1st Sem / Agri / Acrhitectural Assistantship/ Ceramic/ Food Technology/ Plastic Technology / Automobile / Chemical/ Chem P & P/ Civil/ Computer/Electrical/ECE/ Instrumentation & Control engg./ Mechanical / Mechanical (Tool & die Design) / Textile Processing/ Text. Tech./ Automation & Robotics / Medical electronics / Artificial Intlligence & Machine Learning / Computer (For Speech and Hearing Impaired) / ECE (For Speech and Hearing Impaired)

Subject : Applied Mathematics / Applied Mathematics - I

Time : 3 Hrs.   M.M. : 60

Section-A

Note: Multiple Choice questions. All question are compulsory.   (6x1=6)

Q.1   Mid-point of (2,3) & (8,7) is

(a)   (5,5)   (b)   (5,2)

(c)   (3,4)   (d)   (4,7)

Q.2   (-2,-3) lies in quadrant

(a)   1st (b)   2nd

(c)   3rd (d)   4th

Q.3   Value of $\begin{bmatrix} 3 & 2 \\ 2 & 5 \end{bmatrix}$ is

(a)   11   (b)   10

(c)   5   (d)   4

Q.4   Centroid of (2,3) (5,7) & (5,2) is

(a)   (5,4)   (b)   (4,4)

(c)   (4,3)   (d)   (2,2)

Q.5   Order of Matrix $\begin{bmatrix} 2 & 4 \\ 3 & 2 \end{bmatrix}$ is

(a)   2X3   (b)   3X2

(c)   2X2   (d)   1X1

Q.6   Value of (i)^2 is

(a)   1   (b)   -1

(c)   2   (d)   -2

Section-B

Note: Objective type question. All question are compulsory.   (6x1=6)

Q.7   Find distance between the points (2,3) & (6,7)

Q.8   Log(m.n) = logm+logn (True/False)

Q.9 $\text{Sin C} + \text{Sin D} = 2 \cos\left(\dfrac{C+D}{2}\right) \cos\left(\dfrac{C-D}{2}\right)$ (True/False)

Q.10 Give an example of square Matrix.

Q.11 Write the trigonometric value of Tan 45°

Q.12 Find slope between the points (2,3) & (6,7)

Section-C	Section-D
Note: Short answer type questions. Attempt any eight questions out of ten questions. $(8 \times 4 = 32)$	**Note:** Long answer type questions. Attempt any two questions out of three questions. $(2 \times 8 = 16)$

Section-C

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Q.13 Find $2A + 3B$ where $A = \begin{bmatrix} 3 & 1 \\ 1 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

Q.14 If $A = \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$ find $A^2 - 5A + 3I$

Q.15 If $z_1 = 5 + 3i$, $Z_2 = 7 + 4i$ find $|Z_1 + Z_2|$

Q.16 Find conjugate & modulus of $Z = 5 + 3i$

Q.17 Write the formula of slope and also find slope between (3,4) & (5,6)

Q.18 Find eq. of straight line passing through (5,7) and having slope 4.

Q.19 Find the centre and radius of circle whose eq. is $x^2 + y^2 + 10x + 4y + 3 = 0$

Q.20 Prove that $\dfrac{Sin\ 7x + Sin\ 3x}{Cos\ 7x + Cos\ 3x} + \tan 5x$

Q.21 Expand $(2a + 3b)^4$ by using binomial theorem.

Q.22 Prove that $\log_y x \times \log_z y \times \log_x Z = 1$

Section-D

Note: Long answer type questions. Attempt any two questions out of three questions. $(2 \times 8 = 16)$

Q.23 Solve the eq. by crammer's rule

$5x + 2y = 7$

$3x + 5y = 8$

Q.24 Find the equation of circle with centre (3,2) and radius is 4

Q.25 If tan A = 3/5, tan B = 1/5 evaluate tan (A+B)