Amrita Vishwa Vidyapeetham
Amrita School of Engineering, Coimbatore
B.Tech. Degree Mid-Term Examinations – December 2021
First Semester, CSE-CYS
20CYS101 Classical Cryptography (CSE-CYS)

Time : 1 Hour Maximum Marks : 25

1. Suppose key for Shift Cipher is "K=1?", where "?" is last digit of your roll number and plaintext is "we will meet", then show encryption and decryption process. (2 Marks)
2. A message 'D' has been encrypted using affine cipher and ciphertext received was 'I'. If value of b used was 5 then find value of a. (4 Marks)
3. Where is cryptography used? Name 5 domains. (2 Marks)
4. Find the frequency table of following ciphertext. (2 Marks)
   rEgrteafyofrashiaztmoeaslwzlmomwmogfldartmgamtvmzbafasbnofustmmtkyktjwtfeotl

   NOTE: x = last digit of your roll number
   xx = last 2 digits of your roll number

5. Find the inverse of following and verify. (10 Marks)
   a. $11^{-1} \pmod{21}$
   b. $8^{-1} \pmod{17}$
   c. $12^{-1} \pmod{18}$
   d. $7^{-1} \pmod{9}$
   e. $1x^{-1} \pmod{35}$
   f. $2x^{-1} \pmod{51}$
   g. $3x^{-1} \pmod{71}$
   h. $4x^{-1} \pmod{55}$
   i. $2x^{-1} \pmod{39}$
   j. $xx^{-1} \pmod{101}$
6. solve: (5 Marks)
   a. $(1xx)_{10} = (\ )_2$
   b. $(1xx)_{16} = (\ )_{10}$
   c. $(1xx)_{16} = (\ )_8$
   d. $(1xx)_8 = (\ )_{16}$
   e. $(2x)_{10} = (\ )_8$