Roll No. _____          Total No of Pages: 3

**8E5001**

**8E5001**
**B. Tech. VIII Sem. (Main/Back) Exam., April, 2015**
**Computer & IT**
**8CS1 Mobile Computing**
**Common to 8CS1 & 8IT4.1**

**Time: 3 Hours**                    **Maximum Marks: 80**
                                     **Min. Passing Marks: 24**

*Instructions to Candidates:*

*Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

*Units of quantities used/calculated must be stated clearly.*

*Use of following supporting material is permitted during examination. (Mentioned in form No. 205)*

1. NIL _____          2. NIL _____

# UNIT – I

Q.1  (a)  What is Mobile Computing? Explain mobile computing related adaptability issues.                                                              [8]

   (b)  Explain mechanisms for adaptation and incorporating adaptation.   [8]

## OR

Q.1  (a)  What is mobility management? Briefly explain PCS location management scheme.                                                              [8]

   (b)  Explain the principles and techniques for location management.   [8]

# UNIT – II

Q.2 Explain data dissemination and its models. What are the challenges faced in data dissemination in mobile environment? Discuss the cache management scheme. [16]

## OR

Q.2 (a) Explain broadcast disk scheduling in detail. [8]

(b) Discuss the concept and methods of Mobile web caching. [8]

# UNIT – III

Q.3 (a) What is a Mobile Agent? Explain the Mobile-Agent based architecture. [8]

(b) What is the difference between Unicast and Multicast Discovery? Explain in detail. [8]

## OR

Q.3 (a) Explain various methods for service discovery and standardization in detail. [10]

(b) Briefly explain Garbage Collection. [6]

# UNIT – IV

Q.4 List the entities of Mobile IP and describe data transfer from a mobile node to a fixed node and vice-versa. Why and where is encapsulation needed? [16]
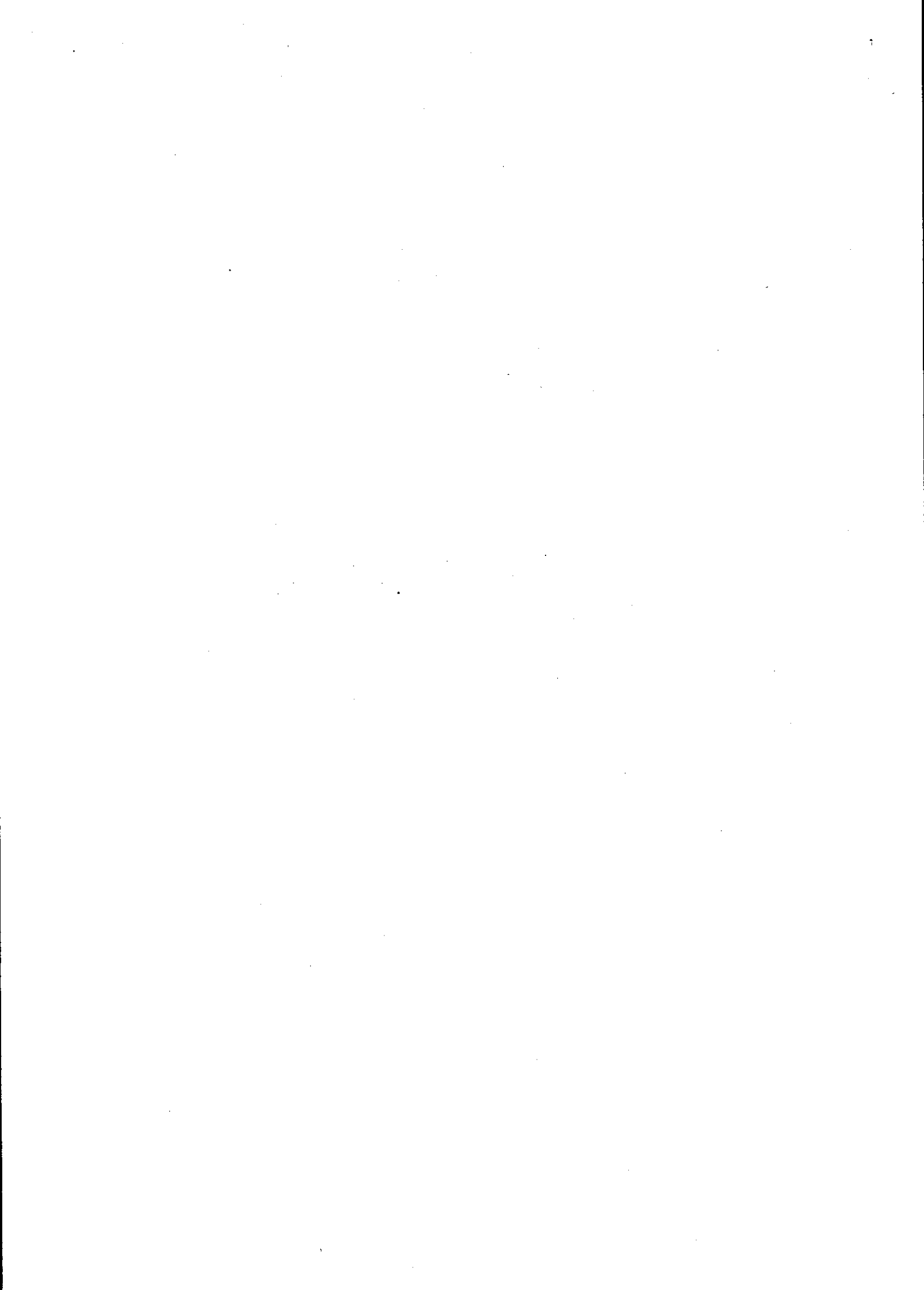
## OR

Q.4 (a) What is Mobility? Briefly explain Mobile TCP. [8]

(b) Explain the system architecture of World Wide Web. What advantages has the statelessness of HTTP? [8]

# UNIT – V

Q.5 Write short note on the following: (Any four)                    [4×4=16]

   (a)   Routing Protocols

   (b)   QoS in Ad-Hoc Networks

   (c)   Issues in MAC

   (d)   Dynamic Source Routing (DSR)

   (e)   Global State Routing (GSR)

   (f)   Destination sequenced distance vector routing (DSDV)

   (g)   Temporary ordered routing algorithm (TORA)

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Roll No. _____                           Total No of Pages: 2

**8E5003**

**8E5003**

**B. Tech. VIII Sem. (Main) Exam., April, 2015**
**Computer Science & Engineering**
**8CS3 Distributed Systems**

**Time: 3 Hours**                                    **Maximum Marks: 80**
                                                     **Min. Passing Marks: 24**

*Instructions to Candidates:*

> *Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

> *Units of quantities used/calculated must be stated clearly.*

> *Use of following supporting material is permitted during examination. (Mentioned in form No. 205)*

1. NIL_____        2.NIL_____

# UNIT – I

Q.1 What are the differences among cluster computing, grid computing and cloud computing? Explain.                                          [16]

## OR

Q.1 What are the goals behind developing distributed systems? Explain.        [16]

# UNIT – II

Q.2 (a) Can a server work as a client and a server in a system? Explain.        [8]

(b) Is there any difference between vertical and horizontal fragmentation? Explain                                                          [8]

## OR

Q.2 State the characteristics of a concurrent programming language. [16]

# UNIT – III

Q.3 When do you prefer coda file system? Justify your answer. [16]

## OR

Q.3 Explain the working of Bit Torrent file system with a neat diagram. [16]

# UNIT – IV

Q.4 What do you understand by distributed deadlock handling? How is it different with centralized deadlock handling concept? [16]

## OR

Q.4 What is a distributed pervasive system? Explain it with a suitable example and a neat sketch. [16]

# UNIT – V

Q.5 Write short notes on **any two**:- [16]

(a) Byzantine Agreement

(b) CORBA Services

(b) Randomized Distributed Agreement

## OR

Q.5 Explain the concepts of relocation, migration and failure transparency. [16]

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**Time: 3 Hours**

**Maximum Marks: 80**
**Min. Passing Marks: 24**

*Instructions to Candidates:*

*Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

*Units of quantities used/calculated must be stated clearly.*

*Use of following supporting material is permitted during examination.*

1. NIL_____          2.NIL_____

# UNIT – I

Q.1  (a)  Explain Euler's theorem in Detail.                                                    [6]

(b)  Write short note on:-                                                                            [5×2=10]

(i)   Groups and Field

(ii)  Entropy and Unicity Distance

## OR

Q.1  (a)  Use Chinese remainder theorem to solve the simultaneous equation          [8]

$x \equiv 2(\text{mod } 3), \ x \equiv 3(\text{mod } 5), \ x \equiv 2(\text{mod } 7)$

(b)  Fine the result of the following -                                                         [4×2=8]

(i)   $5^{-1} \bmod 13$

(ii)  d, if $7d \equiv 1(\text{mod } 30)$

(iii) $15^{18} \bmod 17$

(iv)  $21^{24} \bmod 8$

# UNIT – II

Q.2 (a) Explain IDEA with all its steps and sub-key generation in detail. [10]

(b) Write short note on:- [3×2=6]

(i) Substitution and Transposition techniques.

(ii) Key Distribution in Symmetric Encryption.

## OR

Q.2 (a) Explain DES with Triple DES with all its steps in detail. [10]

(b) Explain all block cipher modes of operation with neat diagram. [6]

# UNIT – III

Q.3 (a) Explain RSA in detail with security analysis of RSA. [8]

(b) Write short note on:- [4×2=8]

(i) Principles of Public key cryptosystems.

(ii) RSA exponentiation in Modular Arithmetic.

## OR

Q.3 (a) Explain with all Diffie-Hellman key Exchange steps in detail. [8]

(b) Write short note on:- [4×2=8]

(i) Distribution of public keys.

(ii) Distribution of secret keys using public key cryptosystems.

# UNIT – IV

Q.4 (a) Why is message authentication required? Explain various authentication protocols. [6]

(b) Explain SHA-1 algorithm in detail. [6]

(c) Write short note on:- [2×2=4]

(i) Birthday attack

(ii) Digital signature

## OR

Q.4 (a) What is message authentication code (MAC)? Explain types of MAC. [8]

(b) Write short note on:- [4×2=8]

(i) Model of Authentication Systems

(ii) Elgamal signatures and undeniable signatures.

# UNIT – V

Q.5 (a) Explain X-509 Authentication procedure with X-509 versions in detail. [8]

(b) Explain Pretty Good Privacy (PGP) with general structure of private and public key rings. [8]

## OR

Q.5 Write short note on: - [4×4=16]

(a) S/MIME

(b) IPSec

(c) AH and ESP in Transport and Tunnel Mode

(d) SSL

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Roll No. _____          **Total No of Pages:** [4]

**8E5005**

# 8E5005
## B. Tech. VIII Sem. (Main/Back) Exam., April, 2015
## Computer Science & Engineering
## 8CS4.2 Real Time Systems

**Time: 3 Hours**          **Maximum Marks: 80**

**Min. Passing Marks: 24**

*Instructions to Candidates:*

*Attempt any **five questions**, selecting **one question** from **each unit**. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

*Units of quantities used/calculated must be stated clearly.*

*Use of following supporting material is permitted during examination. (Mentioned in form No. 205)*

1. NIL_____        2.NIL_____

# UNIT – I

Q.1 (a) What is real time system? How it is different from general purpose system. Draw and explain block diagram of RTS. [8]

     (b) Explain the working of Radar signal processing system using a suitable diagram. [8]

## OR

Q.1 (a) Differentiate between periodic, a periodic and sporadic jobs. Give suitable examples in support of your answer. [8]

(b) Explain following terms (in brief):-

    (i)   Period                                     [1]

    (ii)  Tardiness                               [1]

    (iii) Release time                           [1]

    (iv) Hyper period                        [1]

    (v)  Deadline                                [1]

    (vi) Phase                                   [1]

    (vii) Lateness                             [1]

    (viii) Execution time                     [1]

# UNIT – II

Q.2 (a) Explain the reference model of RTS. Differentiate between processors and resources. [8]

(b) What are the functional and Interconnection parameters of a job? Explain each one using an appropriate example. [8]

## OR

Q.2 (a) What are the different approaches for real time scheduling? Explain precedence graph. [8]

(b) Differentiate between:-

    (i)  Online Vs offline scheduling [4]

    (ii) Dynamic Vs Static system [4]

# UNIT – III

Q.3 (a) What are frame size constraints? Give a set of 4 independent periodic tasks. [8]

$T_1 = (4, 1.0)$

$T_2 = (5, 1.8)$

$T_3 = (20, 1.0)$

$T_4 = (20, 2.0)$

Find out the appropriate frame size.

(b) Give the schedulability test for RMS. How would you use it to check whether a given task set is schedulable under RMS or not? Explain with a suitable example.[8]

## OR

Q.3 (a) Draw a network flow graph for the task set given below:- [8]

$T_1 = (4, 1)$

$T_2 = (5, 2, 7)$

$T_3 = (20, 5)$

(b) Consider a system of 4 independent periodic tasks - [8]

$T_1 = (6, 2)$

$T_2 = (10, 4)$

$T_3 = (12, 3)$

$T_4 = (15, 4)$

(i) Calculate the total utilization of the system.

(ii) Construct an RM schedule for this system in the interval [0, 24] and label any missed deadline.

# UNIT – IV

Q.4 Explain the following (in brief):-

(a) Slack Stealing [4]

(b) Deferrable Server [4]

(c) Polling Server [4]

(d) Priority inversion & exchange in server based algorithms. [4]

## OR

Q.4 What are flexible applications? What are the various approaches for scheduling of flexible computation? Explain (DCM) algorithm using a suitable example. [16]

# UNIT – V

Q.5 (a) Describe "Stack based priority ceiling protocol" for multiple units of resources, with example. [8]

(b) Consider two Jobs $J_1$ and $J_2$. The job $J_2$ is released at time 1 and job $J_1$ is released at time 5. Both of the jobs require a mutually exclusive resource. The critical sections of the jobs are as follows: - [8]

$J_1 = [R; 2]$

$J_2 = [R; 5]$

The priority of job $J_1$ is higher than $J_2$. Show the blocking involved in the schedule of these Jobs.

## OR

Q.5 (a) Differentiate between priority ceiling protocol and inheritance protocol. [8]

(b) What is the effect of resource contention? Explain priority inversion problem in critical section. [8]

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**8E5007**

**B. Tech. VIII Sem. (Main/Back) Exam., April, 2015**
**Information Technology**
**8IT1 Software Testing & Validation**

**Time: 3 Hours**                                           **Maximum Marks: 80**
                                                            **Min. Passing Marks: 24**

*Instructions to Candidates:*

*Attempt any **five questions**, selecting **one question** from each unit. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

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*Use of following supporting material is permitted during examination. (Mentioned in form No. 205)*

1. NIL _____                      2. NIL _____

# UNIT – I

Q.1 (a) Discuss the difference between validate testing goals and acceptance testing goals. [6]

   (b) What is difference between verification and validation? Discuss the level of validation. Also explain the principle of testing. [10]

**OR**

Q.1 Write short note on -                                   [8x2=16]

   (a) White box testing

   (b) Black box testing

# UNIT – II

Q.2  Explain-                                                          [8x2=16]

(a)  Functional testing

(b)  Non-functional testing

## OR

Q.2  Discuss the methodology of performance testing. Explain its tools and process.     [16]

# UNIT – III

Q.3  (a)  Discuss the test phases of internationalization testing.         [8]

(b)  Explain-                                                          [4x2=8]

(i)  Locale testing

(ii)  Localization testing

## OR

Q.3  Write short note on-                                              [8x2=16]

(a)  Ad hoc testing

(b)  Exploratory testing

# UNIT – IV

Q.4  (a)  What is usability testing? How we achieve usability? Also discuss the approaches

to usability.                                                          [8]

(b)  Explain the quality factors and tools for usability.               [8]

## OR

Q.4 Write short note on- [8x2=16]

(a) Primer on object oriented software

(b) Difference in OO testing

# UNIT – V

Q.5 (a) Discuss the test planning process and test approaches. [8]

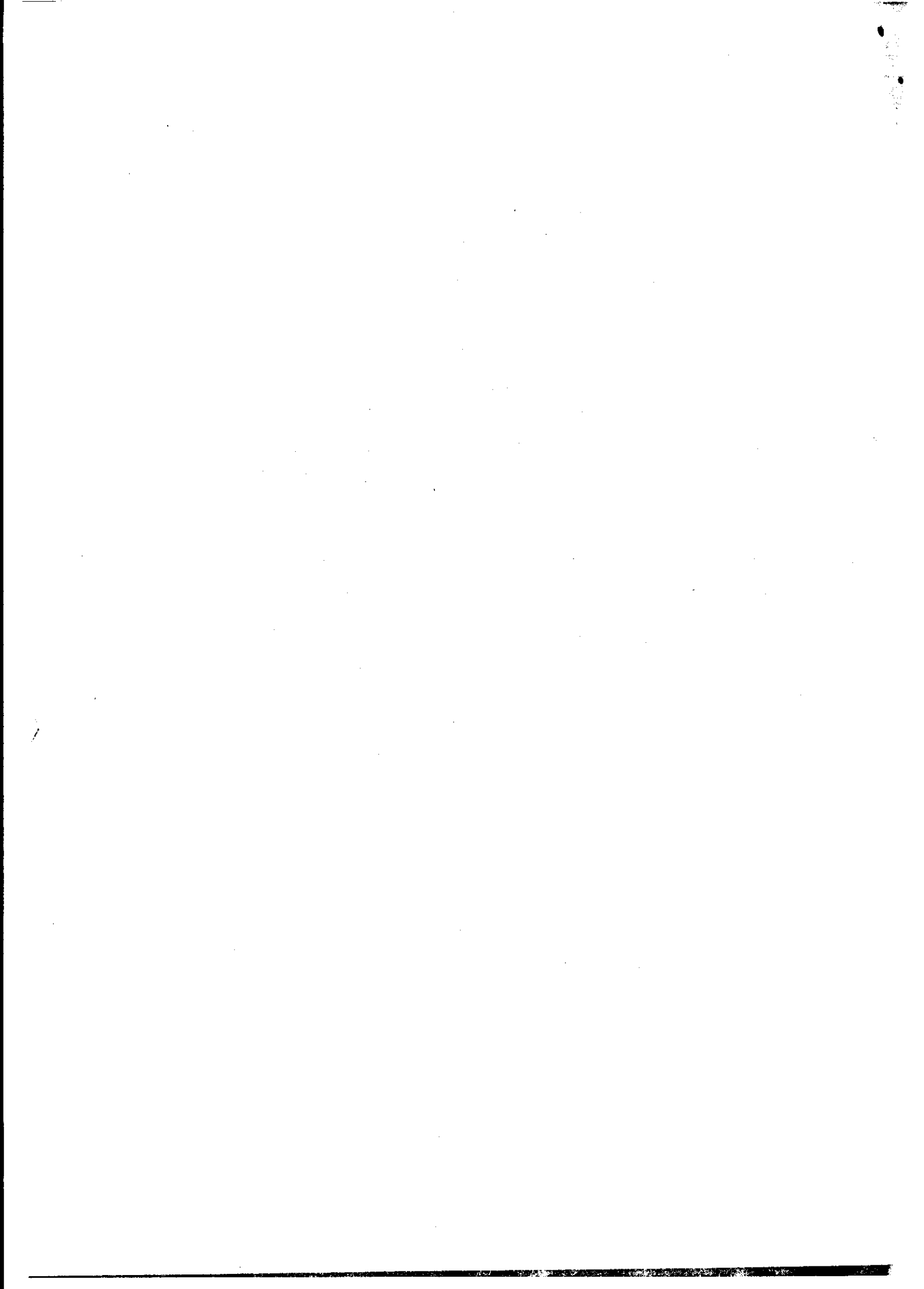(b) Explain the Software Test Automation. [8]

## OR

Q.5 Explain- [4x4=16]

(a) Progress Metrics

(b) Productivity Metrics

(c) Project Metrics

(d) Release Metrics.

----------X----------X---------

**8E5008**

**8E5008**

# B. Tech. VIII Sem. (Main/Back) Exam., April, 2015
## Information Technology
## 8IT3 Data Compression Techniques

**Time: 3 Hours**

**Maximum Marks: 80**

**Min. Passing Marks: 24**

*Instructions to Candidates:*

*Attempt any **five questions**, selecting **one question** from **each unit**. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

*Units of quantities used/calculated must be stated clearly.*

*Use of following supporting material is permitted during examination. (Mentioned in form No. 205)*

1. NIL _____      2.NIL _____

# UNIT – I

Q.1 What is Data Compression? Explain all the types of Data Compression Techniques in detail. [16]

## OR

Q.1 (a) Explain adaptive coding in detail. [8]

    (b) Explain Huffman codes for lossless image compression. [8]

# UNIT – II

Q.2 (a) What are dictionary techniques? Explain LZ77 and also differentiate it from LZ78 and LZW. [10]

    (b) Explain the concept of Arithmetic Coding [6]

**OR**

Q.2 (a) What is Predictive Coding? Explain its types with advantages.                    [8]

(b) Explain T.4 and T.6 in detail.                    [8]

# UNIT – III

Q.3 (a) What is entropy? Explain rate distortion theory in detail.                    [10]

(b) What is Distortion Criteria? Explain.                    [6]

**OR**

Q.3 (a) Explain Linde-Ruzo-Grey algorithm in detail.                    [8]

(b) Explain scalar quantization in detail.                    [8]

# UNIT – IV

Q.4 What is differential encoding? Explain Adaptive DPCM and Delta modulation in detail.                    [16]

**OR**

Q.4 (a) Explain the concept of sampling in frequency and time domain.                    [9]

(b) Write short note on DCT.                    [7]

# UNIT – V

Q.5 (a) Explain sub band coding with its basic Algorithm.                    [8]

(b) Explain how filter banks are designed.                    [8]

**OR**

Q.5 Write short notes on-

(a) G.722                    [8]

(b) Wavelet based compression                    [8]

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