

SECTION - B

Answer any six of the following. Each question carries 5 marks.

 $(6 \times 5 = 30)$

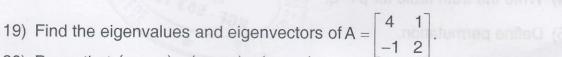
- 13) If $A = \{1, 4\}$, $B = \{2, 3, 6\}$, $C = \{2, 3, 7\}$. Then verify that $A\times(B-C)=(A\times B)-(A\times C).$
- 14) Show that f: $R \rightarrow R$ given by f(x) = 4x + 3 is invertible and find the inverse of f.
- 15) Write the converse, inverse and contrapositive of "If three sides are equal then the triangle is an equilateral triangle".
- 3 -3 4 16) Find the inverse of $A = \begin{bmatrix} 2 & -3 & 4 \end{bmatrix}$. Answer any ten of the following. Eac 1 qut=110
- 17) Using Cramer's rule solve x + y + z = 7

$$2x + 3y + 2z = 17$$

 $4x + 9y + z = 37$.

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18) Verify Cayley - Hamilton theorem for $A = \begin{bmatrix} 1 & 4 \\ -2 & 3 \end{bmatrix}$.



20) Prove that $(p \leftrightarrow q) \equiv (p \rightarrow q) \land (q \rightarrow p)$.

SECTION - C

III. Answer any six of the following. Each question carries 5 marks.

 $(6 \times 5 = 30)$

- 21) If $\log(a + b) = \frac{1}{2}\log(3ab)$. Show that $a^2 + b^2 = ab$.
- 22) In how many ways 3 boys and 5 girls can be arranged so that
 - i) No two boys are together
 - ii) All girls are together.
- 23) How many different words can be formed with the letters of the word 'MISSISSIPPI' ? In how many of these 'I' does not come together ?