

<b>INT202 Complexity of Algorithms</b> <b>In-Class Test 2</b> <b>Semester 2 AY2020/2021</b>	<b>MARK</b>	
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<b>Name</b>		<b>Student ID Number</b>		<b>Signature</b>	
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In this In-Class Test 2, each question contributes 2 marks and the test duration is **20-mins**.

Please write your answer directly in the answer bracket after each question, e.g.:

Q0. Write down the email address of INT202 module leader this semester.

Answer: (R.Yang@xjtlu.edu.cn )

### START OF IN-CLASS TEST 2

Q1. Consider a RSA cryptosystem wherein  $n=35$  and  $e=5$ .

a. Calculate the associated private key  $d$ .

(2 marks)

Answer: (      )

b. Bob chooses an integer between 0 and 34, then encrypts it and sends the number 26 to Alice. Find out the original integer  $M$  chosen by Bob.

(2 marks)

Answer: (      )

Q2. If we prove that a decision problem  $X$  is in the class NP and give a poly-time reduction from  $X$  to 3-COLORING, we can conclude that  $X$  is NP-complete. True or False?

(2 marks)

Answer: (      )

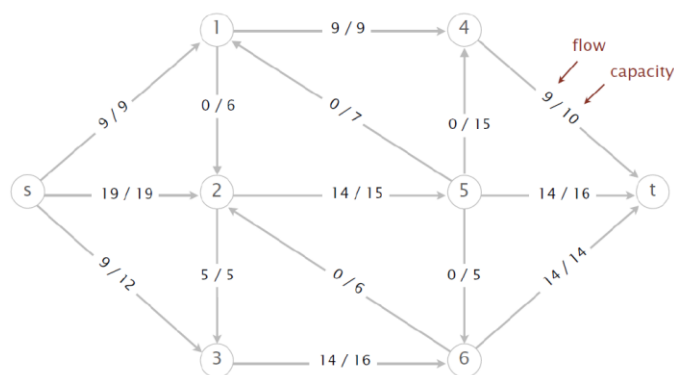
Q3. Find the answer of  $17^{120} \bmod 143$

(2 marks)

Answer: (      )

Q4. Finds the maximum flow of the following flow network.

(2 marks)



Answer: (      )

### END OF IN-CLASS TEST 2