) | (1) | (10) |
| b. Discuss the important properties of Pig. | (2) | (5) | (1) | (10) |

Seventh Semester B.E. Semester End Examination, Dec./Jan. 2019-20
MOBILE COMPUTING AND APPLICATIONS

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Answer any one full question from each unit.

UNIT - I

- 1 a. Define Mobile Computing. Explain the mobile computing functions. (2) (1) (1) (10)
- b. With a neat diagram explain the Three –tier architecture for mobile computing. (2) (1) (1) (10)

OR

- 2 a. Illustrate with an example the composite capabilities/preference profiles. (2) (1) (1) (10)
- b. Explain the context aware systems. (2) (1) (1) (10)

UNIT - II

- 3 a. With a neat diagram explain the WiMAX deployment architecture and WiMAX protocol stack. (2) (2) (1) (10)
- b. Explain how does Mobile IP works (2) (2) (1) (10)

OR

- 4 a. With a neat sketch, explain the system architecture of GSM along with GSM entities. (2) (2) (1) (10)
- b. List out and explain the addresses and identifiers that GSM deals with.
List out and explain the GSM addresses and identifiers. (1,2) (2) (1) (10)

UNIT - III

- a. Describe the characteristics of SMS. (2) (2) (1) (07)
- b. With a neat diagram explain flow of SMS between Two MS. (2) (2) (1) (07)
- c. List characteristics of Value Added services.
List the characteristics of Value Added services through SMS. (1) (2) (1) (06)

OR

- 6 a. With a neat sketch explain Transmission plane and GPRS protocol stack. (2) (2) (1) (10)
- b. Explain BSS and SGSN interface layers.
List the QoS profiles of GPRS using parameters. Explain the attachment and detachment procedure in terms of GPRS network operations (2) (2) (1) (10)

UNIT - IV

- 7 a. Explain the smart client architecture with the help of a neat diagram. (2) (3) (2) (10)
- b. Explain the need analysis and design phase w.r.t. smart client development cycle.
With a neat diagram explain WAP programming model using a wireless gateway. (2) (3) (2) (10)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

OR

8 a. With the help of a neat diagram explain the wireless internet architecture.

(2) (3) (2)

b. Explain in detail the steps involved in processing a wireless request.

Explain the steps involved in processing a wireless request.

(2) (3) (1)

L CO PO

UNIT -V

9 a. Draw the MIDlet lifecycle and explain with an example.

With the help of a neat diagram explain the MIDlet lifecycle. Write down the source code of First MIDlet.

(2) (4) (1) (10)

b. Explain the communication in MIDP.

(2) (4) (1) (10)

OR

10 a. Explain the different types of security considerations in MIDP.

(2) (4) (1) (10)

b. Explain the GUI in MIDP.

(2) (4) (1) (10)

Seventh Semester B.E. Fast Track Semester End Examination, July/August 2019
MOBILE COMPUTING AND APPLICATIONS

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Unit I and Unit III are compulsory
 2. Answer any Three questions from remaining units

UNIT - I (Compulsory)

- | | L CO PO M |
|---|------------------|
| 1 a. Define Mobile computing. Explain the mobile computing in different context with differentiation. | (2) (1) (1) (10) |
| b. With a suitable diagram explain Client Context Manager. | (2) (1) (1) (10) |

UNIT - II

- | | |
|---|------------------|
| 2 a. With a diagram explain Mobile IP architecture. | (2) (1) (1) (10) |
| b. Explain the functions of IEEE 802.16 layers. | (2) (1) (1) (10) |

OR

- | | |
|--|------------------|
| 3 a. Explain GSM system Hierarchy | (2) (2) (1) (10) |
| b. List GSM entities. Explain any two entities | (2) (2) (2) (10) |

UNIT - III (compulsory)

- | | |
|---|------------------|
| 4 a. Explain the unique characteristics of SMS | (2) (2) (1) (10) |
| b. With a neat diagram explain GPRS system architecture | (2) (2) (1) (10) |

UNIT - IV

- | | |
|--|------------------|
| 5 a. Identify and explain the components of smart client architecture with neat diagram. | (3) (3) (2) (10) |
| b. With a diagram explain synchronization architecture | (2) (3) (1) (10) |

OR

- | | |
|---|------------------|
| 6 a. Explain the phases of Need analysis phase with a diagram | (2) (3) (2) (10) |
| b. Explain WAP programming model using a wireless gateway | (2) (3) (2) (10) |

UNIT - V

- | | |
|--|------------------|
| 7 a. What is provisioning? explain provisioning a MIDP application | (2) (4) (1) (10) |
| b. Explain MIDlet lifecycle | (2) (4) (1) (10) |

OR

- | | |
|--|------------------|
| 8 a. Explain Generic Connection framework | (2) (4) (1) (10) |
| b. List security considerations in MIDP. Explain any two security considerations | (2) (4) (1) (10) |

Seventh Semester B.E. Semester End Examination, Dec/Jan 2018-19
CLOUD COMPUTING

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Unit IV and Unit V are Compulsory.
 2. Answer any one FULL question from remaining each Unit.

UNIT - I

- | | L | CO | PO | M |
|---|-----|-----|-----|------|
| 1. a. List and explain any five benefits of cloud dynamic infrastructure. | (2) | (1) | (1) | (5) |
| b. What is virtualization? Draw the block diagram of datacenter clouds. How virtualization of cloud computing has benefitted various organizations. | (3) | (1) | (2) | (10) |
| c. List any five Business and IT enabled benefits for the adoption of cloud. | (1) | (1) | (1) | (05) |

OR

- | | | | | |
|---|-----|-----|-----|------|
| 2. a. Explain measured service in cloud computing. What are its benefits? | (2) | (2) | (2) | (08) |
| b. List the various workloads suitable for public clouds. | (1) | (2) | (2) | (08) |
| c. Compare and contrast public and private clouds. | (3) | (2) | (2) | (04) |

UNIT - II

- | | L | CO | PO | M |
|--|-----|-----|-----|------|
| 3. a. Justify how cloud infrastructure can deliver 'IT-as-a-Service' to the end users. | (3) | (2) | (2) | (05) |
| b. List and explain the various "Service Definitions" defined for cloud computing environment. | (2) | (2) | (2) | (10) |
| c. List and explain the service categories offered by cloud computing. | (2) | (2) | (2) | (05) |

OR

- | | | | | |
|---|-----|-----|-----|------|
| 4. a. List the various considerations required for design and development of cloud applications. | (1) | (2) | (1) | (06) |
| b. Explain the following:
i. Cloud Business Support Service
ii. Operational Support Service | (2) | (2) | (1) | (06) |
| c. Explain the various benefits provided by Computing on Demand. | (2) | (2) | (2) | (08) |

UNIT - III

- | | L | CO | PO | M |
|---|-----|-----|-----|------|
| 5. a. Explain the following related to Virtualization use cases.
i. Availability of machines
ii. Dynamic movement | (2) | (3) | (2) | (10) |
| b. List and explain virtual infrastructure requirements. | (2) | (3) | (2) | (10) |

OR

- | | | | | |
|---|-----|-----|-----|------|
| 6. a. With neat block diagram explain storage virtualization. | (2) | (3) | (1) | (10) |
| b. Explain with a neat diagram Cloud Server Virtualization. | (2) | (3) | (1) | (10) |

UNIT - IV

- 7 a. List and explain the different factors that help to develop the asset management strategy.
(2) (4) (8) (10)

- b. Explain the following terms:

- i. Mean Time Between Failure
- ii. Mean Time to Recover
- iii. High Availability
- iv. Continuous Operations
- v. Continuous Availability

(2) (4) (8) (10)

L CO PO M

UNIT - V

- 8 a. Explain the benefits of Information Lifecycle Management. List some of the objectives that drive the same.
(2) (4) (8) (10)

- b. With a neat block diagram explain Virtual Desktop Infrastructure provided by Cloud Offerings.
(2) (4) (8) (10)

Seventh Semester B.E. Semester End Examination, Dec/Jan 2018-19

SOFTWARE TESTING

Time: 3 Hours

Max. Marks: 100

Instructions:

1. Unit -IV and V are compulsory Units
2. Attempt any full question from the remaining units.
3. Draw the flow diagram and graph wherever required
4. Each question carry 20 marks

UNIT - I

1 a. Draw the life cycle model for testing. Define the following
 (i) Error (ii) Fault (iii) Failure (iv) Incident (2) (1) (1) (05)

b. Discuss code based testing and specification based testing methods. (2) (1) (2) (05)

c. Explain the improved version of the triangle problem statement in detail. Write the pseudo code for same problem. (2,3) (1) (2) (10)

OR

2 a. Explain the SATM System in detail. (2) (1) (2) (05)
b. Discuss in detail the working of Garage Door Opener. (2) (1) (2) (05)
c. Explain the NextDate Function in detail. Draw the flowchart for the same problem. (2) (3) (1) (2) (10)

UNIT - I

UNIT - II

3 a. Discuss the various levels of software testing for embedded device like SATM (Simple Automatic Teller Machine). (2) (3) (2) (10)

b. Discuss with graph the usage of boundary value analysis with function of two variables. Highlight the limitations of Boundary Value Analysis. (2) (1) (2) (10)

OR

OR

4 a. Discuss in brief , with suitable examples (i) Special Value Testing (ii) Random Testing
(2) (2) (2) (05)

b. Design test case table for Boundary Value Analysis of the Triangle problem.
(3) (3) (2) (05)

c. Discuss the following with graph
 i. Robustness Testing
 ii. Worst case Testing
(2) (1) (1) 10

UNIT - II

5 a. Explain Weak Normal Equivalence Class Testing in brief. (2) (2) (1) (05)
 b. Explain Strong Normal Equivalence Class Testing in brief. (2) (2) (1) (05)
 c. Identify Equivalence Class Test Cases for the Triangle Problem. (4) (2) (2) (10)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

OR

- 6 a. List observations and guidelines for equivalence class testing.
b. Explain decision tables technique for the triangle problem.

(1) (3) (2) (8)

(2) (2) (3) (12)

L CO PO M

- 7 a. Define DD-path. Design and develop the Pseudo code for the Triangle program and Draw the corresponding DD-graph.
b. Explain Basis path testing with an example.
c. Define predicate node, du-paths and dc-paths.

(3) (3) (3) (12)

(2) (1) (1) (04)

(2) (1) (1) (04)

L CO PO M

UNIT - V

- 8 a. Briefly explain Data flow testing. And define the following
(i) defining node (ii) usage node (iii) predicate use (iv) clear path
b. Draw DD-path graph for commission problem. Derive the statement fragments associated with DD-paths for the same.

(1.2) (2) (2) (10)

(3) (2) (3) (10)

Seventh Semester B.E. Semester End Examination, Dec/Jan 2018-19
DATA SCIENCE

Time: 3 Hours

Max. Marks: 100

- Instructions:**
1. Unit I and unit II are compulsory.
 2. Answer any one full question from remaining units.

UNIT - I

- 1 a. Define data science. List out the similarities and differences between Big data and Data science. (2) (1) (1) (10)
- b. Write a brief note on history of data science. Illustrate how data science is applied in different fields (3) (1) (1) (10)

UNIT - II

- 2 a. Write a note on
 - (i) Population
 - (ii) Sample
 - (iii) Parameter
 - (iv) Estimation of parameters
 (2) (1) (2) (10)
- b. Explain data science process with a neat diagram (2) (1) (1) (10)

UNIT III

- 3 a. Demonstrate how least squares method is used to best fit the linear regression algorithm (3) (2) (2) (10)
- b. Illustrate K means algorithm with an example (2) (2) (2) (10)

OR

- 4 a. Demonstrate KNN algorithm with an example and discuss the underlying assumptions made while using KNN (3) (3) (2) (10)
- b. Illustrate how predicting of house prices is done using linear regression model (2) (3) (4) (10)

UNIT - IV

- 5 a. Demonstrate how Naïve Bayes algorithm is used in classification of spam filters (3) (3) (2) (10)
- b. Discuss the merits and demerits of Linear Regression for Spam filtering. (2) (3) (2) (10)

OR

- 6 a. Compare and contrast between Naïve Bayes and KNN algorithm in classification of messages (4) (3) (1) (10)
- b. Demonstrate Linear regression model with an example (3) (3) (2) (10)

UNIT - V

- 7 a. Explain map reduce considering word frequency problem as an example (2) (2) (1) (08)
- b. Illustrate handling of data abundance and data scarcity in data engineering (2) (2) (1) (06)
- c. Explain how modeling is done in data engineering process (2) (2) (5) (06)

OR

Note: L : Level, CO : Course Outcome, PO : Programme Outcome, M : Marks

- 8 a. Explain the Hadoop and MapReduce. (2) (2) (1) (10)
- b. Write a short note on: (2) (2) (5) (10)
- (i) Role of Data Scientist in Data Analytics field
 - (ii) Examples of MapReduce

Seventh Semester B.E. Semester End Examination, Dec/Jan 2018-19
EMBEDDED SYSTEMS AND INTERNET OF THINGS

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Unit-I and Unit-IV are compulsory.
 2. Attempt any one question from remaining units.

UNIT - I

- 1 a. Explain Challenges in embedded computing system design. (2) (1) (1) (06)
- b. Explain Characteristics of embedded computing applications (2) (1) (1) (06)
- c. Define an embedded computer system? Explain example for BMW 850i Brake and Stability Control System. (3) (2) (2) (08)

L CO PO M

(2) (1) (1) (06)

(2) (1) (1) (06)

(3) (2) (2) (08)

L CO PO M

(2) (1) (1) (04)

(2) (1) (1) (08)

(2) (1) (1) (08)

UNIT - II

- 2 a. Define IoT. Explain the important characteristics of IoT. (2) (1) (1) (04)
- b. Explain the four IoT communication models. (2) (1) (1) (08)
- c. Illustrate any two levels of IoT systems with suitable example applications. (2) (1) (1) (08)

OR

- 3 a. Illustrate the generic block diagram of an IoT device. (2) (1) (1) (06)
- b. Explain the two IoT communication APIs (2) (1) (1) (07)
- c. Summarize the important features of any two enabling technologies of IoT (2) (1) (1) (07)

L CO PO M

- 4 a. Define an IoT device? Explain Block diagram of an IOT Device. (2) (3) (1) (06)
- b. Develop python programs for:
 i. switching LED on / off from Raspberry Pi Console.
 ii. for switching LED / Light based on LDR reading. (3) (3) (2) (06)
- c. Explain Raspberry Piboard with various components, peripherals & status LEDs. (2) (4) (3) (08)

L CO PO M

- 5 a. Explain Raspberry Pi frequently used commands. (2) (2) (3) (08)
- b. Explain Raspberry Pi interfaces. (2) (2) (3) (04)
- c. Develop python programs for:
 i. for blinking LED.
 ii. controlling an LED with a switch. (3) (3) (2) (08)

UNIT - IV

- 6 a. Explain the IoT architectural reference model with suitable block diagram
(2)
- b. What is 6LoWPAN? List its features
(1)
- c. Explain the MQTT protocol for IoT.
(2)

L	CO	PO	M
(2)	(2)	(1)	(68)
(1)	(2)	(3)	(66)
(2)	(3)	(2)	(66)

UNIT - V

- 7 a. Explain key concepts of Web Application Messaging Protocol (WAMP), with a session between Client and Router.
(2)
- b. i. Explain Publish-subscribe messaging using WAMP-AutoBahn,
ii. WAMP protocol commands for installing AutoBahn.
(2)

L	CO	PO	M
(2)	(1)	(1)	(16)
(2)	(1)	(1)	(16)

OR

- 8 a. Explain designing a RESTful Web API, with necessary python code for Django model & Django views for Weather Station.
(2)
- b. What is the use of Amazon S3? Develop a python code for uploading a file to an S3 cloud storage.
(2)

L	CO	PO	M
(2)	(1)	(1)	(16)
(2)	(1)	(1)	(16)

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15IS/CS751

Seventh Semester B.E. Semester End Examination, Dec/Jan 2018-19
BIG DATA MANAGEMENT

Time: 3 Hours

Max. Marks: 100

- Instructions:**
1. Unit -II and Unit-IV are compulsory units. Answer any one from each of the remaining units.
 2. Draw neat diagrams wherever applicable

UNIT - I

L	CO	PO	M
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- 1 a. Define Big data. Explain the various factors that have led to the evolution of Big Data. (1,2) (1) (1) (10)
- b. An insurance company has been receiving complaints from their policy holders, about fraudulent claims. The company has available with it data about policies of all its customers. The company wishes to reduce the fraudulent claims. Analyze this scenario and identify how Big Data analytics can help the company in detecting fraudulent claims for policies. (3) (1) (2) (10)

OR

- 2 a. List and explain the characteristics that distinguish Big Data from other forms of data. (1,2) (1) (1) (08)
- b. What is Big Data Analytics? Explain the different types of data analytics. (1,2) (1) (1) (07)
- c. Identify the category of analytics that the following fall into and explain why?
- i) One company discovered that they have spent about \$10 million per year on different sales training programs.
 - ii) Revenue is up in the East coast and the likely reason is the increase in investment on targeted marketing approach, closure of a major competitor in the area.
 - iii) Top 10 customer service representatives in terms of processed requests for the month of July in Asia.
 - iv) There's a 60% probability that our biggest supplier in the East coast will partner with our competitor next year.
 - v) Hospital staff determining those patients at highest risk of readmission and take action to mitigate this risk, such as emphasizing patient education at discharge or ensuring timely communication with primary care physicians and acute care facilities.

(3)	(1)	(1)	(05)
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UNIT - II

L	CO	PO	M
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- 3 a. Describe the concept of blocks in HDFS architecture with the help of a neat diagram. (2) (2) (1) (10)
- b. Identify the various HDFS commands providing a description of each. (2) (2) (1) (10)

(2)	(2)	(1)	(10)
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UNIT - III

L	CO	PO	M
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- 4 a. Compare relational databases with NoSQL databases. (2) (3) (1) (10)
- b. Explain the different ways in which data can be distributed and their forms. (2) (3) (1) (05)
- c. Explain the CAP theorem. (2) (3) (1) (05)

OR

- 5 a. Explain the different types of NoSQL databases that are generally used. (2) (3) (1,2) (10)
 b. What are materialized views? (1) (3) (1) (05)
 c. Explain different distribution models and their types, if any. (2) (3) (1) (05)

UNIT - IV

- 6 a. Discuss MapReduce Model architecture diagram that analyses the data in Yarn by using an upgraded MapReduce framework. (2) (4) (2) (10)
 b. Explain YARN architecture in detail with the help of a neat diagram. (2) (4) (1) (10)

UNIT - V

- 7 a. With a schematic representation, explain the architecture of Hive. (2) (5) (1) (08)
 b. List and explain any six Hive services. (1,2) (5) (1) (06)
 c. Explain the Pig architecture in relation to Hadoop Ecosystem. (2) (5) (1) (06)

OR

- 8 a. Explain the various components of Hive with an illustration. (2) (5) (1) (08)
 b. Explain the various aggregate functions available in Hive. (2) (5) (1) (06)
 c. Discuss the two modes used for running the Pig scripts. (2) (5) (1) (06)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

Seventh Semester B.E Semester End Examination, Dec/Jan 2018-19
MOBILE COMPUTING AND APPLICATIONS

Time: 3 Hours

Max. Marks: 100

Instructions: 1. UNIT I and UNIT III are compulsory
 2. Answer any one full question from remaining units

UNIT - I

L	CO	PO	M
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- 1 a. Define mobile computing? Explain the functions of mobile Computing with a diagram.
 b. Explain the architecture of mobile computing

(2)	(1)	(1)	(08)
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UNIT - II

L	CO	PO	M
---	----	----	---

- 2 a. With a diagram explain WiMax Protocol Stack.
 b. With the help of suitable diagram explain GSM System Hierarchy.

(2)	(1)	(1)	(10)
-----	-----	-----	------

OR

- 3 a. Explain WiMAX Deployment Architecture.
 b. Identify and explain set of steps for exchange of IP datagrams between mobile node (A) and another host.
 c. Classify different GSM network groups.

(2)	(1)	(1)	(05)
(2)	(1)	(2)	(10)
(2)	(1)	(1)	(05)

UNIT - III

L	CO	PO	M
---	----	----	---

- 4 a. With a suitable diagram explain SMS architecture.
 b. Explain Transmission plane architecture of GPRS.

(2)	(2)	(1)	(10)
-----	-----	-----	------

UNIT - IV

L	CO	PO	M
---	----	----	---

- 5 a. Illustrate smart client architecture with a suitable diagram
 b. Explain in brief smart client development cycle.
 c. Explain WAP programming model using a wireless gateway

(2)	(3)	(1)	(08)
(2)	(3)	(1)	(06)
(2)	(3)	(1)	(06)

OR

- 6 a. Summarize the need analysis phase of smart client development process.
 b. List and explain protocols of WAP 1.x
 c. Describe the elements of wireless application environment (WAE).

(2)	(3)	(1)	(07)
(2)	(3)	(1)	(07)
(2)	(3)	(1)	(06)

UNIT - V

L	CO	PO	M
---	----	----	---

- 7 a. Explain MIDlet lifecycle
 b. Define provisioning. Identify steps of provisioning a MIDP application.

(2)	(4)	(1)	(10)
(3)	(4)	(1)	(10)

OR

- 8 a. List the UI design issues. (1) (A) (B) (C)
b. Write a java module to delete a Record. (2) (A) (B) (C)
c. Discuss security considerations in MIDP. (2) (A) (B) (C)

Seventh Semester B.E. Makeup Examination, January 2019
CLOUD COMPUTING

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Unit IV and Unit V are Compulsory.
 2. Answer any one FULL question from remaining each Unit.

UNIT - I

L CO PO M

1. a. Define Cloud Computing. With a neat diagram explain the basic cloud computing model. Also list the various reasons for adopting cloud. (2) (1) (1) (10)
- b. Assume an organization wants to setup a cloud infrastructure for all its services. Suggest with reasons the type of cloud deployment model suitable for each of the following.
- i. Employee and Employers Login
 - ii. Client Login
 - iii. Record maintenance
 - iv. Organization Confidential Information
 - v. Product information
- (4) (2) (2) (05)
- c. Discuss the barriers in implementing cloud computing. (2) (1) (2) (05)

OR

2. a. List and explain cloud computing characteristics. (2) (1) (1) (06)
- b. With a neat diagram explain the various cloud deployment models. (2) (1) (2) (10)
- c. Name different services consumed by public cloud. (1) (1) (2) (04)

UNIT - II

L CO PO M

3. a. List and explain the attributes of a cloud infrastructure. How IT-as-a-service can be delivered to the end users as a cloud service? (2) (2) (2) (10)
- b. Differentiate between PaaS, SaaS, and IaaS models. (3) (2) (2) (10)

OR

4. a. List and explain the various opportunities for cloud brokers. (2) (2) (2) (06)
- b. Explain the following:
- i. Cloud Business Support Service
 - ii. Operational Support Service
- (2) (2) (2) (06)
- c. Explain the various benefits provided by Computing on Demand. (2) (2) (2) (08)

UNIT - III

L CO PO M

5. a. List and explain the current virtualization initiatives. (2) (3) (2) (10)
- b. With a neat block diagram explain the concept of virtual machines. (2) (3) (2) (10)

OR

- 6 a. With a neat block diagram explain the Network-Attached Storage. (2) (3) (1) (10)
b. Explain with a neat diagram Cloud Server Virtualization. (2) (3) (2) (10)

L CO PO M

UNIT - IV

- 7 a. Explain cloud governance scenario with a block diagram. (2) (3) (1) (10)
b. Explain the following related to cloud management.
i. Standard Subscription Based Model
ii. Pay Per Use Model (2) (4) (8) (10)

L CO PO M

UNIT - V

- 8 a. Explain the benefits of Information Lifecycle Management. List some of the objectives that drives the same. (2) (4) (8) (10)
b. Explain the concept of Cloud Orchestration workflow with a neat diagram. (2) (4) (8) (05)
c. Draw a block diagram for Cloud Governance. (2) (4) (8) (05)

Seventh Semester B.E. Makeup Examination, January 2019

SOFTWARE TESTING

Time: 3 Hours

Max. Marks: 100

- Instructions:**
1. UNIT IV and UNIT V are compulsory
 2. Answer One complete question from remaining UNITS
 3. Assume the missing data if any

UNIT - I

1. a. Explain why do we test software? Discuss its importance in Software Development Life Cycle (SDLC)? (2) (1) (1) (04)
- b. Discuss testing life cycle with a diagram. (2) (5) (1) (08)
- c. Sketch the flowchart for traditional triangle program implementation (3) (3) (2) (08)

OR

2. a. Explain with an example Error, Fault and Failure. (2) (1) (1) (04)
- b. Discuss two fundamental approaches which are used to identify test cases. (2) (1) (1) (06)
- c. Design the pseudo code for the commission calculation problem where the salesperson has to sell minimum of 5 items of each type (Locks, Stocks and Barrels) to earn the commission. The company is able to manufacture 40 Locks, 70 Stocks and 90 Barrels. Commission 10% is to be calculated for the first total sales of \$3500, 15% commission is to be calculated for the next total sale of \$1500, 20% commission is to be calculated for the total sale greater than \$5000. The price of Lock is \$25, Stock is \$30 and Barrel is \$35. Also analyze it from the perspective of software testing (5) (2) (2) (10)

UNIT - II

3. a. Explain normal boundary value testing with function of two variables. And infer the limitations for normal boundary-value testing. (2) (2) (2) (08)
- b. Explain Robust Boundary Value Testing and Worst-Case Boundary Value Testing. Compute a formula for the number of robust worst-case test cases for a function of n variables. (2,4) (2) (2) (12)

OR

4. a. Identify any 5 Test Cases of the Triangle Problem for (i) Normal Boundary Value Test (ii) Worst-Case Boundary Value test. (1) (2) (2) (10)
- b. Discuss in brief, with suitable examples (i) Special Value Testing (ii) Random Testing (2) (2) (2) (10)

UNIT - III

5. a. Explain the following with graph.
 - i. Weak Normal Equivalence class Testing and Strong Normal Equivalence Class Testing.
 - ii. Weak Robust Equivalence class Testing and Strong Robust Equivalence Class Testing.(3) (4) (5) (10)
- b. Discuss and Design the decision table for the Triangle Problem. (3) (3) (2) (10)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

OR

- 6 a. Explain the concept of Decision Table Based Testing. (2) (1) (1) (04)

- b. Discuss the guidelines and observations of Equivalence Class Testing.
Write Equivalence Classes for the two variables item code which ranges from 99-200 and
item_quantity which ranges from 1-100 (3) (3) (5) (08)

- c. Design Weak Robust and Strong Robust equivalence class test case table for the NextDate
Function. (3) (4) (5) (08)

UNIT - IV

- 7 a. Derive the program graphs for programming constructs (i) if then else (ii) switch (iii) while (iv) do
while. (3) (2) (3) (08)

- b. Explain DD path in brief. Derive DD-path graph for triangle program.

(2,3) (2) (3) (12)

UNIT - V

- 8 a. Explain Data flow testing. (2) (1) (1) (04)

- b. Explain Slice based Testing. Write the guidelines and observations of Slice based testing.

(2) (1) (1) (08)

- c. Discuss du-Path Test Coverage Metrics with diagram.

(3) (1) (2) (08)

Seventh Semester B.E. Makeup Examination, January 2019
DATA SCIENCE

Time: 3 Hours

Max. Marks: 100

- Instructions:* 1. Unit I and unit II are compulsory
 2. Answer anyone full question from remaining units

UNIT - I

- 1 a. What is data science? Illustrate the relationship between big data and data science. (2) (1) (2) (08)

- b. Define datafication. Bring out the differences between a data analyst and data scientist. (2) (1) (2) (08)

- c. List and explain the different challenges that arise in processing big data. (2) (1) (4) (04)

UNIT - II

- 2 a. What is a model? Explain how modeling is done using exploratory data analysis. (2) (2) (2) (10)

- b. Illustrate the process of data science with a diagram (2) (2) (1) (10)

UNIT - III

- 3 a. What is machine learning? Explain the machine learning algorithms. (2) (1) (1) (10)

- b. Compare between Supervised and Unsupervised machine learning. (3) (2) (4) (10)

OR

- 4 a. Briefly explain the K Nearest Neighbour algorithm. List out the modeling assumptions to be made while using KNN algorithm. (2) (2) (4) (10)

- b. Explain the logistic regression model (2) (2) (2) (10)

UNIT - IV

- 5 a. Explain classifiers, run-time, interoperability with respect to logistic regression (2) (2) (1) (10)

- b. Write a brief note on: (2) (2) (1) (10)

(i) Newton's method for maximum likelihood

(ii) Stochastic Gradient Descent

OR

- 6 a. Demonstrate how classification of spam messages is performed using Naïve Bayes algorithm (3) (3) (2) (10)

- b. Explain why KNN and Linear regression algorithms cannot be used for filtering spam (2) (2) (2) (10)

UNIT - V

- 7 a. Explain MapReduce and its framework with an example (2) (2) (1) (10)

- (2) (2) (5) (10)

- b. Write a note on:

(i) Hadoop

(ii) Role of Data scientist in Data Analytics field

OR

- 8 a. Explain how data abundance and data scarcity is handled in data engineering (2) (2) (1) (06)
- b. Explain the word frequency problem. How is it tackled using MapReduce? (2) (2) (5) (06)
- c. Illustrate how modeling is done in data engineering. (2) (2) (5) (08)

Seventh Semester B.E. Makeup Examination, January 2019
EMBEDDED SYSTEM DESIGN AND INTERNET OF THINGS

Time: 3 Hours

Max. Marks: 100

- Instructions:**
1. Unit I and Unit IV are compulsory.
 3. Data, if necessary, may be assumed.
 4. Sketches, when required, may be drawn.

UNIT - I

- | | | L | CO | PO | M |
|---|--|-----|-----|-----|------|
| 1 | a. Explain the embedded system design process with the help of a block diagram. | (2) | (1) | (1) | (08) |
| | b. Construct and write the requirement chart for GPS moving map system. | (3) | (2) | (2) | (05) |
| | c. Develop the ALP to evaluate the following expression using ARM7 assembly programming
$Z = (a \ll z) (b \& 15)$ | (3) | (2) | (2) | (07) |

UNIT - II

- | | | L | CO | PO | M |
|---|--|-----|-----|-----|------|
| 2 | a. Explain the features of four IoT protocols used in Link Layer laid by IEEE. | (2) | (1) | (1) | (06) |
| | b. Contrast all 4 IoT Communication Models. | (2) | (1) | (1) | (06) |
| | c. Illustrate IoT level-6 deployment template with block diagram. | (2) | (1) | (1) | (08) |

OR

- | | | L | CO | PO | M |
|---|---|-----|-----|-----|------|
| 3 | a. Explain the Characteristics of an IoT System. | (2) | (1) | (1) | (06) |
| | b. Explain REST – based communication APIs, with block diagram. | (2) | (1) | (1) | (06) |
| | c. Illustrate IoT level-5 deployment template with block diagram. | (2) | (1) | (1) | (08) |

UNIT - III

- | | | | | | |
|---|--|-----|-----|-----|------|
| 4 | a. Define the terms sensors and actuators. Explain any one sensor and an actuator that you know. | (2) | (2) | (2) | (06) |
| | b. Explain the communication interfaces for data transfer available in Raspberry Pi. | (2) | (2) | (1) | (06) |
| | c. Build a Python program for Raspberry Pi to send an email on pressing of a switch. | (3) | (3) | (3) | (08) |

OR

- | | | | | | |
|---|---|-----|-----|-----|------|
| 5 | a. What is GPIO header? Explain the use of the same in Raspberry Pi. | (2) | (2) | (2) | (06) |
| | b. Develop a Python code on Raspberry Pi to demonstrate controlling of a LED with a switch. | (3) | (3) | (2) | (08) |
| | c. Explain briefly about any two single board computers other than Raspberry Pi that you know | (2) | (2) | (2) | (06) |

UNIT - IV

- | | | L | CO | PO | M |
|---|--|-----|-----|-----|------|
| 6 | a. Explain 6LowPAN Protocol. | (2) | (1) | (1) | (10) |
| | b. Explain IPv6 Routing Protocol for Low-Power and Lossy Networks (RPL)Protocol. | (2) | (1) | (1) | (10) |

UNIT - V

	L	CO	PO	M
7 a.	What is WAMP? Explain the key concepts of WAMP. (2)	(4)	(3)	(06)
b.	Explain the procedure to setup a MySQL database and configure it with Django project (2)	(4)	(3)	(07)
c.	Explain the Django view that retrieves data from Xively cloud with suitable example. (2)	(4)	(3)	(07)

OR

- 8 a. What is Django? Briefly explain its architecture.

(2) (4) (3) (06)
- b. Explain the python code for sending data to Xively cloud with a suitable example.

(2) (4) (3) (07)
- c. Explain about the Amazon Web Services for IoT.

(2) (4) (3) (07)

Seventh Semester B.E. Makeup Examination, January 2019

BIG DATA MANAGEMENT

Time: 3 Hours

Max. Marks: 100

- Instructions:**
1. Unit II and Unit IV are compulsory.
 2. Answer one full question from Units I, III and V.

UNIT - I

- 1 a. Compare between internal and external sources of data and explain structured, unstructured and semi structured data. (2) (1) (1) (10)
- b. Explain the different elements of Big data in detail. (2) (1) (1) (10)

OR

- 2 a. Compare the three types of Big Data Analytics and discuss the advantages of Big Data Analytics. (2) (1) (1) (10)
- b. Explain in detail the different applications of Big Data. (2) (1) (1) (10)

UNIT - II

- 3 a. With a schematic diagram, explain the different components of the Hadoop Ecosystem. (2) (2) (1) 10
- b. Explain the architecture of HDFS. (2) (2) (1) 10

UNIT - III

- 4 a. Discuss the concept of Graph Databases with the help of a neat diagram. (2) (3) (1) (10)
- b. Explain CAP theorem with the help of a neat diagram. (2) (3) (2) (10)
- 5 a. Explain ACID property and Sharding with the help of a neat diagram. (2) (3) (1) (10)
- b. Illustrate the various NoSQL data models with neat diagrams. (2) (3) (1) (10)

UNIT - IV

- 6 a. XYZ.com is an online music website where users listen to various tracks and the data gets collected in log files and looks like as shown below:

```

UserId|TrackId|Shared|Radio|Skip
111115|222|0|1|0
111113|225|1|0|0
111117|223|0|1|1
111115|225|1|0|0
    
```

Assume that there are four log files for four cities with statistics for residents of each city. Model this using the Map Reduce paradigm to determine the number of times the track was listened to on the radio. Depict the same using a schematic diagram.

- b. Infer the limitations of Hadoop 1 Map Reduce.

(4) (4) (2,3) (10)
 (2) (4) (1) (10)

UNIT -V

		L	CO	PO	M
7	a. With a neat diagram, explain the architecture of Hive.	(2)	(5)	(1)	(10)
	b. Explain the Hive commands used in Shell interactive mode.	(2)	(5)	(1)	(10)
	OR				
8	a. Discuss the Built-in functions available in Hive.	(2)	(5)	(1)	(10)
	b. Discuss the important properties of Pig.	(2)	(5)	(1)	(10)

Seventh Semester B.E. Makeup Examination, January 2019
MOBILE COMPUTING AND APPLICATIONS

Time: 3 Hours

Max. Marks: 100

Instructions: 1. UNIT I and UNIT III are compulsory
 2. Answer any one full question from remaining units

UNIT - I

- 1 a. What is mobile computing? Explain the characteristics of mobile Computing. (2) (1) (1) (07)

- b. State design considerations for mobile computing. (2) (1) (1) (05)

- c. Identify and explain role of a client context manager with a suitable diagram. (3) (1) (2) (08)

UNIT - II

- 2 a. With a diagram explain WiMax Deployment architecture. (2) (1) (1) (10)

- b. With the help of suitable diagram explain architecture of GSM. (2) (1) (1) (10)

OR

- 3 a. Explain tunneling operations in Mobile IP (2) (1) (1) (10)

- b. Identify and explain GSM addresses and identifiers. (3) (1) (2) (10)

UNIT - III

- 4 a. List and explain the unique characteristics of SMS. (2) (2) (1) (06)

- b. With a suitable diagram explain GPRS System architecture. (2) (2) (1) (08)

- c. Explain the routing of packets in GPRS (2) (2) (1) (06)

UNIT - IV

- 5 a. Illustrate smart client Synchronization architecture with a suitable example. (2) (3) (1) (08)

- b. Summarize the need analysis phase of smart client development process. (2) (3) (1) (07)

- c. Explain WAP programming model without using a gateway. (2) (3) (1) (05)

OR

- 6 a. Explain the steps of processing a wireless request. (2) (3) (1) (10)

- b. List and explain protocols of WAP 2.x (2) (3) (1) (05)

- c. Identify the elements of wireless application environment(WAE). (3) (3) (1) (05)

UNIT -V

- | | | L | CO | PO | M |
|---|---|-----|-----|-----|------|
| 7 | a. Give typical mobile application architecture. | (2) | (4) | (1) | (05) |
| | b. What is provisioning. Explain provisioning a MIDP application. | (2) | (4) | (1) | (10) |
| | c. Summarize MIDlet Event Handling. | (3) | (4) | (1) | (05) |

OR

- | | | | | | |
|---|---|-----|-----|-----|------|
| 8 | a. Explain the UI design issues. | (2) | (4) | (1) | (05) |
| | b. Write a java module to delete a RecordStore. | (3) | (4) | (2) | (08) |
| | c. Explain security considerations in MIDP | (2) | (4) | (2) | (07) |

Seventh Semester B.E. Makeup Examination, January 2020

INFORMATION AND NETWORK SECURITY

Time: 3 Hours

Max. Marks: 100

- Instructions:**
1. All units are compulsory
 2. Answer any one question from each unit
 3. Draw a neat figure wherever required

UNIT - I

1. a. Using the Vigenere cipher ,encrypt the word "explaination" using the key "leg"
(3) (1) (1) (04)
- b. Apply Playfair ciper to encrypt and decrypt the message "hide the gold in the tree stump" using the key "largest".
(3) (1) (1) (08)
- c. Apply Hill ciper to encrypt and decrypt the message "GOGATE" using the key

$$\begin{matrix} 5 & 4 \\ 4 & 7 \end{matrix}$$

(3) (1) (1) (08)

OR

2. a. With a neat figure explain the encryption and decrytion process in DES algorithm
(1) (1) (1) (10)
- b. Explain polyalphabetic substitution cipher. How do they differ from monoalphabetic cipher.
(1) (1) (1) (10)

UNIT - II

3. a. What are the applications of public key cryptosystems.
(1) (4) (1) (06)
- b. What are the requirements of public key cryptography.
(1) (4) (1) (06)
- c. Describe the RSA algorithm.
(1) (4) (1) (08)

OR

- a. List the important ingredients of public key cryptosystems.
(1) (4) (1) (06)
- b. List the possible approaches for attacking RSA algorithm.explain anyone in detail
(1) (4) (1) (06)
- c. Explain how you provide authentication and secrecy in public key cryptosystems for sender C and receiver D.
(2) (4) (1) (08)

UNIT - III

4. a. Discuss the concept of key hierarchy.
(1) (4) (1) (05)
- b. Explain how the keys can be distributed for a symmetric encryption to work.
(2) (4) (1) (07)
- c. Explain how A establishes a logical connection with B. Explain the key distribution scenario with a neat diagram
(2) (4) (6) (08)

OR

5. a. Discuss the approaches used in public key distribution and analyze the risks involved in various approaches
(2) (4) (1) (10)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

Seventh Semester B.E. Semester End Examination, Dec/Jan 2018-19
INFORMATION AND NETWORK SECURITY

Time: 3 Hours

Max. Marks: 100

- Instructions:** 1. Unit I and III are compulsory.
 2. Answer five full question by selecting at least one question from each UNIT.

UNIT - I

- 1 a. List and explain types of attacks on encrypted messages. (2) (1) (1) (10)

- b. Illustrate overall scheme for DES Encryption. Give appropriate example. Write a note on strength of DES. (2) (1) (1) (10)

UNIT - II

L	CO	PO	M
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- 2 a. Write an algorithm for RSA and perform encryption and decryption using RSA algorithm for the following values.

$P=11, q=13, e=11, M=7.$ (2) (1) (1) (08)

- b. Explain how you provide authentication and secrecy in public key cryptosystem. (2) (1) (1) (06)

- c. Explain any one of the possible approach to attack the RSA algorithm. (2) (1) (1) (06)

OR

- 3 a. Describe in general terms an efficient procedure for picking a prime number. (1) (1) (1) (10)

- b. What are the requirements for public key cryptography? (1) (1) (1) (10)

UNIT - III

L	CO	PO	M
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- 4 a. Explain the different ways, key distribution can be achieved for two parties A and B. Explain with figure key distribution scenario. (2) (4) (1) (10)

- b. Explain with diagram X.509 formats (2) (4) (1) (10)

UNIT - IV

L	CO	PO	M
---	----	----	---

- 5 a. List and explain the security threats of wireless networks. (2) (3) (6) (10)

- b. Explain with a neat figure any of the two phases of handshake protocol associated with Secure Socket Layer. (2) (3) (6) (10)

OR

- 6 a. Explain with a neat diagram the architecture of Secure Socket Layer (2) (3) (6) (08)

- b. Explain with neat diagram IEEE 802 protocol architecture. (2) (3) (6) (06)

- c. What are the conditions for web security? (1) (3) (6) (06)

Seventh Semester B.E. Makeup Examination, January 2019
INFORMATION AND NETWORK SECURITY

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Unit-I and Unit-III are Compulsory
 2. Answer any one full question from each of the remaining questions.

UNIT - I

L CO PO M

- 1 a. Explain the transposition techniques for encrypting and decrypting the plaintext. (2) (1) (1) (10)
 b. Describe the General description of Data Encryption algorithm with a neat diagram. (1) (1) (1) (10)

UNIT - II

L CO PO M

- 2 a. Explain the requirements for Public Key cryptography. Explain the procedure for picking a prime number. (2) (2) (1) (10)
 b. Explain the principles of public key cryptosystem (2) (2) (1) (05)
 c. In a public key system using RSA, you intercept the ciphertext C=10 sent to a user whose public key is e=5, n=35. what is the plain text M? (3) (2) (1) (05)

OR

- 3 a. Perform encryption and decryption using the RSA algorithm for the following
 i) p=3; q=11; e=7; M=5
 ii)p=17; q=31; e=7; M=2 (3) (1) (1) (10)
 b. Explain five possible approaches to attacking the RSA algorithm. (2) (1) (1) (10)

UNIT - III

L CO PO M

- 4 a. Explain the key distribution scenario associated with symmetric key distribution using asymmetric encryption. (2) (4) (1) (06)
 b. How do you provide confidentiality and authentication with secret key distribution in symmetric key distribution using asymmetric encryption? (2) (4) (1) (06)
 c. Write and explain the general format of a X.509 public key certificate. (1) (4) (1) (08)

UNIT - IV

L CO PO M

- 5 a. Explain the types of security threats faced and their consequences when using the web. Also suggest countermeasures. (2) (3) (6) (10)
 b. List and explain fatal alert codes supported by TLS. (2) (3) (6) (10)

OR

- 6 a. List and explain security threats to wireless networks. Explain two types of countermeasures for securing wireless transmissions. (2) (3) (6) (10)
 b. List and explain the security controls to be configured for the BYOD or Bring Your Own Devices. (2) (3) (12) (10)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)

UNIT -V

- | | L | C O | P ₀ | |
|---|---|-----|----------------|-----|
| 7 | a. Explain the PGP message generation and message reception technique
b. What is S/SMIME? What are the functions of S/MIME?
c. What are the threats associated with E-mail. | (2) | (2) | (6) |
| | | (1) | (2) | (6) |
| 8 | a. Explain with a neat figure the key components of Internet mail architecture.
b. Discuss the services of Pretty Good Privacy. | (1) | (2) | (6) |
| | | (2) | (2) | (6) |
| | | (1) | (2) | (6) |
- OR**

UNIT -V

		L	CO	PO	M
7	a. Explain with diagrams PGP cryptographic functions.	(2)	(2)	(6)	(10)
	b. Explain transmission and reception of PGP services.	(2)	(2)	(6)	(10)
	OR				
8	a. Explain MIME content types and subtypes.	(2)	(2)	(6)	(10)
	b. List and explain the capabilities that an attacker might have as per RFC 4686.	(2)	(2)	(12)	(10)

Note: L (Level), CO (Course Outcome), PO (Programme Outcome), M (Marks)