

Question-1 :- (a)

$$A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

→ As we can see that Both the column vectors are independent of each other or we can also find rank of matrix A which is 2 (showing that column vectors are independent) therefore

$$\Rightarrow [C(A) = R^2]$$

Question-2 :- (b)

$$B = \begin{bmatrix} 1 & 2 \\ 2 & 4 \end{bmatrix}$$

→ As we can see here second column vector is dependent on 1st one or vice versa as

$$C_2 = 2 * C_1 \text{ (or) } C_1 = \frac{1}{2} * C_2 \text{ so we can say that}$$

$$\Rightarrow [C(B) = R^1] \text{ (because columns are dependent)}$$

Question-3 :- (c)

$$D = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 0 & 4 \end{bmatrix}$$

→ As we can see that column 2 is multiple of column 1 as, $C_2 = 2 * C_1$ so C_1 & C_2 are dependent hence.

$$[C(D) = R^2] \left(\begin{array}{l} \text{we can say that 1st \& 3rd} \\ \text{column vectors are indepen-} \\ \text{dent} \end{array} \right)$$

Report and relevant results with explanation are
~~being~~ written ~~in~~ after the code of each subpart of
Question 2 as comments. ~~and~~