

Seventh Semester B.E. Fast Track Semester Examination, July/Aug. 2019
CRYPTOGRAPHY AND NETWORK SECURITY

Time: 3 Hours

Max. Marks: 100

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

UNIT - I (compulsory)

- 1 a. Explain DES algorithm in detail with the help of a neat diagram. (2) (1) (1) (10)
- b. Solve using the following cryptographic techniques
 a) Play fair cipher to obtain cipher text for plain text "always welcome" and keyword MONARCHY
 b) Transposition technique to decrypt the plain text "good morning have a nice day" for the key 4321657 (3) (1) (2) (10)

UNIT - II (compulsory)

- 2 a. Explain the characteristics of a public key cryptosystem (asymmetric) with a neat diagram. List the 3 applications of public key cryptosystems. (2) (2) (1) (10)
- b. Show the steps involved in RSA algorithm. Solve to obtain the cipher text given plain text $M=88$, $p=17$, $q=11$ and $e=7$. (3) (2) (2) (10)

UNIT - III

- 3 a. Explain packet filtering firewall in detail with a neat diagram. Apply a simple firewall rule and format. (3) (3) (2) (10)
- b. Define Virtual Packet Networks. Explain the 2 modes of VPN with neat diagrams. (2) (3) (1) (10)

OR

- 4 a. Explain application gateways, Circuit gateways and MAC Layer firewalls in detail. (2) (3) (1) (10)
- b. Categorize the different types of firewall based on their architecture. (4) (3) (1) (10)

UNIT - IV

- 5 a. Explain a typical IP Security Scenario with the help of a neat diagram along with its applications. (2) (4) (1) (10)
- b. Explain the benefits and routing applications of IPSec. (2) (4) (1) (10)

OR

- 6 a. List the IPSec Services. Explain the different categories of IPSec documents. (2) (4) (1) (10)
- b. List and explain the different parameters in a Security Association Database (SAD) entry. (2) (4) (1) (10)

UNIT - V

- 7 a. Explain the different Wireless Network threats in detail (2) (5) (1) (10)
- b. Explain the different ways to configure the mobile device with security controls.

OR

8 a. Explain the 5 header fields defined in MIME along with its content types.

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

b. Discuss the MIME transfer encodings and cryptographic algorithms used in S/MIME

(2) (5) (3) (10)

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

Time: 3 Hours

Max. Marks: 100

- Instructions:**
1. Unit-I and Unit-II are compulsory. Answer any one from the remaining Units.
 2. Draw neat diagrams wherever applicable

UNIT - I

L CO PO M

- 1 a. Explain DES algorithm in detail with the help of a neat diagram. (2) (1) (1) (10)
- b. Solve using the following cryptographic techniques
- a) Play fair cipher to obtain cipher text for plain text "most welcome" and keyword MONARCHY
 - b) Transposition technique to decrypt the plain text "get up early and do your exercise regularly" for the key 4321657 (3) (1) (2) (10)

UNIT - II

L CO PO M

- 2 a. Show how public key cryptosystem can be used to apply secrecy during transmission with the help of a neat diagram. (3) (2) (2) (10)
- b. Explain the requirements and applications of public key cryptosystem. (2) (2) (1) (10)

UNIT - III

L CO PO M

- 3 a. Explain packet filtering firewall in detail with a neat diagram. Apply a simple firewall rule and format. (3) (3) (2) (10)
- b. Define Virtual Packet Networks. Explain the 2 modes of VPN with neat diagrams. (2) (3) (1) (10)

OR

- 4 a. Explain the 3 subsets of packet filtering firewall in detail. (2) (3) (1) (10)
- b. List the 3 interacting services of Kerberos. Explain Kerberos login with a neat diagram. (2) (3) (1) (10)

UNIT - IV

L CO PO M

- 5 a. Show the steps involved in IP traffic processing for outbound traffic with a neat diagram. (2) (4) (1) (10)
- b. Explain the fields of a top level format of an ESP packet with a neat diagram. (2) (4) (1) (10)

OR

- 6 a. Show the tunnel mode ESP with neat diagrams for ipv4 and ipv6. (2) (4) (1) (10)
- b. Show the steps involved in IP traffic processing for inbound traffic with a neat diagram. (2) (4) (1) (10)

UNIT - V

L CO PO M

- 7 a. Explain the different Wireless Network threats in detail (2) (5) (1) (10)
- b. Explain the different Security Threats for Mobile devices (2) (5) (3) (10)

OR

- 8 a. Explain the 5 header fields defined in MIME along with its content types.
(2) (5) (1) (10)
- b. Discuss the MIME transfer encodings and cryptographic algorithms used in S/MIME
(2) (5) (3) (10)

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

Time: 3 Hours

Max. Marks: 100

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

UNIT - I

L CO PO M

- 1 a. Explain different types of attacks on encrypted messages based on the amount of information known to the cryptanalyst. (2) (1) (2) (10)
- b. Construct a Playfair matrix with the key "occurrence". Make a reasonable assumption about how to treat redundant letters in the key. (3) (1) (2) (05)
- c. Use Caesar cipher with key =15 to encrypt the message "meet me after the toga party". (3) (1) (1) (05)

UNIT - II

L CO PO M

- 2 a. Explain the characteristics of a public key cryptosystem (asymmetric) with a neat diagram. List the applications of public key cryptosystems. (2) (2) (1) (10)
- b. Show the steps involved in RSA algorithm. Solve to obtain the cipher text given plain-text $M=88$, $p=17$, $q=11$ and $e=7$. (3) (2) (2) (10)

UNIT - III

L CO PO M

- 3 a. Explain Kerberos authentication mechanism. (2) (3) (1) (10)
- b. Explain packet-filtering firewalls. (2) (3) (1) (10)

OR

- 4 a. Explain honey pots with its advantages and disadvantages (2) (3) (2) (05)
- b. Explain different generation of firewalls. (2) (3) (2) (10)
- c. Explain transport mode VPN. (2) (3) (2) (05)

UNIT - IV

L CO PO M

- 5 a. Explain a typical IP Security Scenario with the help of a neat diagram along with its applications. (2) (4) (1) (10)
- b. Explain the benefits and routing applications of IPSec. (2) (4) (1) (10)

OR

- 6 a. List the IPSec Services. Explain the different categories of IPSec documents. (2) (4) (1) (10)
- b. List and explain the different parameters in a Security Association Database (SAD) entry. (2) (4) (1) (10)

UNIT -V

L	CO	PO	M
(2)	(5)	(3)	(10)
(2)	(5)	(3)	(10)

- 7 a. List different major security concerns for mobile devices.
b. Explain S/MIME in details.

OR

- 8 a. Summarize the different PGP services.
b. With neat diagram, explain PGP authentication.
c. Explain different security threats to wireless networks.

(2)	(5)	(3)	(06)
(2)	(5)	(3)	(06)
(2)	(5)	(3)	(08)

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

Time: 3 Hours

Max. Marks: 100

- Instructions:** 1. Unit-I and Unit-II are compulsory. Answer any one from the remaining Units.
 2. Draw neat diagrams wherever applicable

UNIT - I

L	CO	PO	M

- 1 a. Explain DES algorithm in detail with the help of a neat diagram. (2) (1) (1) (10)
- b. Solve using the following cryptographic techniques
 a) Play fair cipher to obtain cipher text for plain text "most welcome" and keyword MONARCHY
 b) Transposition technique to decrypt the plain text "get up early and do your exercise regularly" for the key 4321657 (3) (1) (2) (10)

UNIT - II

L	CO	PO	M

- 2 a. Show how public key cryptosystem can be used to apply secrecy during transmission with the help of a neat diagram. (3) (2) (2) (10)
- b. Explain the requirements and applications of public key cryptosystem. (2) (2) (1) (10)

UNIT - III

L	CO	PO	M

- 3 a. Explain packet filtering firewall in detail with a neat diagram. Apply a simple firewall rule and format. (3) (3) (2) (10)
- b. Define Virtual Packet Networks. Explain the 2 modes of VPN with neat diagrams. (2) (3) (1) (10)

OR

- 4 a. Explain the 3 subsets of packet filtering firewall in detail. (2) (3) (1) (10)
- b. List the 3 interacting services of Kerberos. Explain Kerberos login with a neat diagram. (2) (3) (1) (10)

UNIT - IV

L	CO	PO	M

- 5 a. Show the steps involved in IP traffic processing for outbound traffic with a neat diagram. (2) (4) (1) (10)
- b. Explain the fields of a top level format of an ESP packet with a neat diagram. (2) (4) (1) (10)

OR

- 6 a. Show the tunnel mode ESP with neat diagrams for ipv4 and ipv6. (2) (4) (1) (10)
- b. Show the steps involved in IP traffic processing for inbound traffic with a neat diagram (2) (4) (1) (10)

L	CO	PO	M

UNIT - V

- 7 a. Explain the different Wireless Network threats in detail (2) (5) (1) (10)
- b. Explain the different Security Threats for Mobile devices (2) (5) (3) (10)

OR

- 8 a. Explain the 5 header fields defined in MIME along with its content types. (2) (5) (1) (10)
b. Discuss the MIME transfer encodings and cryptographic algorithms used in S/MIME (2) (5) (3) (10)

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

L	CO	PO	M
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- 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

L	CO	PO	M
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- 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

L	CO	PO	M
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- 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)

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

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

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

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|---|--|-------|-----|-----|------|
| 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 - II

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

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|---|---|-----|-----|-----|------|
| 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 <ul style="list-style-type: none"> i. Robustness Testing ii. Worst case Testing | (2) | (1) | (1) | 10 |

UNIT - III

- | | | L | CO | PO | M |
|---|--|-----|-----|-----|------|
| 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. (1) (3) (2) (08)
b. Explain decision tables technique for the triangle problem. (2) (2) (3) (12)

UNIT - IV

- 7 a. Define DD-path. Design and develop the Pseudo code for the Triangle program and Draw the corresponding DD-graph. (3) (3) (5) (12)
b. Explain Basis path testing with an example. (2) (1) (1) (04)
c. Define predicate node, du-paths and dc-paths. (2) (1) (1) (04)

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 (1,2) (2) (2) (10)
b. Draw DD-path graph for commission problem. Derive the statement fragments associated with DD-paths for the same. (3) (2) (3) (10)

Seventh Semester B.E. Fast Track Semester Examination, July/Aug. 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

L CO PO M

- 1 a. Why do we test software? Discuss with an example errors, faults and failures. (2) (1) (1) (05)
- b. Explain a typical testing life cycle with the diagram. (2) (1) (2) (05)
- c. Explain the triangle problem statement in detail. Write the pseudo code and draw the flowchart for the same problem. (2,3) (1) (2) (10)

OR

- 2 a. Explain the SAT M System in detail. (2) (1) (2) (10)
- b. Explain the Commission problem in detail. Write the pseudo code and draw the flowchart for the same problem. (2,3) (1) (2) (10)

UNIT - II

L CO PO M

- 3 a. Design and develop test cases for commission problem by using boundary value analysis technique? (3) (2) (2) (10)
- b. Explain Boundary value analysis with example and its limitations? With neat diagram explain about i) Robustness testing ii) Worst case testing. (2,4) (2) (2) (10)

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

L CO PO M

- 5 a. Analyze the following scenario by using equivalence testing method. Bank has different charges depending on the transaction done. A)5% of the amount for transaction less than or equal to 1000 B) 6% of the amount for transaction more than 1000 and less than or equal to 2000 C)7% of the amount for transaction more than 2000.(From the above scenario determine valid and invalid partitions? (2) (2) (1) (10)
- b. Briefly explain i) Weak normal equivalence class testing ii) Strong normal equivalence class testing iii) Weak robust equivalence class testing iv) Strong robust equivalence class testing. (2) (2) (1) (10)

OR

- 6 a. List observations and guidelines for equivalence class testing.

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

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

- b. Explain decision tables techniques for the triangle problem.

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

L CO PO M

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

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

- b. Draw diagram and give example for nested, concatenated and knotted loops.

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

UNIT – V (Compulsory)

L CO PO M

- 8 a. Briefly explain Data flow testing. And define the following
(i) defining node (ii) usage node (iii) predicate use (iv) clear path

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

- b. Draw DD-path graph for commission problem. Derive the statement fragments associated with DD-paths for the same.

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

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:
 (i) Newton's method for maximum likelihood
 (ii) Stochastic Gradient Descent (2) (2) (1) (10)

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)

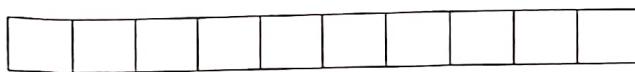
UNIT - V

- 7 a. Explain MapReduce and its framework with an example (2) (2) (1) (10)
- b. Write a note on:
 (i) Hadoop
 (ii) Role of Data scientist in Data Analytics field (2) (2) (5) (10)

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

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. 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)

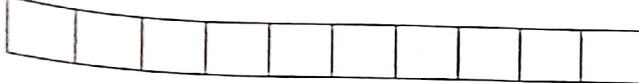
UNIT - V

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

UNIT - II

- 2 a. Define IoT. Explain the important characteristics of IoT. L CO PO M
 b. Explain the four IoT communication models. (2) (1) (1) (04)
 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. L CO PO M
 b. Explain the two IoT communication APIs (2) (1) (1) (06)
 c. Summarize the important features of any two enabling technologies of IoT (2) (1) (1) (07)

UNIT - III

- 4 a. Define an IoT device? Explain Block diagram of an IOT Device. L CO PO M
 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)

OR

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

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

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

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.
(1)

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

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.
(1)

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

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15CS74

Seventh Semester B.E. Fast Track Semester End Examination, July/August 2019
EMBEDDED SYSTEMS AND INTERNET OF THINGS

Time: 3 Hours

Max. Marks: 100

Instructions: 1. Unit-I and Unit-IV are compulsory

UNIT - I (Compulsory)

- 1 a. Define Embedded Systems. List the important characteristics of embedded systems and the different challenges in embedded system design. (1) (1) (1) (08)
- b. Explain the programming model of ARM7 processor with help of a block diagram (2) (1) (1) (06)
- c. Develop the ALP to evaluate the following expression using ARM7 assembly programming
 $x = (a + b) - c$ (3) (2) (2) (06)

UNIT - II

- 2 a. Explain the generic block diagram of an IoT device. (2) (2) (1) (06)
- b. Explain the Cloud computing as an IoT enabling technology. (2) (1) (2) (07)
- c. Illustrate the IoT level-2 with a suitable example. (2) (2) (2) (07)

OR

- 3 a. Explain the functional blocks of IoT with the help of a block diagram. (2) (1) (2) (06)
- b. Illustrate an example of IoT service that uses WebSocket-based communication (2) (1) (2) (07)
- c. Summarize the important features of any two enabling technologies of IoT. (2) (1) (1) (07)

UNIT - III

- 4 a. Define the terms sensors and actuators. Illustrate any one example of a sensor and an actuator. (2) (2) (2) (07)
- b. Develop a Python code on Raspberry Pi to demonstrate controlling of a LED with a switch. (3) (3) (2) (07)
- c. Explain the Arduino single board computer for IoT applications (2) (1) (2) (06)

OR

- 5 a. Explain the functional blocks of an IoT device with a neat sketch of a block diagram. (2) (1) (2) (07)
- b. Develop a Python code on Raspberry Pi to send an email on pressing of a switch. (3) (3) (2) (07)
- c. Compare the Raspberry Pi single board computer with a desktop computer (2) (1) (1) (06)

UNIT – IV (Compulsory)

- 6 a. Explain the IoT architectural reference model with a block diagram. (2) (2) (1) (06)

- b. What is 6LoWPAN? List its important features. (1) (2) (1) (07)
- c. Illustrate the key concepts of MQTT protocol. (2) (2) (1) (07)

UNIT – V

- 7 a. What is Django? Briefly explain the architecture of a Django application. (2) (4) (5) (06)
- b. Explain the Django view that retrieves data from Xively cloud with a suitable example (2) (4) (5) (07)
- c. Develop a python code for sending data to Xively cloud with a suitable example (3) (4) (5) (07)

OR

- 8 a. Explain the WAMP as AutoBahn framework for IoT. (2) (4) (5) (06)
- b. Develop a python code for WAMP publisher and subscriber using AutoBahn framework. (3) (4) (5) (07)
- c. Explain in detail about the Amazon web services for IoT. (2) (4) (5) (07)

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

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

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

- 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

- 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) (06)

OR

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

UNIT IV

- 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. Semester End Examination, Dec/Jan 2018-19

C#.NET

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. Explain .NET solution. Explain with a neat diagram, the workflow that takes place between your source code, a given .NET compiler and the .NET execution engine
- (2) (1) (1) (10)
- b. Explain the differences between single and multifile assemblies. Explain what are basic CTS data types?
- (2) (1) (1) (10)

UNIT - II

- 2 a. Discuss in detail the use of csc.exe to build C# application on .Net framework. Illustrate with an example the referencing of external assemblies.
- (2) (2) (1) (10)
- b. What is command line debugger? List and explain command line flags recognized by command line debugger.
- (2) (2) (1) (10)

UNIT - III

- 3 a. Explain with example (i)out (ii)ref (iii)params
- (2) (2) (1) (10)
- b. Write the differences between value type and reference type. What is the output of (i)program as below(ii)in the program below, "class Foo" is replaced by "struct Foo" [Note: Write the outputs in each case]

```

class Foo
{
    public int x,y;
}

class ValRef
{
    public static int Main(string[] args)
    {
        Foo f1=new Foo();
        f1.x=100;
        f1.y=100;
        //Contd to the right
    }
}

```

```

Console.WriteLine("assigning f2 to 1");
Foo f2=f1;
Console.WriteLine("f1.x={0}",f1.x);
Console.WriteLine("f1.y={0}",f1.y);
Console.WriteLine("f2.y={0}",f2.y);
Console.WriteLine("f2.y={0}",f2.y);
Console.WriteLine("changing f2.x to 900");
f2.x=900;
Console.WriteLine("here are the X's
again");
Console.WriteLine("f2.x={0}",f2.x);
Console.WriteLine("f1.x={0}",f1.x);
return 0;
}//end of main
}//end of class

```

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

OR

- 4 a. What is boxing and unboxing. Explain with example
- (1) (2) (2) (10)
- b. Write a C# program to add 2 complex numbers. Initialize the numbers using constructors.
- (3) (2) (2) (10)

- b. Find mean and sample variance for given data.

Arrival/period 0 1 2 3 4 5 6 7 8 9

Frequency 12, 10, 15, 17, 10, 8, 6, 8, 7, 10

(1) (4) (2) (06)

- c. Explain chi-square goodness of fit test . Apply it to Poisson distribution with mean=3.64, Data size =100 and observed frequency 12,10,19,17,10,8,7,5,5,3,3,1 with Critical value=11.1

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

OR

- 7 a. List any six suggestions to enhance and facilitate data collection .

(1) (4) (2) (06)

- b. Explain construction of histogram with one example.

(2) (4) (1) (06)

- c. Explain the four steps in the development of a useful model of input data.

Discuss the ways to obtain information about a process even if data are not available.

(3) (4) (2) (08)

UNIT -V

L CO PO M

- 8 a. Explain the following terms in brief (i) The Event scheduling/ Time advance Algorithm (ii) Suggested Estimators for distributions often used in simulation.

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

- b. Explain generation of Pseudo-Random numbers.

(4) (2) (3) (05)

- c. Explain Input-Output Validation using Historical input data.

(2) (2) (4) (05)

Seventh Semester B.E. Makeup Examination, January 2019
ARTIFICIAL INTELLIGENCE

Time: 3 Hours

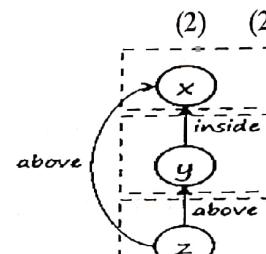
Max. Marks: 100

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

UNIT - I

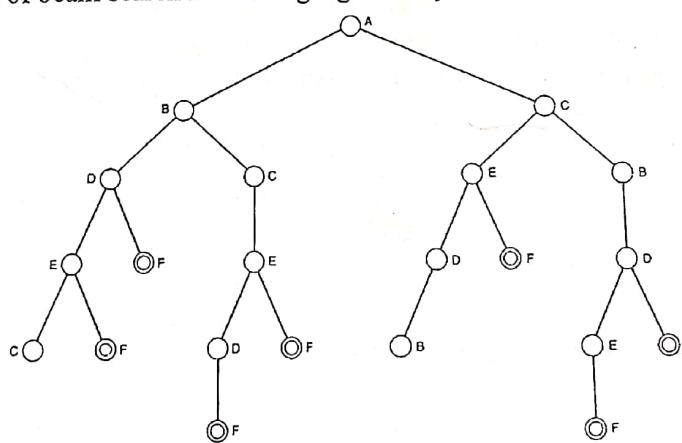
L CO PO M

- 1 a. Define
- Intelligence
 - Artificial intelligence
 - Strong Methods and Weak Methods
- (1) (1) (1) (06)
- b. Explain the Chinese Room argument, and
- present some of the arguments against it, and
 - the counter-arguments.
 - Which do you find most convincing? How does this affect your view on the overall worth of the study of Artificial Intelligence?
- (2) (2) (1) (06)
- c. Design Semantic net with appropriate frames for the following objects having relations each other:

**UNIT - II**

L CO PO M

- 2 a. Explain the differences and similarities between depth-first search and breadth-first search. Give examples of the kinds of problems where each would be appropriate. Mention the time and space complexity of depth-first search and breadth-first search.
- (2) (3) (2) (10)
- b. Write implementation of beam search in 'C' language. Analyze beam search for the following tree.

(4) (2) (2) (10)
L CO PO M**UNIT - III**

- 3 a. Prove the following: $\vdash (\forall \rightarrow B) \rightarrow ((B \rightarrow C) \rightarrow ((C \rightarrow D) \rightarrow (\forall \rightarrow D)))$
- (3) (2) (1) (06)

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

- b. Explain the Deduction Theorem, with the rule: if $A \cup \{B\} \vdash C$ then $A \vdash (B \rightarrow C)$ (2) (1) (1) (06)
- c. Explain briefly
 a. Soundness
 b. Completeness
 c. Decidability
 d. Monotonicity (2) (1) (2) (08)

OR

- 4 a. i. What is Logic?
 ii. Why Logic is used in Artificial Intelligence?
 iii. List five Logical Operators. (1) (1) (2) (08)
- b. Translate from English to Logic notations, making use of symbols R=raining, T=Tuesday, N>New York, S=sick, T=tired:
 i. "It is raining and it is Tuesday"
 ii. "It is raining in New York"
 iii. "It is raining in New York, and I'm getting sick or just very tired" (2) (2) (1) (06)
- c. Identify the meaning of Deduction, for the logical expressions: a. $\frac{A \quad B}{A \wedge B}$ b. $\frac{A \wedge B}{A}$ c. $\frac{A \quad A \rightarrow B}{B}$ (3) (2) (2) (06)

UNIT - IV

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

- 5 a. Explain Skolemization and Unification with examples (2) (3) (2) (10)
 b. List rules to convert a wff to prenex normal form. Also list the rules to move quantifiers to the front. (1) (3) (2) (10)

OR

- 6 a. Explain with example forward chaining and backward chaining. (2) (3) (2) (10)
 b. Write a short note on
 i) CLIPS
 ii) CYC (2) (3) (2) (10)

UNIT - V

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

- 7 a. Explain why the blackboard architecture is an effective way to combine information from a number of knowledge sources, include its main components and explain the block schematic. (2) (1) (1) (10)
 b. Explain what kinds of problems, the Copycat architecture can solve, using block schematic. (2) (1) (1) (10)

OR

- 8 a. i. Define an agent?
 ii. List and explain five properties of agents.
 iii. Explain briefly five types of agents. (2) (1) (1) (10)
 b. i. Explain with block diagram a three-layer subsumption architecture for an agent.
 ii. Compare Horizontal and Vertical agent architectures. (2) (1) (1) (10)

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

Time: 3 Hours

Max. Marks: 100

- Instructions:**
1. Unit I and II are compulsory.
 2. Readable question's numbers must be in allocated space.
 3. Data, if necessary, may be assumed.
 4. Sketches, when required, may be drawn.

UNIT - I

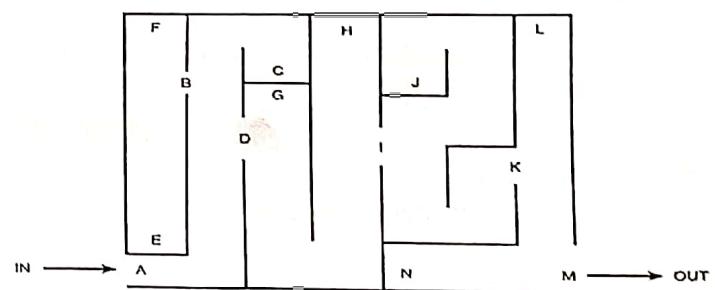
L CO PO M

- 1 a. Differentiate between
 i) Strong methods and weak methods
 ii) Strong AI and weak AI (3) (3) (2) (05)
- b. Convert the following information into:
 a) a semantic net
 b) a frame based representation
 A Ford is a type of car. Bob owns two cars. Bob parks his car at home. His house is in California, which is a state. Sacramento is the state capital of California. Cars drive on the freeway, such as Route 101 and Highway 81. (3) (3) (2) (10)
- c. Differentiate between a top-down approach and a bottom-up approach to problem solving. In what kind of situations might each be appropriate (3) (3) (2) (05)

UNIT - II

L CO PO M

- 2 a. Refer to maze, for entry, exit, dead nodes, decision nodes – identify path from entry to exit, and build an appropriate search tree.

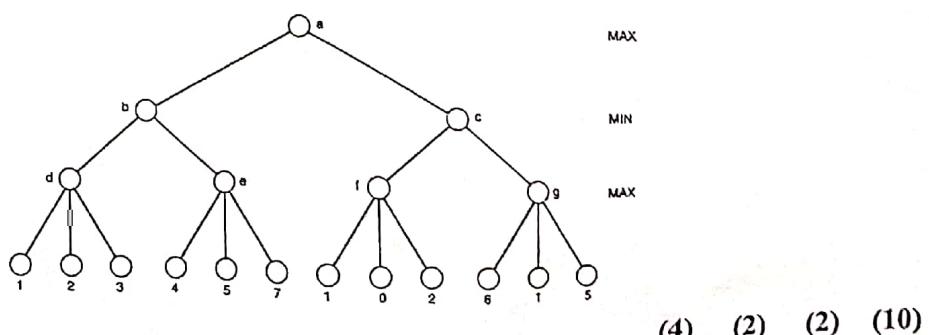


- b. Summarize the Properties of Search Methods. (1) (1) (1) (04)
- c. Solve the eight-queens problem, using Constraint Satisfaction Search method, list out the steps and chess-board sketch, too. (3) (2) (2) (08)

UNIT - III

L CO PO M

- 3 a. Apply and analyze alpha-beta pruning algorithm for the following game tree.



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

b. Translate the following sentences in to predicate logic:

- i) Marcus was a man
- ii) All Pompeians were Romans
- iii) Everyone is loyal to someone
- iv) Marcus tried to assassinate Caesar
- v) All men are people

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

OR

4 a. Explain effectiveness of alpha-beta pruning algorithm. Explain how alpha-beta pruning algorithm is implemented with code.

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

b. Prove the following:

- a) $(\neg A \rightarrow B) \rightarrow (\neg B \rightarrow A)$
- b) $(A \rightarrow B) \rightarrow ((B \rightarrow C) \rightarrow ((C \rightarrow D) \rightarrow (A \rightarrow D)))$

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

UNIT - IV

L CO PO M

5 a. Solve the phrase to to get Conjunctive Normal Form (CNF): $(A \rightarrow B) \rightarrow C$

(3) (2) (2) (06)

b. Explain the Resolution Rule and using the Resolution Rule resolve $\{A, B\}, \{\neg B, C\}$

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

c. Illustrate with block diagram and explain the architecture of an Expert System.

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

OR

L CO PO M

6 a. Solve the phrase to to get Conjunctive Normal Form (CNF): $A \leftrightarrow (B \wedge C)$

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

b. Explain the method of Proof by Reputation using an example.

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

c. How to build an medical expert system using backward chaining in Rule-Based Expert System.

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

UNIT - V

L CO PO M

7 a. Write a note on

- i) Blackboard Architecture
- ii) Copycat Architecture

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

b. Explain Dempster Shafer Theory of evidence with an example

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

OR

8 a. Explain properties of agents

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

b. Explain with block diagram a three-layer subsumption architecture for an agent with suitable examples

(2) (1) (2) (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)

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

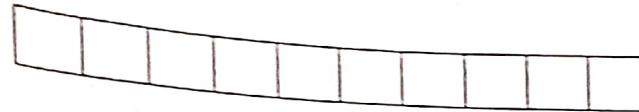
UNIT - V

- 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)
 (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
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
1	a.	Define mobile computing? Explain the functions of mobile Computing with a diagram.	(2)	(1)	(1)	(08)
	b.	Explain the architecture of mobile computing	(2)	(1)	(1)	(12)
		UNIT - II	L	CO	PO	M
2	a.	With a diagram explain WiMax Protocol Stack.	(2)	(1)	(1)	(10)
	b.	With the help of suitable diagram explain GSM System Hierarchy.	(2)	(1)	(1)	(10)
		OR				
3	a.	Explain WiMAX Deployment Architecture.	(2)	(1)	(1)	(05)
	b.	Identify and explain set of steps for exchange of IP datagrams between mobile node (A) and another host.	(2)	(1)	(2)	(10)
	c.	Classify different GSM network groups.	(2)	(1)	(1)	(05)
		UNIT - III	L	CO	PO	M
4	a.	With a suitable diagram explain SMS architecture.	(2)	(2)	(1)	(10)
	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	(2)	(3)	(1)	(08)
	b.	Explain in brief smart client development cycle.	(2)	(3)	(1)	(06)
	c.	Explain WAP programming model using a wireless gateway	(2)	(3)	(1)	(06)
		OR				
6	a.	Summarize the need analysis phase of smart client development process.	(2)	(3)	(1)	(07)
	b.	List and explain protocols of WAP 1.x	(2)	(3)	(1)	(07)
	c.	Describe the elements of wireless application environment (WAE).	(2)	(3)	(1)	(06)
		UNIT - V	L	CO	PO	M
7	a.	Explain MIDlet lifecycle	(2)	(4)	(1)	(10)
	b.	Define provisioning. Identify steps of provisioning a MIDP application.	(3)	(4)	(1)	(10)

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

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)
 L CO PO M

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)
 L CO PO M

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)
 L CO PO M

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

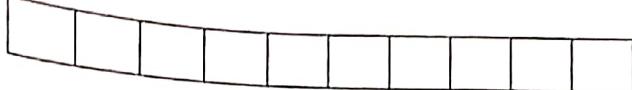
- 6 a. Explain the steps of processing a wireless request. (2) (3) (1) (10)

- 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. 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

- 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)

UNIT - II

L CO PO M

- 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)

UNIT - III

L CO PO M

- 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

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

- 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. 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)

OR

- 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. (4) (4) (2,3) (10)

- b. Infer the limitations of Hadoop 1 Map Reduce. (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. Semester End Examination, Dec/Jan 2018-19
INFORMATION AND NETWORK SECURITY

Max. Marks: 100

Time: 3 Hours

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

	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)

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

- 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

- 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

- 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

- 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)
- 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	CO	PO	M
7	a.	Explain the PGP message generation and message reception technique	(2)	(2)	(6)	(08)
	b.	What is S/SMIME? What are the functions of S/MIME?				
	c.	What are the threats associated with E-mail.	(1)	(2)	(6)	(06)
		OR	(1)	(2)	(6)	(06)
8	a.	Explain with a neat figure the key components of Internet mail architecture.	(2)	(2)	(6)	(10)
	b.	Discuss the services of Pretty Good Privacy.	(1)	(2)	(6)	(10)

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