

KING SAUD UNIVERSITY COLLEGE OF COMPUTER AND INFORMATION SCIENCES COMPUTER SCIENCE DEPARTMENT		
CSC 329: Computer Network	Tutorial 4	2nd Semester 1441
Name:		Student ID:
Serial Number:		Section Number:

Part1: Multiple-Choice Questions

- 1) A bit-stuffing based framing protocol uses an 8-bit flag pattern of 01111110. If the output bit-string after bit stuffing is 01111100101, then the input bit-string is
 - a. 0111110100
 - b. 0111110101
 - c. 0111111101
 - d. 0111111011

- 2) Which error detection method consists of just one redundant bit per data unit?
 - a. Simple parity check
 - b. Two-dimensional parity check
 - c. CRC
 - d. Checksum

- 3) Which error detection method consists of a parity bit for each data unit as well as an entire data unit of parity bits?
 - a. Simple parity check
 - b. Two-dimensional parity check
 - c. CRC
 - d. Checksum

- 4) Which error detection method involves the use of parity bits?
 - a. Simple parity check
 - b. Two-dimensional parity check
 - c. CRC
 - d. (a) and (b)

- 5) If the ASCII character c is sent and the character g is received, what type of error is this? The ASCII code for c= 1100011, g= 1100111
 - a. Single-bit
 - b. Multiple-bit
 - c. Burst error
 - d. Recoverable

6) Which error detection method can detect a burst error?

- a. simple parity check
- b. Two-dimensional parity check
- c. (a) and (b)
- d. None of the above

7) In _____ coding, we divide our message into blocks, each of k bits, called ____.

- a. block; blockwords
- b. linear; datawords
- c. block; datawords
- d. none of the above

Part2: Exercises

1) assuming odd parity, find the parity bits for the following data units.

0101110 → 0101110**1**

1000100 → 1000100**1**

1100111 → 1100111**0**

2) A receiver receives the bit pattern **01001001** if the system is using even parity, is the pattern in error?

Yes , because the number of 1s is odd

3) Find the parity bits for the following bit pattern, using two-dimensional parity.

Assume even parity.

1010101 1110101 0110101 1010100

1010101	0
1110101	1
0110101	0
1010100	1
<hr/>	
1000001	0

4) The following block is received by a system using two-dimensional even parity.

Is there any error in the block?

10110101 01001101 11010010 11001111

10110101	1
01001101	0
11010010	0
11001111	0
<hr/>	
11100101	1

<<< this added row and the added column on the right must be all zeros when there is no error

Yes, there is an error. The number of ones in each row and column must be even.