

No. of Printed Pages : 2 MMTE-006(P)(Set-II)

M. Sc. (MATHEMATICS WITH APPLICATIONS IN COMPUTER SCIENCE) [M. SC. (MACS)]

Term-End Practical Examination

June, 2025

MMTE-006(P)(Set-II) : CRYPTOGRAPHY

Time : 1½ Hours *Maximum Marks : 40*

Note : (i) The question paper has two questions worth 30 marks. Attempt both of them.

(ii) The remaining 10 marks are for viva-voce.

1. The following text was encrypted using a shift cipher :
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

UVTIP GKZEX JYZWK TZGYV IZJVR
JPQQQ

Write a program in C language that print all possible shifts. Use your program to decrypt the above encrypted text and find the encryption and decryption keys. 15

2. (a) Find the inverse of $\begin{bmatrix} \bar{2} & \bar{14} & \bar{2} \\ \bar{6} & \bar{9} & \bar{12} \\ \bar{1} & \bar{3} & \bar{2} \end{bmatrix}$ $\in \text{GL}_3(83)$ using GP. 5
- (b) Write a program in GP that decrypt using Vigenere cipher. Decrypt the following text :
- QDLM TPI WAOOEBCBOT UNUNCI
 BJW PNF WVR TRE CAXERBGAD
 using the key 'MARKTWAIN'. 10

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