

SC 461

Coding Theory

Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT)

Version 3 (Spring 2019)

INSTRUCTIONS:

- There are 3 double sided pages (5 printed pages). Ensure that you have all the pages.
- Answer **all questions**, writing clearly in the space provided.
- Show all your work and explain how you arrived at your answers, unless explicitly told to do otherwise.
- Write your name and student number **clearly** at the top of each page before starting the exam.
- You have **two hours** to complete the test.
- Use supplementary sheets for rough work. You need to write final crisp answers in this booklet.
- Marks for each question are indicated in brackets at right. You may use point form for your answers, but make sure the points are clear and unambiguous. I am more interested in your thought process.

FOR MARKER'S USE ONLY

Question	Possible	Received
1	10	
2	10	
3	10	
4	10	
TOTAL	40	

1. DNA Codes

- (a) How many self reversible DNA strings of length n are possible? (10)

2. DNA Codes

- (a) If possible, give an example of DNA code which is complement but not reverse. (10)

3. DNA codes

- (a) Construct a DNA code of $n = 4$, $M = 8$ and $d = 3$ that satisfies the reverse constraints. (10)

4. Secret Sharing Scheme

- (a) As discussed in the class, construct a secret sharing scheme based on coding theory, which involves 3 people. Justify your answer. (10)