Class Test 4 **Date: August 13, 2022**

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY

Department of Computer Science and Engineering

L-3/T-1 CSE 305: Computer Architecture

Time: 20 minutes **Marks: 20**

Student Name: _____ Student No: _____

1. Answer the questions below for the following memory address subdivision:

$31 \cdots 18$	$17 \cdots 8$	$7 \cdots 2$	$1 \cdots 0$
14-bits	10-bits	6-bits	2-bits

   (a) How many indices will there be in the cache? (3)

   (b) What is the size of a data element in the cache? (3)

   (c) In addition to the data, how many extra bits will have to be stored in each cache index for the direct mapping scheme? (3)

   (d) How many memory addresses will map to a single cache index? (3)

   (e) In which cache index will the decimal address 1805121 map to? (4)

   (f) If a cache index is valid, what is the probability that its element will have to be replaced in the next request? Assume each memory address having equal likelihood of being requested. (4)

(a)	(b)	(c)	(d)	(e)	(f)

Write your answers in the table above