

Faculty of Engineering & Technology						
Ramaiah University of Applied Sciences						
Department		Computer Science and Engineering	Programme	B. Tech.		
Semester/Batch		4 th /2017				
Course Code		CSC212A	Course Title	Data Communication		
Course Leader		Dr. Rinki Sharma, Prof. A. Prabhakara				
Assignment no 2						
Name of Student			Register No			
Sections		Marking Scheme		Max Marks	First Examiner Marks	Second Examiner Marks
Part-A	A1.1	Introduction to high rate modulation		01		
	A1.2	Benefits and limitations of high order modulation techniques		02		
	A1.3	Stance taken with justification		02		
		Part-A Max Marks		05		
Part B 1	B1.1	Algorithm/Flowchart for computation of Hamming distance with explanation		03		
	B1.2	Implementation to compute Hamming distance between two binary strings of equal length, with explanation		04		
	B1.3	Testing of implementation with explanation		03		
		B.1 Max Marks		10		
Part B 2	B2.1	Algorithm / flowchart for computation of Hamming (7, 4) code, with explanation		03		
	B2.2	Implementation to compute Hamming (7, 4) code, with explanation		04		
	B2.3	Testing of implementation with explanation		03		
		B.2 Max Marks		10		
	Total Assignment Marks			25		

Course Marks Tabulation

Component- CET B Assignment	First Examiner	Remarks	Second Examiner	Remarks
A				
B.1				
B.2				
Marks (Max 50)				
Marks (out of 25)				
<div>Signature of First Examiner</div> <div>Signature of Second Examiner</div>				

Please note:

1. Documental evidence for all the components/parts of the assessment such as the reports, photographs, laboratory exam / tool tests are required to be attached to the assignment report in a proper order.
2. The First Examiner is required to mark the comments in RED ink and the Second Examiner's comments should be in GREEN ink.
3. The marks for all the questions of the assignment have to be written only in the **Component – CET B: Assignment** table.
4. If the variation between the marks awarded by the first examiner and the second examiner lies within +/- 3 marks, then the marks allotted by the first examiner is considered to be final. If the variation is more than +/- 3 marks then both the examiners should resolve the issue in consultation with the Chairman BoE.

Assignment – 2

Term - 2

Instructions to students:

1. The assignment consists of 3 questions: Part A – 1 Question, Part B- 2 Questions.
2. Maximum marks is 25.
3. The assignment has to be neatly word processed as per the prescribed format.
4. The maximum number of pages should be restricted to **10**.
5. Restrict your report for Part-A to 2 pages only.
6. Restrict your report for Part-B to a maximum of 8 pages.
7. The printed assignment must be submitted to the subject leader.
8. **Submission Date: 18 March 2019**
9. **Submission after the due date is not permitted.**
10. **IMPORTANT:** It is essential that all the sources used in preparation of the assignment must be suitably referenced in the text.
11. Marks will be awarded only to the sections and subsections clearly indicated as per the problem statement/exercise/question

Preamble:

Data communication refers to exchange of information between source and destination entities. In this course, students learn the principles, concepts, techniques and technologies of data communication. This assignment is designed to assess student's understanding of principles of data sources, channels and receiver techniques.

PART A

5 Marks

Preamble

While High order modulation techniques achieve high data rates in digital communication systems, they also have certain drawbacks that affect the quality of signals at the receiver.

In this context, debate on the statement **“High order modulation techniques are the best option to achieve reliable and efficient digital communication systems”**

The documentation should comprise the following:

- A1.1** Introduction to high rate modulation
- A1.2** Benefits and limitations of high order modulation techniques
- A1.3** Stance taken with justification

PART B

B1

20 Marks

10 Marks

Hamming distance is effectively used for error detection and error correction, in data communication. Write a program to compute the Hamming distance between two binary strings of equal length and test its functionality.

The report should comprise the following with explanation:

- B1.1** Algorithm/Flowchart for computation of Hamming distance
- B1.2** Implementation to compute Hamming distance between two binary strings of equal length
- B1.3** Testing of implementation

Note: The developed program should be generic. Provide screenshots of the output in support of your answer. Demonstrate the implementation to the course leader.

B2

10 Marks

Hamming codes are used for error detection at the receiver. Students need to write a program to compute Hamming (7, 4) code for 4-bits of data.

The report should comprise of the following, with explanation:

- B2.1** Algorithm / flowchart for computation of Hamming (7, 4) code
- B2.2** Implementation to compute Hamming (7, 4) code
- B2.3** Validation of the implementation

Note: The developed program should be generic. Provide screenshots of the output in support of your answer. Demonstrate the implementation to the course leader.

