	The Bodwad Sarvajanik Co-Op. Education Society Ltd., Bodwad **Arts, Commerce and Science College Bodwad** **<u>Question Bank</u>** **Class:-TYBSc** **Sem:-VI** **Subject: Linear Algebra** **Paper Name:- MTH 603**	
Sr. No.	**Questions**	**Ans**
1.	If V is a vector space over field F, then the elements of V are called ________ (A) scalars (C) rationals (B) vectors (D) unit	**B**
2.	) If V is a vector space over field F, then for $x, v \in V$, $\alpha \in F$ i) $x + y \in V$, ii) $\alpha x \in V$ (A) Only i) is true (B) Only iI) is true (C) Both are true (D) Both are not true	**C**
3.	If $V(F)$ is a vector space then $(V, +)$ is _____________ (A) Ring (B) non abelian Ring (C) simple Ring (D) None of these D	**D**
4.	A non-empty set V is be vector space then __________ (A) $av = V$ (B) $av \notin V$ (C) $av \neq V$ (D) None of these D	**D**
5.	{0} and (F) are _____________ subspaces of a vector space V F . (A) no t (B) trivial (C) non-trivial (D) None of these	**B**
6.	If $U = (3,1,0,-4)$ and $V = (-1,2,1,4)$ be vectors of R^4 (R) then $U + 3V$ = _______ (A) (5 ,4, 2, 1) (B) (0, 7, 3, 8) (C) (1, −2, 1, −4) (D) (5, 4, 1, −4)	**B**

7.	If U = (1,2,1,2) and V = (0,1, −1,4) be vectors of R^4 (R) then $2U - V$ = _______ (A) (2 ,3, 3, 0) (B) (0, −1, 3, 2) (C) (2, 3, 3, 0) (D) (5, 4, 1, −4) A	**A**
8.	If U = (2,1,3) and V = (3,2,1) be vectors of R^3 (R) then $U + 2V$ = _______ (A) (5 ,4, 2) (B) (0, 7, 3) (C) (8, 6, 5) (D) (8, 5, 5)	**D**
9.	$U = \{ , b, c : a \geq b\}$ is ____________ of R^3 R . (A) subspace (B) scalar (C) not a subspace (D) None of these C	**C**
10.	Union of two subspaces is ________________ (A)subspace (B) Need not a subspace (C) always empty set (D) None of these	**B**
11.	If V is a vector space over F then {0} is _______ (A) linearly dependent (B) linearly independent (C) Scale (D) None of these A	**A**
12.	If V is a vector space over F and $v \in V$ then $\{v\}$ is linearly independent if ______ (A) v =infinity (B) v is non zero (C) v is equal to zero (D) None of these B	**B**
13.	Superset of linearly dependent set is ____________. (A) linearly independent (B) linearly dependant (C) not defined (D) infinite set	**B**

14.	The system of vectors(1,1,2), (−1,2,3), (1,2,4) is ___________ (A) linearly independent (B) Basis of R 4 (C) linearly dependant (D) None of these	**A**
15.	The system of vectors(2,1,2) , (−1,4,3 is ____________ (A) linearly independent (B) Basis of R 3 (C) linearly dependant (D) None of these A	**A**
16.	Let S = { 2,3 , 1,1 , 3,5 } then S is (A) Linearly independent set (B) Linearly dependant set (C) Basis (D) None of these B	**B**
17.	The system of two vectors (1,2), (2,4) is ____________ (A) linearly independent (B) Basis of R 4 (C) linearly dependant (D) None of these C	**C**
18.	The system of vectors{ (1,1,2),(0,0,0), (1,2,4) is ____________ (A) linearly independent (B) Basis of R (C) linearly dependant (D) None of these C	**C**
19.	If the set contains ___________ then it is linearly dependant. (A) unit vector (B) zero vector (C) constant vector (D) None of these B : $v \in$	**B**
20.	) Standard Basis of $\mathbb{R}^2$ is __________________ (A) { 1,0 , (1,0)} (B) { 1,0 , 1,1 } (C) { 1,0,0 , 1,0,0 , 0,0,1)} (D) { 1,0,0 , 1,0, 1 , (0,0,1)} A	**A**
21.	) If W is a subspace of a vector space$V(F)$ then $\frac{v}{w}$= ___________ (A) $\{w + V : w \in W\}$ (B) $\{wV : w \in W\}$ (C) $\{vW : v \in V\}$ (D) $\{v + W : v \epsilon V\}$	**D**

22.	If $V(F)$ is a vector space and S is non-empty subset of Vthen $L\ (L(\ S))$ = _______ (A) V (B) S (C) $V(S)$ (D) $L(S)$	**D**
23.	Let $V(F)$ be a vector space and S be basis of V then $L\ (S)$ = _______ (A) S (B) V (C) $\emptyset$ (D) None of these B	**B**
24.	If F is field then $F\ x$ is ____________ vector space over F. (A) Alway s (B) May be (C) Never (D) None of these A	**A**
25.	If S is basis of $V(F)$ then number of elements in F is called __________ . (A) dimension of V (B) dimension of F (C) dimension of S (D) None of these D	**D**
26.	If S is basis of $V(F)$ then number of elements in V is called __________ . (A) dimension of V (B) dimension of F (C) dimension of S (D) None of these D	**D**
27.	If S is basis of (F) then number of elements in basis of V is called __________ . (A) dimension of V (B) dimension of F (C) dimension of S (D) None of these A	**A**
28.	If S is finite subset of vector space $V(F)$ such that $L\ S = V$ then Basis of V____ (A) does not exists (B) exists (C) Cannot say exists (D) None of these B	**B**
29.	If $V = W1 \oplus W2$ then dim($W1 \cap W2$) is _________ (A) zero (B) non-zero (C) not defined (D)Non of these	**A**

30.	If $A \cap B = \emptyset$ then dim $A + B$ =__________________ (A) dim A – dim (B) (B) dim A + dim (B) (C) dim(A B) (D) none of these B	**B**
31.	Dimension of a vector space R^nover R is ___________ (A) ∞ (B) 0 (C) 1 (D) n D	**D**
32.	In an n-dimensional vector space, each set consisting of $(n + 1)$ or more vectors is ___________ (A) a basis (B) linearly independent (C) linearly dependent (D) None of these C	**C**
33.	If dim $V = n$ then the number of vectors in basis on V are ____ (A) 0 (B) n (C) $k.n$ (D) ∞ B	**B**
34.	Linear span of S is __________ subspace of vector space V containing S. (A) Smallest (B) Largest (C) Empty (D) None of these A	**A**
35.	The system of three vectors 0,2,0 , 0,0,2 , (2,0,0) is _______ of R^3 $(R\ )$. (A) linearly dependent set (B) Basis (C) not span set (D) None of these B	**B**
36.	If (1,1,1) is linearly independent vector then the basis of $\mathbb{R}^3$ $(\mathbb{R})$ that contains this vector is __________________ (A)(1,1,1) , (1,0,1 , (2,2,2) (B) (1,1,1),(1,0,1) , (2,0,2 (C) (1,1,1), (0,0,1) , (0,1,0) (D)(1,0,0) , (0,0,1) , (0,1,0)	**C**
37.	If (1,1) is linearly independent vector then the basis of $\mathbb{R}$2 $(\mathbb{R})$ that contains this vector is __________________ (A)(1,1), (2,2), (3,2) (B) (1,1 , (0,1) (C)(1,0) , (3,1) , (D)(1,0) , (0,1	**B**

38.	If W is subspace of a finite dimensional vector space V then, $dim\frac{v}{w}$ = ________ (A) dim V − dim(W) (B) dim V + dim(W) (C) dim W − dim(V) (D) dim (V)	**A**
39.	Standard basis of R 4 is ____________ (A) (1,0,0,0), (0,1,0,0) ,(0,1,1,0), (0,0,0,1) (B) (1,0,0,0) , (0,0,1,0),(0,0,2,0) , (1,1,0,0) (C) 1,0,0,0 , 1,1,0,0 , (1,1,1,0),(1,0,0,1) (D)(0,0,0,1) , (0,1,0,0), (1,0,0,0), (1,0,0,0)	**D**
40.	The set of polynomials in $P2$ [x] , 1 + x +2x^2x 2 , 2 − x − 2x^2, 4 + 5x + x^2are______ (A) Linearly independent (B) Linearly dependant (C) All constants (D) None of these A	**A**
41.	The set of polynomials in $P2$ [x] , 1 + x + 2$x^2$2 , 2 + 3x − x^2 , 2 + 2x + 4x^2 are______ (A) Linearly independen (B) Linearly dependant (C) All constants (D) None of these B	**B**
42.	If V is a finite dimensional vector space and S, T are two finite subsets of V such that S spans V and T is linearly independent set then, (A) $O(S)$ = $O(T)$ (B) $O(T) \leq O(S)$ (C) O (S) ≥ $O(T)$ (D) None of these	**B**
43.	If S and T both are bases of a finite dimensional vector space $V(F)$ then, (A) $O(S)$ = $O(T)$ (B) $O(T) \leq O(S)$ (C) O (S)≥ $O(T)$ (D) None of the	**A**

44.	If A and B are two subspaces of a finite dimensional vector space$V(F)$ then dim($A + B$) + dim($A \cap B$) = ________ (A) dim (A) + dim(B) (B) dim A − dim B (C) dim A / dim B (D) None of these A	**A**
45.	The system of three vectors (1,1,2),(0,1,1), (1,2,3) is __________ set of R^3 (R) (A) linearly independent (B) linearly dependant (C) Basis (D) None of these B	**B**
46.	Let $V(F)$ be a vector space , a subset S of V is said to be basis if _________ (A) S is linearly dependant and $L(S) = V$ (B) S is linearly independent and $L(S) \neq V$ (C) S is linearly dependant and $L(S) \neq V$ (D) None of these	**D**
47.	The co-ordinate vector of v =((3, 5, −2)with respect to standard basis is______ (A) (−2, 5, 3) (B) (3, 5, −2) (C) (−3, −5, 2) (D) None of these	**B**
48.	If dim $V = n$ and $S = \{v1 , v2 , \ldots , vn \}$ is linearly independent set then, S is _________of V. (A) Basis (B) linearly dependent set (C) superset (D) None of these A	**A**
49.	Row Echelon form of matrix A = 1 1 2 3 is__________ (A)) $\begin{bmatrix}1 & 1\\0 & 2\end{bmatrix}$ (B)) $\begin{bmatrix}1 & 0\\0 & 4\end{bmatrix}$ (C) $\begin{bmatrix}1 & 1\\0 & 4\end{bmatrix}$ (D) $\begin{bmatrix}1 & 0\\0 & 2\end{bmatrix}$	**C**

50.	Row Echelon form of matrix A = 1 −1 2 2 is__________ (A) $\begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix}$ (B) $\begin{bmatrix} 1 & -1 \\ 0 & 4 \end{bmatrix}$ (C)) $\begin{bmatrix} 1 & 1 \\ 0 & 4 \end{bmatrix}$ (D) $\begin{bmatrix} 1 & 1 \\ 0 & 2 \end{bmatrix}$	**B**
51.	Let T be linear transformation on $\mathbb{R}^3$ defined by $T(x, y, z)$= $(3x, x - y, 2x + y + z)$ Then,______________ (A) T is invertible (B) T is not invertible (C) T is constant (D) None of these A	**A**
52.	Let,T:U F ⟶ $V(F)$ be a linear transformation then ker(V) is ___________ (A) subspace of $U(F)$ (B) subspace of $V(F)$ (C) Not defined (D) None of these C	**C**
53.	If T: V ⟶ V is a linear transformation the (A) T is one-one (B) T is onto (C) T u + v = T u + $T(v)$ (D) All of above C	**C**
54.	Let, T:U F ⟶ $V(F)$ be a linear transformation then Range(T) is ___________ (A) subspace of $U(F)$ (B) subspace of $V(F)$ (C) Not defined (D) None of these B	**B**
55.	Let F: V ⟶ W and G: U ⟶ V which of the following may not exists. (A) $F \circ G$ (B) $G \circ F$ (C) $2F$ (D) $3G$	**B**
56.	Let, T:U F ⟶ $V(F)$ be a vector isomorphism then, (A) $U \neq V$ (B) dim U = dim V (C) dim U ≠ dim(V) (D) None of these	**B**