KENDRIYA VIDYALAYA SANGATHAN
AHMEDABAD REGION

Class - XII

Multiple Choice Question Bank

MATHEMATICS [041]

Based on Latest CBSE Exam Pattern

for the Session 2024-25

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CONTENT DOVELOPED BY			
S. No.	CHAPTER'S NAME	PREPARED BY (NAME OF PGT)	NAME OF KV
1.	RELATIONS AND FUNCTIONS	SHILPA TANEJA	K V SECTOR 30, GANDINAGAR
2.	INVERSE TRIGNOMETRIC FUNCTIONS	RAJENDER PARMAR	K V AFS SAMANA
3.	MATRICES	R P YADAV	K V SAC VASTRAPUR
4.	DETERMINANTS	L S RAWAT	K V NO. 3 AFS MAKARPURA VADODARA
5.	CONTINUITY AND DIFFERENTIABILITY	SHIRIN PANDYA	K V KRIBHCO SURAT
6.	APPLICATION OF DERIVATIVES	SUMATI KAUSHIK	K V NO 1 AFS BHUJ
7.	INTEGRAL	ASUTOSH RAI	K V NO. 3 GANDHINAGAR CANTT
8.	APPLICATION OF INTEGRALS	MONIKA KALSI	K V ONGC ANKLESHWAR
9.	DIFFERENTIAL EQUATION	MANISH KUMAR	K V NO. 1 SURAT
10.	VECTORS	JITENDRA BIJAL RATHOD	K V RLY. GANDHIDHAM
11.	THREE-DIMENSIONAL GEOMETRY	SANTOSH KUMAR TIWARI	K V NO, 2 ARMY VADODARA
12.	PROBABILITY	A P SRIVASTAVA	K V NO. 3 AFS MAKARPURA VADODARA
13.	LINEAR PROGRAMMING	BHAVNA SUTARIYA	K V SABARMATI

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KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

OBJECTIVE TYPE QUESTIONS(SESSION 2024-25)

CLASS XII MATHEMATICS (041)

CHAPTER 1: RELATIONS AND FUNCTIONS

	MCQs
Q. 1: -	A function f: $R_+ \to R$ where R_+ is the set of all non negative real numbers defined by $f(x) = 4x + 3$ is : (a) One-one but not onto (b) Onto but not one-one (c) Both one-one and onto (d) Neither one-one nor onto
Q. 2: -	Let f : $R_+ \to [-5, \infty)$ be defined as $f(x) = 9x^2 + 6x - 5$, where R_+ is the set of all non-negative real numbers.Then f is: (a) One-one (b) onto (c) bijective (d) neither one-one nor onto
Q. 3: -	Let R be a relation on the set N of natural numbers defined by n R m if n divides m. Then R is (a) Reflexive and symmetric (b) Transitive and symmetric (c) Equivalence (d) Reflexive , transitive but not symmetric
Q. 4: -	The maximum number of equivalence relations on the set A = (1,2,3) are : (a) 1 (b) 2 (c) 3 (d) 5
Q. 5: -	If set A contains 5 elements and the set B contains 6 elements , then the number of one-one and onto mappings from A to B is: (a) 720 (b) 120 (c) 0 (d) None of these
Q. 6: -	Let f : R → R be defined by $f(x) = 1/x \ \forall \ x \in R$ .Then f is (a) One-one (b) onto (c) bijective (d) None of these

Q. 7: -	Set A has 3 elements , and set B has 4 elements .Then the number of injective mappings that can be defined from A to B is **(a)** 144 (b) 12 (c) 24 (d) 64
Q. 8: -	A mapping f: A →B defined as f (x) = $\frac{2x+3}{3x+5}$, x ∈A Iff is to be onto thenwhat are A and B equal to ? **(a)** A = R – { -5/3} and B = R – { -3/2} **(b)** A = R and B = R – {-5/3} **(c)** A = R –{-3/2} and B = R – {0} **(d)** None of these
Q. 9: -	Let T be the set of all triangles in the Euclidean plane , and let a relation R on T be defined as a R b if a is congruent to b ∀ a , b ∈ T Then R is **(a)** Reflexive but not transitive **(b)** Transitive but not symmetric **(c)** Equivalence **(d)** None of these
Q. 10:	The greatest integer function f(x) = [x] is (a) One-one into (b) Many–one into (c) One-one onto (d) None of these
Q. 11:	Let A = {1,2,3,…n} and B = {a,b} .Then the number of surjections from A into B is (a) P_2^n (b) 2^n-2 (c) 2^n-1 (d) None of these
Q. 12:	The relation R = {(1,2) (1,3)} on set A = {1,2,3} is (a) Neither reflexive nor symmetric nor transitive (b) Symmetric and transitive (c) Reflexive and transitive (d) Neither reflexive nor symmetric but transitive
Q. 13:	Let f: N → N defined by f(x) = $x^2 + x + 1$ is (a) One-one and onto (b) One-one but not onto (c) Not one-one but onto (d) Neither One-one nor onto
Q. 14:	Possible reflexive relation in a set A whose n(A) = 3 are (a) 2^3 (b) 2^5 (c) 2^6 (d) 3^6

Q. 15:	Let A = {1,2,3}.Then the number of relations containing (1,2) and (1,3) which are reflexive and symmetric but not transitive is (a) 1 (b) 2 (c) 3 (d) 4
Q. 16:	Let f: R → R be defined as f(x) = x^4.Then (a) f is one-one onto (b) f is many-one onto (c) f is on-one but not onto (d) f is neither one-one nor onto
Q. 17:	Let $A = \{x \in Z: 0 \leq x \leq 12\}$ and R be a relation on A defined as $R = \{(a,b): a,b \in A, \lvert a-b \rvert \ is\ divisible\ by\ 4\}$. The equivalence class of 2 is: (a) { 2,6,10 } (b) { 0,4,8,12} (c) { 0,2,4,6,8,10,12} (d) { 4,8}
Q. 18:	Let $f: R \to R$ be defined by $f(x) = x^2 + 1$. Then, pre-images of 17and – 3, respectively, are: (a) ϕ , {4,-4} (b) $\{3,-3\}$, ϕ (c) {4,-4}, ϕ (d) {4,-4} , { 2,-2}
Q. 19:	Let f : [3, ∞) → B given by f(x) = x^2 – 6 x +14 is a bijection , then B is equal to (a) [3, ∞) (b) [5, ∞) (c) (5, ∞) (d) R
Q. 20:	For real numbers x and y, we write x R y ↔ x – y + $\sqrt{2}$ is an irrational number. Then the relation R is (a) Reflexive (b) Symmetric (c) Transitive (d) None of these
Q. 21:	Let A = {1, 2, 3}and R = {(1, 2), (2, 3)} be a relation in A. Then, the minimum number of ordered pairs may be added, so that R becomes an equivalence relation, is (a) 7 (b) 5 (c) 1 (d)4
Q. 22:	Let A = {1, 2, 3}. Then, the number of relations containing (1, 2) and (1, 3) which are reflexive and symmetric and transitive, is (a) 1 (b) 2 (c) 3 (d) 4
Q. 23:	Let f : R → R be a function defined by f(x) =x^3+ 4, then f is (a) Injective (b) Surjective (c) Bijective (d) None of these

Q. 24:	Let g: R→R g(x) = x^2– 4x – 5, then (a) g is one-one on R (b) g is not one-one on R (c) g is bijective on R (d) None of these
Q. 25:	Let A = {1, 2, 3} and B = {a, b, c}, then the number of bijective functions from A to B are (a) 2 (b) 8 (c) 6 (d) 4
Q. 26:	The number of surjective functions from A to B where A = {1, 2, 3, 4} and B = {a, b} is (a) 14 (b) 12 (c) 2 (d) 15
Q. 27:	The function f : R → R defined by f (x) = (x – 1) (x – 2) (x – 3) is (a) one-one but not onto (b) onto but not one-one (c) both one-one and onto (d) neither one-one nor onto
Q. 28:	The relation R = {(1, 1), (2, 2), (3, 3), (1, 2), (2, 3), (1, 3)} on set A = {1, 2, 3} is (a) Reflexive, not symmetric and transitive (b) Reflexive, not symmetric and not transitive (c) Reflexive, Symmetric and transitive (d) Reflexive ,symmetric nor transitive
Q. 29:	In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices. (a) Both (A) and (R) are true and (R) is the correct explanation of (A). (b) Both (A) and (R) are true but (R) is not the correct explanation of (A). (c) (A) is true but (R) is false. (d) (A) is false but (R) is true. Assertion (A): The relation f: {1,2,3,4} ⟶ {x, y, z, p} defined by f = {(1, x), (2, y), (3, z)} is a bijective function. Reason (R): The function f: {1,2,3} ⟶ {x, y, z, p} such that f = {(1, x), (2, y), (3, z)} is one-one.
Q. 30:	In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices. (a) Both (A) and (R) are true and (R) is the correct explanation of (A). (b) Both (A) and (R) are true but (R) is not the correct explanation of (A). (c) (A) is true but (R) is false. (d) (A) is false but (R) is true. Assertion(A): A relation R = {(a, b) :|a–b|< 2} defined on the set A = {1,2,3,4,5} is reflexive. Reason(R): A relation on the set A is said to be reflexive if (a, a) ∈ R ∀a ∈ A.

ANSWER KEY: CHAPTER 1: RELATIONS AND FUNCTIONS

1(a)	2 (c)	3 (d)	4(d)	5(c)	6(d)	7(c)	8(d)	9(c)	10(b)
11 (b)	12(d)	13(b)	14(c)	15(a)	16(d)	17(a)	18 (c)	19 (b)	20 (a)
21 (a)	22(a)	23 (c)	24 (b)	25 (c)	26 (a)	27(b)	28(a)	29 (d)	30(a)

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KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER:2 INVERSE TRIGONOMETRIC FUNCTIONS

Q1	**If** $\sin^{-1} x = y, then$ **(a)** $-\frac{\pi}{2} < y < \frac{\pi}{2}$ **(b)** $-\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$ **(c)** $0 < y < \pi$ **(d)** $0 \leq y \leq \pi$
Q2	**Which of the following is the principal value branch of** cosec^{-1} **x ?** **(a)** $(-\frac{\pi}{2}, \frac{\pi}{2})$ **(b)** $(0, \pi) - \{\frac{\pi}{2}\}$ **(c)** $[-\frac{\pi}{2}, \frac{\pi}{2}]$ **(d)** $[-\frac{\pi}{2}, \frac{\pi}{2}] - \{0\}$
Q3	$\cos^{-1}\left(\cos\frac{7\pi}{6}\right)$ **= .....** **(a)** $\frac{\pi}{6}$ **(b)** $\frac{5\pi}{6}$ **(c)** $-\frac{\pi}{6}$ **(d)** $\frac{7\pi}{6}$
Q4	$\cos\left[\tan^{-1}\left\{\cot\left(\sin^{-1}\frac{1}{2}\right)\right\}\right] = \cdots$ **(a)** 1 **(b)** 0 **(c)** $1/\sqrt{2}$ **(d)** $1/2$
Q 5	**What will be the value of k, if** $\sin^{-1}\left[k\tan\left(2\cos^{-1}\frac{\sqrt{3}}{2}\right)\right] = \frac{\pi}{3}$ **(a)** 1 **(b)** $1/4$ **(c)** $1/\sqrt{2}$ **(d)** $1/2$
Q 6	$\sin\left\{\frac{\pi}{3} - \sin^{-1}\left(-\frac{1}{2}\right)\right\}$ **is equal to:** **(a)** 0 **(b)** $\frac{1}{2}$ **(c)** $\frac{\sqrt{3}}{2}$ **(d)** 1
Q 7	**the value of** $\sin^{-1}\left(-\frac{1}{2}\right) - \sin^{-1}(-1)$ **(a)** $\frac{\pi}{6}$ **(b)** $\frac{5\pi}{6}$ **(c)** $-\frac{\pi}{6}$ **(d)** $\frac{\pi}{3}$
Q 8	**the range of the function** $f(x) = 2\sin^{-1}(1-x)$ **is:** **(a)** $[-1, 1]$ **(b)** $(-1, 1)$ **(c)** $[-2, 2]$ **(d)** $[-\frac{1}{2}, \frac{1}{2}]$
Q 9	$\cos\left(\frac{\pi}{3} + \cos^{-1}(-1)\right) = \cdots$ **(a)** $1/2$ **(b)** $-1/2$ **(c)** 1 **(d)** -1
Q10	**If** $f(x) = \sin(\tan^{-1} x)$**, then** $f(-1) = \cdots \ldots \ldots$ **(a)** $-\frac{1}{2}$ **(b)** $-\frac{1}{\sqrt{2}}$ **(c)** 1 **(d)** -1
Q11	$\sin\left[\tan^{-1}(-\sqrt{3}) + \cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right] = \cdots$ **(a)** 1 **(b)** -1 **(c)** 0 **(d)** 2
Q 12	**The value of** $\sin^{-1}(\sin(5\pi/4))$ **is:** **(a)** $5\pi/4$ **(b)** $3\pi/4$ **(c)** $-\pi/4$ **(d)** $7\pi/4$

Q13	**Value of** $\cos\left[\frac{\pi}{6}+\cos^{-1}\left(-\frac{1}{2}\right)\right]=\cdots$ **(a)** $-\frac{\sqrt{3}}{2}$ **(b)** $\frac{\sqrt{3}-1}{2\sqrt{2}}$ **(c)** $\frac{1}{2}$ **(d)** $\frac{\sqrt{3}+1}{2\sqrt{2}}$
Q14	**The value of the expression** $sec^2(\tan^{-1}3)+cosec^2(\cot^{-1}5)$ **is** **(a) 36 (b) 15 (c) 34 (d) 64**
Q15	**The principal value of** $\tan^{-1}(\tan 3\pi/5)$ **is** **(a)** $2\pi/5$ **(b)** $-2\pi/5$ **(c)** $3\pi/5$ **(d)** $-3\pi/5$
Q16	**The domain of** $\sin^{-1}(2x)$ **is** **(a) [0, 1] (b) [− 1, 1] (c) [-1/2, 1/2] (d) [−2, 2]**
Q 17	**The range of** $\sin^{-1}x+\cos^{-1}x+\tan^{-1}x$ **is** **(a)** $[0,\pi]$ **(b)** $[\pi/4, 3\pi/4]$ **(c) (0,** π**) (d)** $[0,\pi/2]$
Q 18	**The value of** $\cos(\sin^{-1}(1/2))$ **is:** **(a)** $\sqrt{2}/2$ **(b)** $\sqrt{3}/2$ **(c) 1 (d) 1/2**
Q 19	$cos^2\left(\sin^{-1}\left(\frac{1}{2}\right)\right)+sin^2\left(\cos^{-1}\left(\frac{1}{2}\right)\right)$ **(a)** $1/2$ **(b)** 1 **(c)** $3/2$ **(d)** 2
Q 20	**The domain of the function** $\cos^{-1}(2x-1)$**is .....** **(a)** $[0,1]$ **(b)** $[-1,1]$ **(c)** $[0,1/2]$ **(d)** $[0,\pi]$
Q 21	$\sin^{-1}\left(\frac{1}{2}\right)+2\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)=\cdots$ **(a)** $\frac{\pi}{2}$ **(b)** π **(c)** $\frac{11\pi}{6}$ **(d)** $\frac{3\pi}{4}$
Q 22	**The domain of the function defined by** $\sin^{-1}(\sqrt{x-1})$ **is .....** **(a)** $[1,2]$ **(b)** $[-1,1]$ **(c)** $[0,1]$ **(d) None of these**
Q 23	**The value of** $\cos^{-1}\left[\cos\left(\frac{33\pi}{5}\right)\right]$ **is.....** **(a)** $\frac{3\pi}{5}$ **(b)** $\frac{-7\pi}{5}$ **(c)** $\frac{\pi}{10}$ **(d)** $\frac{-\pi}{10}$
Q 24	**The value of** $\cos^{-1}\left(\cos\frac{3\pi}{2}\right)$ **is .....** **(a)** $\frac{\pi}{2}$ **(b)** $\frac{3\pi}{2}$ **(c)** $\frac{5\pi}{2}$ **(d)** $\frac{7\pi}{2}$
Q 25	**The value of** $\cos^{-1}\left[\cos\left(-\frac{\pi}{3}\right)\right]$**=.....** **(a)** $-\frac{\pi}{3}$ **(b)** $\frac{\pi}{3}$ **(c)** $\frac{4\pi}{3}$ **(d)** $\frac{2\pi}{3}$
Q 26	$\tan^{-1}\left(\frac{3x-x^3}{1-3x^2}\right)=\cdots\ldots\ldots\ldots\ldots\ldots, 0<x<\frac{1}{\sqrt{3}}$ **(a)** $\tan^{-1}x$ **(b)** $\tan^{-1}(3x)$ **(c)** $3\tan^{-1}x$ **(d)** $3\tan^{-1}x$

Directions: Each of the following questions contains two statements, Assertion and Reason. Each of these questions also has four alternative choices, only one of which is the correct answer. You have to select one of the codes (a), (b), (c) and (d) given below. **(a) Assertion is correct, reason is correct; reason is a correct explanation for assertion.** **(b) Assertion is correct, reason is correct; reason is not a correct explanation for assertion** **(c) Assertion is correct, reason is incorrect** **(d) Assertion is incorrect, reason is correct.**	
Q 27	**Assertion (A): Principal value of** $sin^{-1}\left(1/\sqrt{2}\right)$ **is** $\pi/4$ **Reason (R): Principal value of** $cot^{-1}\left(-1/\sqrt{3}\right)$ **is** $2\pi/3$
Q 28	**Assertion (A): The domain of the function** $y = \sec^{-1} 2x$ **is** $\left(-\infty, -\frac{1}{2}\right] \cup \left[\frac{1}{2}, \infty\right)$. **Reason (R):** $\sec^{-1}(-2) = -\frac{\pi}{4}$
Q 29	**Assertion (A): Domain of** $y = \cos^{-1} x$ **is** $[-1, 1]$ **Reason (R): The range of the principal value branch of** $y = \cos^{-1} x$ **is** $[0, \pi] - \left\{\frac{\pi}{2}\right\}$
Q 30	**Assertion (A):** $cos^{-1}\left(-\frac{1}{2}\right) = \frac{2\pi}{3}$ **Reason (R): Principal value branch of** $cos^{-1} x$ **is** $[0, \pi]$.

ANSWERS
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER:2 INVERSE TRIGONOMETRIC FUNCTIONS

Q1	(b)
Q2	(d)
Q3	(b)
Q4	(d)
Q 5	(d)
Q 6	(d)
Q 7	(d)
Q 8	(c)
Q 9	(b)
Q10	(b)
Q11	(a)
Q 12	(c)
Q13	(a)
Q14	(a)
Q15	(b)
Q16	(c)
Q 17	(a)
Q 18	(b)
Q 19	(c)
Q 20	(a)
Q 21	(c)
Q 22	(a)
Q 23	(a)
Q 24	(a)
Q 25	(b)
Q 26	(c)
Q 27	(b)
Q 28	(c)
Q 29	(c)
Q 30	(a)

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KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER:3 MATRICES

Q1	Find the value of $x, y \text{ and } z$ if $\begin{bmatrix} x+y+z \\ x+z \\ y+z \end{bmatrix} = \begin{bmatrix} 9 \\ 5 \\ 7 \end{bmatrix}$ (A) 1,2,3 (B) 2, O, 3 (C) 2,4,3 (D) 2,3,4
Q2	Find the value of a,b,c and d if $\begin{bmatrix} a-b & 2a+c \\ 2a-b & 3c+d \end{bmatrix} = \begin{bmatrix} -1 & 5 \\ 0 & 13 \end{bmatrix}$ (A) 1,2,3,4 (B) 2,3,4,5 (C) 3,4,5,6 (D) 4,5,6,7
Q3	If $\begin{bmatrix} 9 & -1 & 4 \\ -2 & 1 & 3 \end{bmatrix} = A + \begin{bmatrix} 1 & 2 & -1 \\ 0 & 4 & 9 \end{bmatrix}, then\ find\ the\ matrix\ A$. (A) A = $\begin{bmatrix} 4 & -3 & 5 \\ -2 & -3 & -6 \end{bmatrix}$ (B) A = $\begin{bmatrix} 8 & -3 & 5 \\ -2 & -2 & -6 \end{bmatrix}$. (C) A = $\begin{bmatrix} 3 & -3 & 5 \\ -2 & -3 & -6 \end{bmatrix}$ (D) A = $\begin{bmatrix} 8 & -3 & 5 \\ -2 & -3 & -6 \end{bmatrix}$
Q4	Find the value of x and y if $2\begin{bmatrix} 1 & 3 \\ 0 & x \end{bmatrix} + \begin{bmatrix} y & 0 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 5 & 6 \\ 1 & 8 \end{bmatrix}$ (A) x = 2, y = 3, (B) x = 3, y = 2 (C) x = 3, y = 3 (D) x = 3, y = 4
Q 5	If $\begin{bmatrix} x+3y & y \\ 7-x & 4 \end{bmatrix} = \begin{bmatrix} 4 & -1 \\ 0 & 4 \end{bmatrix}$ then (A) x = 7, y = - 1 (B) x = -1 , y = 7 (C) x = 7, y = 7 (D) x = -1, y= -1
Q 6	If A = $\begin{bmatrix} 2 & 3 & -5 \\ 1 & 4 & 9 \\ 0 & 7 & -2 \end{bmatrix}$ and B = $\begin{bmatrix} 2 & 1 & -1 \\ -3 & 4 & 4 \\ 1 & 5 & 2 \end{bmatrix}$, then find $a_{22} + b_{21}$ is (A) -1 (B) 1 (C) 4 (D) – 2

Q 7	If A=$\begin{bmatrix} cos\alpha & -sin\alpha \\ sin\alpha & cos\alpha \end{bmatrix}$,then for what value of α, A is an identity matrix if α= (A) 90^0 (B) 45^0 (C) 0^o (D) 135^0
Q 8	If $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}\begin{bmatrix} 3 & 1 \\ 2 & 5 \end{bmatrix} = \begin{bmatrix} 7 & 11 \\ k & 23 \end{bmatrix}, then\ find\ the\ value\ of\ k.$ (A) 17 (B) 19 (C) 21 (D) 23
Q 9	Write a square matrix of order 2, which is both symmetric and skew symmetric. (A) $\begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$ (B) $\begin{bmatrix} 1 & 0 \\ 0 & -1 \end{bmatrix}$ (C) $\begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$ $(D)\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$
Q10	From the following matrix equation, find the value of x: $\begin{bmatrix} 1 & 3 \\ 4 & 5 \end{bmatrix}\begin{bmatrix} x \\ 2 \end{bmatrix} = \begin{bmatrix} 5 \\ 6 \end{bmatrix}$ (A) x =-1 (B) x = 1 (C) x = 0 (D) x = -2
Q11	Write the order of the product matrix $\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}[2 \quad 3 \quad 4]$ (A) 1 x 1 (B) 3 x3 (C) 1 x 3 (D) 3 x 1
Q 12	For a 2x 2 matrix A = $[a_{ij}]$, whose elements are given by $a_{ij} = \frac{i}{j}$, write the value of a_{12} (A) 2 (B) 1 / 2 (C) 1 / 3 (D) 3
Q13	For what value of x, is the matrix A = $\begin{bmatrix} 0 & 1 & -2 \\ -1 & 0 & 3 \\ x & -3 & 0 \end{bmatrix}$ is a skew symmetric matrix? (A) x =2 (B) x = -2 (C) x = 3 (D) x = -3
Q14	If A is a 3 x 3 matrix, whose elements are given by $a_{ij} = \frac{1}{3}\lvert -3i + j \rvert$, then write the value of a_{23}. (A) -1 (B) 1 (C) 2 (D) -2

Q15	15.If $\begin{bmatrix}1 & 0 & 0\\0 & -1 & 0\\0 & 0 & 1\end{bmatrix}\begin{bmatrix}x\\y\\z\end{bmatrix} = \begin{bmatrix}1\\0\\1\end{bmatrix}$, *then values of* x, y *and* z. (A) $x = -1, y = 0, z = -1$ (B) $x = 1, y = 1, z = 1$ (C) $x = 1, y = 0, z = 1$ (D) $x = 1, y = 0, z = -1$
Q16	If $A^T = \begin{bmatrix}-2 & 3\\1 & 2\end{bmatrix}$ and B = $\begin{bmatrix}-1 & 0\\1 & 2\end{bmatrix}$ then find $(A + 2B)'$ (A) $\begin{bmatrix}4 & 5\\1 & 6\end{bmatrix}$ (B) $\begin{bmatrix}-4 & 5\\1 & -6\end{bmatrix}$ (C) $\begin{bmatrix}-4 & 5\\1 & 6\end{bmatrix}$ (D) $\begin{bmatrix}4 & 5\\1 & -6\end{bmatrix}$
Q 17	If A = = $\begin{bmatrix}3 & 10\\2 & 7\end{bmatrix}$, then write A^{-1} (A) $\begin{bmatrix}7 & -10\\2 & 3\end{bmatrix}$ (B) $\begin{bmatrix}7 & -10\\-2 & 3\end{bmatrix}$ (C) $\begin{bmatrix}7 & 10\\-2 & 3\end{bmatrix}$ (D) $\begin{bmatrix}7 & 10\\2 & 3\end{bmatrix}$
Q 18	Write the number of all possible matrices of order 2 x2 with each entry 1,2 or 3 (A) 81 (B) 9 (C) 3 (D) none of these
Q 19	Assume X, Y, Z, W and P are matrices of order 2 × n, 3 × k, 2 × p, n × 3 and p × k, respectively. The restriction on n, k and p so that PY + WY will be defined are: (A) k = 3, p = n (B) k is arbitrary, p = 2 (C) p is arbitrary, k = 3 (D) k = 2, p = 3
Q 20	Assume X, Y, Z, W and P are matrices of order 2 × n, 3 × k, 2 × p, n × 3 and p × k, respectively. If n = p, then the order of the matrix 7X – 5Z is: (A) p × 2 (B) 2 × n (C) n × 3 (D) p × n

Q 21	If A, B are symmetric matrices of same order, then AB – BA is a (A) Skew symmetric matrix (B) Symmetric matrix (C) Zero matrix (D) Identity matrix
Q 22	If A = $\begin{bmatrix} cos\alpha & -sin\alpha \\ sin\alpha & cos\alpha \end{bmatrix}$ and A + A′ = I, then the value of α is (A) π / 6 (B) π / 3 (C) π (D) 2 π
Q 23	Matrices A and B will be inverse of each other only if (A) AB = BA (B) AB = BA = 0 (C) AB = 0, BA = I (D) AB = BA = I
Q 24	If the matrix A is both symmetric and skew symmetric, then (A) A is a diagonal matrix (B) A is a zero matrix (C) A is a square matrix (D) None of these
Q 25	The number of all possible matrices of order 3 × 3 with each entry 0 or 1 is: (A) 27 (B) 18 (C) 81 (D) 512
Q 26	A is a 3 X 4 matrix . A matrix B is such that A′ B and B A′ are defined then order of B is (A) 3 X 4 (B) 3 X 3 (C) 4 X 4 (D) 4 X 3
Q 27	If A = $\begin{bmatrix} 1 & 3 \\ 3 & 4 \end{bmatrix}$ and A^2 – k A – 5 I = 0 then the value of k is (A) 3 (B) 7 (C) 5 (D) 9
Q 28	If A = $[2 \ -3 \ \ 4]$, B = $\begin{bmatrix} 3 \\ 2 \\ 2 \end{bmatrix}$, X = [1 2 3], Y = $\begin{bmatrix} 2 \\ 3 \\ 4 \end{bmatrix}$ AB + XY equals to (A) [28] (B) [24] (C) [12] (D) [-28]
Q 29	If order of matrix X is 2 x p and order of matrix Z is n x n and n=p, then the order of the matrix 7X-5Z is (A)P x 2 (B) 2 x n (C) n x 3 (D) p x n
Q 30	If A = $[a_{ij}]_{m \times n}$, then A' is equal to (A) $[a_{ji}]_{n \times m}$ (B) $[a_{ij}]_{m \times n}$ (C) $[a_{ji}]_{m \times n}$ (D) $[a_{ij}]_{n \times m}$

ANSWERS
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER:3 MATRICES

Q1	(b)
Q2	(d)
Q3	(b)
Q4	(d)
Q 5	(d)
Q 6	(d)
Q 7	(d)
Q 8	(c)
Q 9	(b)
Q10	(b)
Q11	(a)
Q 12	(c)
Q13	(a)
Q14	(a)
Q15	(b)
Q16	(c)
Q 17	(a)
Q 18	(b)
Q 19	(c)
Q 20	(a)
Q 21	(c)
Q 22	(a)
Q 23	(a)
Q 24	(a)
Q 25	(b)
Q 26	(c)
Q 27	(b)
Q 28	(c)
Q 29	(c)
Q 30	(a)

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KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION
OBJECTIVE TYPE QUESTIONS (2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER 4: DETERMINANTS

Q1	If $\begin{bmatrix}1 & 2 & 1\\2 & 3 & 1\\3 & a & 1\end{bmatrix}$ is a non-singular matrix and $a \in A$, then the set A is (a) R (b) $\{0\}$ (c) $\{4\}$ (d) R - $\{4\}$
Q2	If $\|A\| = \|k\,A\|$,where A is square matrix of order 2, then sum of all possible values of k is (a) 1 (b) -1 (c) 2 (d) 0
Q3	If (a, b), (c, d) and (e, f) are vertices of $\Delta\,ABC$ and Δ denotes the area of $\Delta\,ABC$, then $\begin{vmatrix}a & c & e\\b & d & f\\1 & 1 & 1\end{vmatrix}^2$ is equal to (a) $2\Delta^2$ (b) $4\Delta^2$ (c) $2\,\Delta$ (d) 4Δ
Q4	If $\|A\| = 2$, where A is a 2×2 matrix, then $\|4\,A^{-1}\|$ equals: (a) 4 (b) 2 (c) 8 (d) $\frac{1}{32}$
Q5	If the area of a triangle with vertices (-3, 0), (3, 0) and (0, k) is 9 sq units. Then the value of k will be (a) 9 (b) 3 (c) -9 (d) 6

Q6	If $\begin{vmatrix} 2x & 5 \\ 8 & x \end{vmatrix} = \begin{vmatrix} 6 & -2 \\ 7 & 3 \end{vmatrix}$, then value of x is (a) 3 (b) ± 3 (c) ± 6 (d) 6
Q7	If $A = \begin{bmatrix} 6 & 3 \\ 1 & 2 \end{bmatrix}$ be such that that A^{-1} =k A, then the value of k is (a) $\frac{1}{9}$ (b) $\pm\frac{1}{9}$ (c) $\frac{1}{3}$ (d) $\pm\frac{1}{3}$
Q8	If A and B are matrices of order 3 and $\|A\| = 5$, and $\|B\| = 3$, then $\|3AB\|$ is equal to (a) 45 (b) 405 (c) 135 (d) None of these
Q 9	If there are two values of 'a' which makes determinant, $\begin{vmatrix} 1 & -2 & 5 \\ 2 & a & -1 \\ 0 & 4 & 2a \end{vmatrix}$ =86, then sum of these numbers is (a) 4 (b) -5 (c) -4 (d) 9
Q 10	If A is a square matrix of order 3, with $\|A\| = 9$, then the value of $\|2\,.\,adj\ A\|$ is (a) 648 (b) 54 (c) 72 (d) 108
Q 11	If A is a square matrix such that $A.adjA = \begin{bmatrix} 5 & 0 & 0 \\ 0 & 5 & 0 \\ 0 & 0 & 5 \end{bmatrix}$,then write the value of $\|adjA\|$.

	(a) 5 (b) 25 (c) 1 (d) 125
Q 12	If matrix $\begin{bmatrix} 2 & 3 & -1 \\ x+4 & -1 & 2 \\ 3x+1 & 2 & -1 \end{bmatrix}$ is a singular matrix, then the value of x is (a) $\frac{-33}{16}$ (b) $\frac{3}{16}$ (c) $\frac{4}{13}$ (d) $\frac{8}{10}$
Q 13	If $A = \begin{bmatrix} 2 & \lambda & -3 \\ 0 & 2 & 5 \\ 1 & 1 & 3 \end{bmatrix}$,then find λ if A^{-1} it exists. (a) $\boldsymbol{\lambda = \frac{-8}{5}}$ (b) $\boldsymbol{\lambda \neq \frac{-8}{5}}$ (c) $\boldsymbol{\lambda = 3}$ (d) $\boldsymbol{\lambda \neq 3}$
Q 14	Given that A = $[a_{ij}]$ is a square matrix of order 3×3 and |A| = −7, then the value of $\sum_{i=1}^{3} a_{i1}\ A_{\mathrm{i1}}$, where A_{ij} denotes the cofactor of element a_{ij} is: (a)7 (b)-7 (c) 0 (d)49
Q15	Given that A is a non-singular matrix of order 3 such that $A^2 = 2A$, then value of |2A| is: (a) 4 (b) 8 (c) 64 (d) 16
Q 16	Let A = $\begin{vmatrix} 1 & sin\theta & 1 \\ -sin\theta & 1 & sin\theta \\ -1 & -sin\theta & 1 \end{vmatrix}$,where $0 \leq \theta \leq 2\pi. Then$

	(a) Det (A) =0 (b) Det(A) ∈ (2, ∞) (c) Det(A) ∈ (2, 4) (d) Det(A) ∈ [2, 4]
Q17	Given $A = \begin{bmatrix} 4 & 2 & 5 \\ 2 & 0 & 3 \\ -1 & 1 & 0 \end{bmatrix}$, write the value of det($2AA^{-1}$). (a) 1 (b) 9 (c) 8 (d) 4
Q18	If A is an invertible matrix of order 3 and $\|A\| = 5$, then value $\|adj\ A\|$ is (a) 15 (b) 45 (c) 35 (d) 25
Q19	If A is a singular matrix, then A (adj A) is (a) Null matrix (b) Scalar matrix (c) Identity matrix (d) None of these
Q 20	If A is 3×3 square matrix such that A (adj A) = 2I, where I is the identity matrix, The value of $\|adj\ A\|$ is (a) 4 (b) -4 (c) 0 (d) none of these
Q 21	If the value of a third order determinant is 12, then the value of the determinant formed by replacing each element by its cofactors will be (a) 12 (b) 144 (c) -12 (d) 13
Q 22	If A is a square matrix of order 3×3 such that $\|A\| = 2$, then the value of $\|adj(adj\ A)\|$ is (a)-16 (b) 16

	(c) 0 (d) 2
Q 23	If A is a square matrix of order 3×3 such that$\|A\| = 4$, then the value of $\|A\ (adj\ A)\|$ is (a) 4 (b) 16 (c) 12 (d) 64
Q 24	If A is a skew symmetric matrix of order 3 then the value of $\|A\|$ is (a) 0 (b) 3 (c) 9 (d) 27
Q25	It is given that $X \begin{bmatrix} 3 & 2 \\ 1 & -1 \end{bmatrix} = \begin{bmatrix} 4 & 1 \\ 2 & 3 \end{bmatrix}$, Then matrix X is (a) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ (b) $\begin{bmatrix} 0 & -1 \\ 1 & 1 \end{bmatrix}$ (c) $\begin{bmatrix} 1 & 1 \\ 1 & -1 \end{bmatrix}$ (d) $\begin{bmatrix} 1 & -1 \\ 1 & -1 \end{bmatrix}$
Q26	If A is a square matrix of order 3×3 such that$\|A\| = 10$, then find the value of $\|A\ (adj\ A)\|$. (a) 10 (b) 100 (c) 30 (d) 1000
Q27	A is a square matrix of order 2 and $\|A\| = 7$, then find then value of $\|2\ A\ A'\|$ (a) 196 (b) 56 (c) 49 (d) 7

Q28	If A_{ij} is the cofactore of the elements a_{ij} of the matrix $A = \begin{bmatrix} 2 & -3 & 3 \\ 6 & 0 & 4 \\ 1 & 5 & -7 \end{bmatrix}$ Then find the values of $a_{32}A_{32}$. (a) -20 (b) 35 (c) 2 (d) -50
	Questions number 29 and 30 are Assertion and Reason based questions carrying 1 mark each. Two statements are given, one labelled Assertion (A)and other labelled Reason (R). Select the correct codes (a), (b), (c) and (d) as given below. (a) Both (A) and (R) are true and (R) is the correct explanation of (A). (b) Both (A) and (R) are true but (R) is not the correct explanation of (A). (c) (A) is true but (R) is false. (d) (A) is false but (R) is true
Q29	**Assertion (A):** If $\begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 2 \\ 0 & 0 & 4 \end{bmatrix}$ then $\|3A\| = 9\|A\|$ **Reason(R):** If A is square matrix of order n then $\|kA\| = k^n\|A\|$
Q30	**Assertion (A):** The value of x for which the matrix $\begin{bmatrix} 1 & 1 & 0 \\ 0 & 1 & 2 \\ -1 & 0 & x \end{bmatrix}$ is singular is 2. **Reason(R):** A square matrix is singular if $\|A\| = 0$

Answers

1. d	2. d	3. b	4. c	5. b	6. c	7. b	8. b
9. a	10. a	11. b	12. a	13. b	14. b	15. c	16. d
17. c	18. d	19. a	20. a	21. b	22. b	23. d	24. a
25 . c	26. d	27. a	28. d	29. d	30. a		

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KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER:5 CONTINUITY AND DIFFERENTIABILITY

SL.NO.	M.C.Q. TYPE QUESTIONS
1.	The function $y = \|x - 5\|$ is (A) Continuous at x = 5 (B) Differentiable at $x = 5$ (C) Both continuous and differentiable at $x = 5$ (D) Neither continuous nor differentiable at $x = 5$
2	At how many points the function $y = sinx$ is not differentiable. (A) One (B) Two (C) All (D) No
3	$f(x)$ is a polynomial function with degree 7. Which order derivative of the function will be zero? (A) 6 (B) 7 (C) 8 (D) 9
4	The derivative of the function $f(x) = x^x$ w.r.t. 'x' is $(A)1 + \log x$ (B) $x^x(1 + \log x)$ (C) $1+x^x$ (D) None of these
5	The derivative of $\log_{10} x$ w.r.t. 'x' is $(A)\frac{1}{x}$ (B) $\frac{x}{10}$ (C) $\frac{10}{x}$ (D) None of these
6	If $x^y = e^{x-y} then\ \frac{dy}{dx}\ is$ .... $(A)\frac{1+x}{1+lox\ x}$ (B) $\frac{1-\log x}{1+lox\ x}$ (C) Not defined (D) $\frac{\log x}{(1+\log x)^2}$
7	If $y = sin^{-1}\left(\frac{1-x^2}{1+x^2}\right)$, then $\frac{dy}{dx} = \cdots$. $(A)\frac{-2}{1+x^2}$ (B) $\frac{2}{1+x^2}$ (C) $\frac{1}{2-x^2}$ (D) $\frac{2}{2-x^2}$
8	For the curve $\sqrt{x} + \sqrt{y} = 1, \frac{dy}{dx}\ at\ \left(\frac{1}{4}, \frac{1}{4}\right)\ is$ ... (A) ½ (B) 1 (C) -1 (D) 2

9	Let $f(x) = \|x\| + \|x-1\|$ then (A) f(x) is continuous at x=0 as well as at x=1 (B) f(x) is continuous at x=0 as but not at x=1 (C) f(x) is continuous at x=1 but not at x=0 (D) None of these
10	The value of b for which the function $f(x) = \begin{cases} 5x-4, 0 < x \leq 1 \\ 4x^2+3bx, 1 < x < 2 \end{cases}$ is continuous at every point of its domain is… (A) -1 (B) 0 (C) 13/3 (D) 1
11	If $y = \sqrt{\sin x + y}$ then dy/dx =… $(A)\frac{\cos x}{2y-1}$ (B) $\frac{\cos x}{1-2y}$ (C) $\frac{\sin x}{1-2y}$ (D) $\frac{\sin x}{2y-1}$
12	If $y = \log(\frac{1-x^2}{1+x^2})$ then dy/dx =… $(A)\frac{4x^3}{1-x^4}$ (B) $\frac{-4x}{1-x^4}$ (C) $\frac{1}{4-x^4}$ (D) $\frac{-4x^3}{1-x^4}$
13	If $y = \sqrt{\tan x}$ then dy/dx at $x = \frac{\pi}{4}$ is given by.. $(A)\infty$ (B) 1 (C) 0 (D) 1/2
14	Which of the followings is true about the greatest integer function $(x) = [x]$? (A) Everywhere continuous on R (B) Nowhere continuous on R (C) Continious on R – Z (D) None of these
15	If $y = x\|x\|$ then dy/dx for x < 0 is (A) 2x (B) -2x (C) 0 (D) None of these
16	Let $f(x) = \begin{cases} x+a \; if \; x \geq 1 \\ ax^2+1 \; if \; x < 1 \end{cases}$ then f is differentiable at x = 1 if (A) a= 1 (B) a=0 (C) a=2 (D) a = ½
17	The function $f(x) = sin^{-1}(\cos x)$ *is*.. (A) discontinuous at x = 0 (B) continuous at x =0 (C) Differentiable at x = 0 (D) None of these

18	If $x = 2at \text{ and } y = at^2, \text{where } a \text{ is a constant then } \frac{d^2y}{dx^2} \text{ at } x = \frac{1}{2} \text{ is}$ $(A)\frac{1}{2a}$ (B) 1 (C) 2a (D) None of these
19	If $x = t^2 \text{and } y = t^3 \text{ then } \frac{d^2y}{dx^2} =$ (A) 3/2 (B) $3/4t^2$ (C) 3/2t (D) 3t/2
20	If $y = e^{tanx} \text{ then } (cos^2 x)y_2 = \cdots$ (A) (1-sin 2x) y_1 (B) – (1+ sin 2x) y_1 (C) (1+ sin 2x) y_1 (D) None of these
21	1) The derivative of $\cos x$ w.r.t $\sin x$ at $x = -\pi/4$ is (A) $\tan x$ (B) $-\tan x$ (C) 1 (D) – 1
22	If $y = x^x$, then $\frac{dy}{dx}$ = (A) $x^x(\log x + 1)$ (B) x^{x-1} (C) $x^x \log x$ (D) $(\log x + 1)$
23	The value of k if the function f(x) = $\begin{cases} \frac{\sin x}{x} + cosx, & x \neq 0 \\ k & x = 0 \end{cases}$ is continuous at x = 0 (A) 1 (B) 2 (C) 3 (D) 4
24	The points at which the function $f(x) = \frac{2 - x}{x - 1}$ is discontinuous is (A) 2 (B) 1 (C) 3 (D) No such point
25	If $f(x) = \begin{cases} ax + 3 & 0 < x \leq 1 \\ 2x^2 - x & 1 < x < 2 \end{cases}$ is continuous on (0, 2), then the values of a is (A) 1 (B) 2 (C) -1 (D) -2
26	$\frac{d}{dx}(\log(\sin e^x)) =$ (A) $e^x cosec\ e^x$ (B) $e^x cos\ e^x$ (C) $e^x cot\ e^x$ (D) $e^x tan\ e^x$
27	The function $f(x)$ = $\begin{cases} 1 & , x < 0 \\ x.\sin\left(\frac{1}{x}\right), & x \geq 0 \end{cases}$ is (A) Continuous at x = 0, and the value is 1 (B) Continuous at x = 0, and the value is 0

	(C) Continuous at $x = 0$, and the value is -1 (D) Discontinuous at $x = 0$.
28	If $y = \sqrt{\sin x + y}$, then $\frac{dy}{dx}$ = (A) $\frac{cos\, x}{2y + 1}$ (B) $\frac{cos\, x}{2y - 1}$ (C) $\frac{sin\, x}{2y + 1}$ (B) $\frac{\sin x}{2y - 1}$
29	The function $f(x) = \begin{cases} 2x + 6, & x < 1 \\ 3x + 5, & x \geq 1 \end{cases}$ is (A) Continuous at $x = 1$ and Differentiable at $x = 1$. (B) Continuous at $x = 1$ but not Differentiable at $x = 1$. (C) Discontinuous at $x = 1$ but Differentiable at $x = 1$. (D) Neither Continuous at $x = 1$ nor Differentiable at $x = 1$.
30	If $x = a^{\sin^{-1} t}$ and $y = a^{\cos^{-1} t}$ then $\frac{dy}{dx}$ = (A) 0 (B) 1 (C) x (D) y

ANSWERS

1	**(A)**	**2**	**(D)**	**3**	**(C)**	**4**	**(D)**	**5**	**(D)**
6	**(D)**	**7**	**(B)**	**8**	**(C)**	**9**	**(A)**	**10**	**(A)**
11	**(A)**	**12**	**(B)**	**13**	**(A)**	**14**	**(C)**	**15**	**(B)**
16	**(D)**	**17**	**(B)**	**18**	**(A)**	**19**	**(B)**	**20**	**(D)**
21	**(C)**	**22**	**(A)**	**23**	**(B)**	**24**	**(B)**	**25**	**(D)**
26	**(C)**	**27**	**(D)**	**28**	**(B)**	**29**	**(B)**	**30**	**(A)**

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KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER:6 APPLICATION OF DERIVATIVES

Q1	A cylindrical vessel of radius 0.5 m is filled with oil at the rate of 0.25 π m^3/min.The rate at which oil is rising is (a)1m/min (b)2m/min (c)5m/min (d)1.25 m/min
Q2	Given a curve $y=7x-x^3$ and x increases at the rate of 2 units per second.The rate at which the slope of curve is changing when x=5 is: (a)-60 units/sec (b) 60 units/sec (c) -70 units/sec (d) -140 units/sec
Q3	For the function $y=x^3+21$,the value of x,when y increases 75 times as fast as x ,is (a)±3 (b)±5√3 (c)±5 (d)none of these
Q4	If the sides of a square are decreasing at the rate of 1.5 cm/sec,the rate of decrease of its perimeter is: (a) 1.5cm/sec (b) 6 cm/sec (c) 3cm/sec (d) 2.25 cm/sec
Q 5	The point(s) on the curve $y=x^2$, at which y coordinate is changing six times as fast as x coordinate is/are (a)(2,4) (b)(3,9) (c)(3,9),(9,3) (d)(6,2)
Q 6	The side of an equilateral triangle is increasing at the rate of 2 cm/sec. The rate at which area increases when the side is 10 is: (a) 10 cm^2/sec (b) √3 cm^2/sec (c) 10√3 cm^2/sec (d) 10/3 cm^2/sec
Q 7	The coordinates of the point on the ellipse $16x^2+9y^2=400$ where ordinate decreases at the same rate at which abscissa increases,are (a) (3,16/3) (b) (-3,16/3) (c) (3,-16/3) (d) (3,-3)
Q 8	The function f(x) ,defined as $f(x)=4-3x+3x^2-x^3$ is:

	(a) Decreasing on R (b) Increasing on R (c) strictly increasing on R (d) Strictly decreasing on R
Q 9	The interval in which function $y=x^2e^{-x}$ is increasing is: (a) $(-\infty,\infty)$ (b)(-2,0) (c) $(2,\infty)$ (d) (0,2)
Q10	The function f(x)=x+cos x is (a)always increasing (b) always decreasing (c) increasing for a certain range of x (d) none of these
Q11	If the function $f(x)=x^3-9kx^2+27x+30$ is increasing on R ,then (a)$-1<k<1$ (b) $k<-1$ or $k>1$ (c) $0<k<1$ (d) $-1<k<0$
Q 12	The function $f(x)= [x(x-3)]^2$is increasing in the interval: (a) $(0,\infty)$ (b)$(-\infty,0)$ (c) (1,3) (d)$(0,3/2)U(3,\infty)$
Q13	The function f(x)=ax+b is strictly decreasing for all $x\in R$ iff: (a) a=0 (b) a<0 (c) a>0 (d) none of these
Q14	If g(x)=f(x)+f(2a-x) and $f''(x)>0$ for all $x\in[0,a]$.Then g(x) (a) increases on [0,a] (b) decreases on [0,a] (c) increases on [-a,0] (d) decreases on [a,2a]
Q15	The function $f(x)=\log_e[x^3+\sqrt{x^6+1}\ ]$ is of the type: (a)even and increasing (b) odd and increasing (c)even and decreasing (d)odd and decreasing
Q16	The function $f(x)=\tan^{-1}(\sin x+\cos x)$ is an increasing function in the interval (a) (0,п/2) (b) (-п/2,п/2) (c) (п/4,п/2) (d) (-п/2,п/4)
Q 17	The maximum value of $(\frac{1}{x})^x$ is (a) e

	(b)e^e (c)$e^{\frac{1}{e}}$ (d)$(\frac{1}{e})^{\frac{1}{e}}$
Q 18	The function $\frac{x}{2}+\frac{2}{x}$ has a local minima at x equal to: (a) 2 (b) 1 (c) 0 (d) -2
Q 19	The height of cylinder of maximum volume that can be inscribed in a sphere of radius a is: (a) 2a/3 (b)2a/$\sqrt{3}$ (c)a/3 (d)a/5
Q 20	The minimum value of the function $f(x)=2x^3+3x^2-36\ x+10$ is: (a) -31 (b) 31 (c) -34 (d) 34
Q 21	The critical points of the function $f(x) = (x-2)^{\frac{2}{3}}(2x+1)$are (a) 1 and 2 (b) 1 and -1/2 (c) -1 and 2 (d) 1
Q 22	If $f(x)=a\log x+bx^2+x$ has its extremum values at x=-1 and x=2 then (a) a=-1/2,b=2 (b)a=1,b=-1 (c) a=-1,b=1 (d)a=2,b=-1/2
Q 23	The absolute maximum value of $y=x^3-3x+2$ in [0,2]is: (a) 0 (b) 2 (c) 4 (d) 6
Q 24	If f(x)= |x+1|+|x+10| ,then minimum value of f(x) is (a)10 (b) 1 (c) 9 (d) 21
Q 25	Which of the following is the point of inflection of the function $f(x) = (x-2)^4(x+1)^3$?

	(a) x= -1 (b) x= 1 (c) x= 2 (d) x= 1/2
	Each of the following questions contains two statement: Assertion (A) and Reason (R).Each of the question has for alternative choices ,only one of which is the correct statement. (a) Both 'A' and 'R' are true and 'R' is correct explanation of 'A' (b) Both 'A' and 'R' are true but 'R' is not the correct explanation of 'A' (c) 'A' is true but 'R' is false (d) 'A' is false but 'R' is true
Q 26	**Assertion(A)**: The function f(x)= x^3- $3x^2$ + 6x - 10 is strictly increasing on R. **Reason(R)**: A strictly increasing function is an injective map.
Q 27	**Assertion (A)**: The minimum value off(x)=x^2+2bx+c is c-b^2. **Reason(R)**:f'(-b)=0
Q 28	**Assertion(A)**:The function f(x)=log(cos x) is strictly increasing on $(0,\frac{\pi}{2})$. **Reason(R)**: The function f(x)=log(sin x) is strictly increasing on $(0,\frac{\pi}{2})$.
Q 29	**Assertion(A):**A man 2 m high, walks at a uniform speed away from a lamp post 6 m high. If the man is walking away from the lamp-post at a uniform speed of 10 m/minute, then the length of his shadow increases at the rate of 5 m/minute. **Reason(R)**: The rate of change of the shadow is half of the rate at which the man walks away from the lamp-post.
Q 30	**Assertion (A)**: If two positive numbers are such that their sum is 16 and sum of their cubes is minimum, then numbers are 8,8. **Reason(R)**:If f be a function defined on an interval I and c belongs to I and let f be twice differentiable at c,then x=c is a point of local minima if $f'(c)=0$ and $f''(c)>0$ and f(c) is local minimum value of f(x).

ANSWERS
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER:6 APPLICATION OF DERIVATIVES

Q1	**a**
Q2	**b**
Q3	**c**
Q4	**b**
Q 5	**b**
Q 6	**c**
Q 7	**a**
Q 8	**a**
Q 9	**d**
Q10	**a**
Q11	**a**
Q 12	**d**
Q13	**b**
Q14	**a**
Q15	**b**
Q16	**d**
Q 17	**c**
Q 18	**a**
Q 19	**b**
Q 20	**c**
Q 21	**a**
Q 22	**c**
Q 23	**c**
Q 24	**c**
Q 25	**a**
Q 26	**b**
Q 27	**a**
Q 28	**d**
Q 29	**a**
Q 30	**a**

NAME OF TEACHER: SUMATI KAUSHIK

NAME OF KV : PM SHRI KV NO. 1 AFS BHUJ

KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

OBJECTIVE TYPE QUESTIONS (SESSION: 2024 – 25)

CLASS: XII MATHEMATICS (041)

CHAPTER 7: INTEGRALS

Q. 1 $\int \frac{1}{\sin^2 x \cos^2 x} dx$ **is equal to**

(a) $\sin^2 x - \cos^2 x + C$ **(b)** -1

(c) $\tan x + \cot x + C$ **(d)** $\tan x - \cot x + C$

Q. 2 $\int x^x (1 + \log x)\, dx$ **is equal to**

(a) $x^x \log x + C$ **(b)** $\frac{x^x}{\log x} + C$

(c) $x^x + C$ **(d)** $x^x + 1 + C$

Q. 3 $\int e^{\log \sin x}\, dx$ **is equal to**

(a) $\sin x + C$ **(b)** $\cos x + C$

(c) $-\cos x + C$ **(d)** $-\sin x + C$

Q. 4 $\int \cot^2 x\, dx$ **equals to**

(a) $\cot x - x + C$ **(b)** $\cot x + x + C$

(c) $-\cot x + x + C$ **(d)** $-\cot x - x + C$

Q. 5 $\int e^x (\log \sin x + \cot x)\, dx$

(a) $e^x \log \sin x + C$ **(b)** $e^x \cot x + C$

(c) $e^x \tan x + C$ **(d)** $e^x (\log \cos x - \cot x) + C$

Q. 6 $\int \frac{(\cos 2x - \cos 2\theta)}{(\cos x - \cos \theta)} dx$ **is equal to**

(a) $2(\sin x + x \cos \theta) + C$ **(b)** $2(\sin x - x \cos \theta) + C$

(c) $2(\sin x + 2x \cos \theta) + C$ **(d)** $2(\sin x - 2x \cos \theta) + C$

Q. 7 **If** $\int \sec^2 (7 - 4x)\, dx = a \tan (7 - 4x) + C$, **then value of a is**

(a) 7 **(b) –4** **(c) 3** **(d) –1/4**

Q. 8 **Q 8) The anti-derivative of** $\sqrt{x} + \frac{1}{\sqrt{x}}$ **equals to**

(a) $\frac{1}{3}x^{1/3} + 2x^{1/2} + C$ **(b)** $\frac{2}{3}x^{2/3} + \frac{1}{2}x^{1/2} + C$

(c) $\frac{3}{2}x^{3/2} + 2x^{1/2} + C$ **(d)** $\frac{2}{3}x^{3/2} + \frac{1}{2}x^{1/2} + C$

Q. 9	$\int \frac{(10\,x^9 + 10^x \log_e 10)}{x^{10} + 10^x} dx$ **= .....** **(a)** $10^x - 10^x + C$ **(b)** $10^x + 10^x + C$ **(c)** $(10^x + x^{10})^{-1} + C$ **(d)** $log(x^{10} + 10^x) + C$
Q. 10	$\int \frac{sin^2 x - cos^2 x}{sin^2 x\, cos^2 x} dx$ **is equal to** **(a)** $tan\, x + cot\, x + C$ **(b)** $tan\, x + cosec\, x + C$ **(c)** $-tan\, x + cot\, x + C$ **(d)** $tan\, x + sec\, x + C$
Q. 11	$\int \frac{e^x (1 + x)}{cos^2 (x\, e^x)} dx$ **(a)** $-\cot(ex^x) + C$ **(b)** $tan\ (xe^x) + C$ **(c)** $tan\ (e^x) + C$ **(d)** $cot\ (e^x) + C$
Q. 12	$\int \frac{dx}{x(x^2 + 1)}$ **=.....** **(a)** $log\ \lvert x\rvert - \frac{1}{2} log\ (x^2 + 1) + C$ **(b)** $log\ \lvert x\rvert + \frac{1}{2} log\ (x^2 + 1) + C$ **(c)** $-log\ \lvert x\rvert + \frac{1}{2} log\ (x^2 + 1) + C$ **(d)** $\frac{1}{2} log\ \lvert x\rvert + log\ (x^2 + 1) + C$
Q. 13	$\int \sqrt{1 + x^2}\ dx$ **(a)** $\frac{x}{2}\sqrt{1 + x^2} + \frac{1}{2} log\left(x + \sqrt{1 + x^2}\right) + C$ **(b)** $\frac{2}{3}(1 + x^2)^{3/2} + C$ **(c)** $\frac{2}{3} x (1 + x^2)^{3/2} + C$ **(d)** $\frac{x^2}{2}\sqrt{1 + x^2} + \frac{1}{2} x^2 \log\left(x + \sqrt{1 + x^2}\right) + C$
Q. 14	$\int x^2 e^{x^3}\ dx = \cdots$ **(a)** $\frac{1}{3} e^{x^3} + C$ **(b)** $\frac{1}{3} e^{x^2} + C$ **(c)** $\frac{1}{2} e^{x^3} + C$ **(d)** $\frac{1}{2} e^{x^2} + C$
Q. 15	$\int e^x\, sec\, x\, (1 + tan\, x)\, dx = \cdots$ **(a)** $e^x\, cos\, x + c$ **(b)** $e^x\, sec\, x + c$ **(c)** $e^x\, sin\, x + c$ **(d)** $e^x\, tan\, x + c$
Q. 16	$\int_0^{\frac{\pi}{2}} \frac{\sqrt{sinx}}{\sqrt{sinx} + \sqrt{cosx}} dx = \ldots$ **(a)** $\pi/2$ **(b)** $\pi/3$ **(c)** $\pi/4$ **(d)** π
Q. 17	$\int_{-1}^{1} \lvert 1 - x\rvert\, dx = \cdots$ **(a) 3** **(b) 2** **(c) -2** **(d) 1**

Q. 18	$\int_{-1}^{1} log\left(\frac{2+x}{2-x}\right)\, dx = \cdots$ **(a) e (b) 0 (c) 1 (d) 2**
Q. 19	$\int_{0}^{\pi/2} log\ (cot\, x)\, dx = \cdots$ **(a)** $\pi/4\, log\, tanx$ **(b)** $\pi/8\, log\, 2$ **(c) 0 (d)** $\pi/8\, log\, 8$
Q. 20	$\int_{-\pi/2}^{\pi/2} x^{2022}\ sin^{-1} x\ dx = \cdots$ **(a) 2022/2021 (b) 2021/2022** **(c) 1 (d) 0**
Q. 21	$\int_{0}^{a} f(x)dx = -2020\,,\ then\ \int_{0}^{a} f(a-x)dx = \cdots$ **(a) 0 (b)** -2020 **(c)** 2020 **(d) 1**
Q. 22	$\int_{-5}^{5} \lvert x\rvert\, dx = \cdots$ **(a) 0 (b) 25/2 (c) 25 (d) 50**
Q. 23	$\int_{0}^{\pi^2/4} \frac{sin\sqrt{x}}{\sqrt{x}} dx$ **(a) 2 (b)1 (c)** π **(d)** $\pi/2$
Q. 24	$\int_{0}^{\pi/2} \cos x\, e^{sinx}\, dx = \cdots$ **(a) 0 (b) e (c) e-1 (d)** $e^{\pi/2}$
Q. 25	$\int_{0}^{1} \frac{dx}{1+x^2}$ **(a) 1 (b) 0 (c)** $\pi/2$ **(d)** $\pi/4$
Q. 26	$\int_{0}^{\pi/4} sin\, 2x\ dx = \cdots$ **(a) 1 (b)0 (c) ½ (d)** $\pi/2$
Q. 27	$\int_{0}^{3} \frac{dx}{9+x^2}$ **(a)** $\pi/12$ **(b)** $\pi/2$ **(c)** $\pi/4$ **(d)** π
Q. 28	$\int_{e}^{e^2} \frac{dx}{x\, log\, x}$ **(a) 0 (b) 2 (c)** $log\, 2$ **(d) 1**
Q. 29	$\int_{0}^{2} \sqrt{4-x^2}\ dx$ **(a)** π **(b)** 2π **(c)** $\frac{\pi}{2}$ **(d)** $\pi/4$
Q. 30	**If** $\int_{0}^{1}(3x^2+2x+k)dx = 0\,,$ **then find the value of** k. **(a) 1 (b) 2 (c) -2 (d) 4**

ANSWERS
KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION
OBJECTIVE TYPE QUESTIONS (SESSION: 2024 – 25)
CLASS – XII MATHEMATICS (041)
CHAPTER 7 – INTEGRALS

Q. 1	**(d)** $tan\,x - cot\,x + C$
Q. 2	**(c)** $x^x + C$
Q. 3	**(c)** $-cos\,x + C$
Q. 4	**(d)** $-cot\,x - x + C$
Q. 5	**(a)** $e^x\,log\,sinx + C$
Q. 6	**(a)** $2(sin\,x + x\,cos\,\theta) + C$
Q. 7	**(d)** $-1/4$
Q. 8	**(d)** $\frac{2}{3}x^{3/2} + \frac{1}{2}x^{1/2} + C$
Q. 9	**(d)** $\log(x^{10} + 10^x) + C$
Q. 10	**(a)** $tan\,x + cot\,x + C$
Q. 11	**(b)** $tan\,(xe^x) + C$
Q. 12	**(a)** $log\lvert x\rvert - \frac{1}{2}log(x^2 + 1) + C$
Q. 13	**(a)** $\frac{x}{2}\sqrt{1 + x^2} + \frac{1}{2}\log\left(x + \sqrt{1 + x^2}\right) + C$
Q. 14	**(a)** $\frac{1}{3}e^{x^3} + C$
Q. 15	**(b)** $e^x\,sec\,x + C$
Q. 16	**(c)** $\frac{\pi}{4}$
Q. 17	**(c)** -2
Q. 18	**(b) 0**
Q. 19	**(c) 0**
Q. 20	**(d) 0**
Q. 21	**(b)** -2020
Q. 22	**(c) 25**
Q. 23	**(a) 2**
Q. 24	**(c) e-1**
Q. 25	**(d)** $\pi/4$
Q. 26	**(c) 1/2**
Q. 27	**(a)** $\pi/12$
Q. 28	**(c)** $log\,2$
Q. 29	**(a)** π
Q. 30	**(c)** -2

NAME OF TEACHER – ASHUTOSH RAI, PGT – MATH

NAME OF K V – NO 3 GANDHINAGAR CANTT

KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER: 8 APPLICATIONS OF INTEGRALS

Q1	The area enclosed by the circle $x^2 + y^2 = 2$ is equal to a) 4π sq units b) $2\sqrt{2}$ sq units c) $4\pi^2$ sq units d) 2π sq units
Q2	The area enclosed by the curve $y = \sqrt{16 - x^2}$ and x-axis is equal to a) 8π sq units b) 20π sq units c) 16π sq units d) 256π sq units
Q3	The area of the region bounded by the curve y=x+1 and the lines x=2 and x=3 is a) $\frac{7}{2}$ sq units b) $\frac{9}{2}$ sq units c) $\frac{11}{2}$ sq units d) $\frac{13}{2}$ sq units
Q4	The area bounded by the parabola $y^2 = 36x$, line x = 1 and the x-axis is _____ sq units. a) 2 b) 4 c) 6 d) 8
Q 5	The area enclosed by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is equal to a) $\pi^2 ab$ b) πab c) $\pi a^2 b$ d) πab^2

Q 6	The area of the region bounded by the curve $y = x^2$ and the line y = 16 is a) $\frac{32}{3}$ sq units b) $\frac{256}{3}$ sq units c) $\frac{64}{3}$ sq units d) $\frac{128}{3}$ sq units
Q 7	The area of the region bounded by the ellipse $\frac{x^2}{25} + \frac{y^2}{16} = 1$ is a) 5π sq units b) 20π sq units c) 25π sq units d) 16π sq units
Q 8	The area of the region bounded by the curve $y = x^3$, x-axis and the lines x=1 and x=4 is a) $\frac{255}{4}$ sq units b) $\frac{225}{2}$ sq units c) $\frac{125}{3}$ sq units d) $\frac{124}{3}$ sq units
Q 9	The area of the region bounded by the curve x = 2y+3, y-axis and the lines y=1 and y= - 1 is a) 4 sq units b) 3/2 sq units c) 6 sq units d) 8 sq units
Q10	The area of the region bounded by the parabola $y = x^2$ and x =-1, x=2 and x-axis is a) 3 sq units b) 5 sq unit c) 7 sq units d) $3/2$ sq units
Q11	The area of the region bounded by the parabola $y = x^2$ and y = 2 is a) $4/\sqrt{3}$ sq units

	b) $8/3\sqrt{2}$ sq units c) $8\sqrt{2}$ /3 sq units d) $4\sqrt{3}$ sq units
Q 12	The area of the region bounded by y = | x − 1 | and y = 1 is a) 2 sq units b) 1 sq units c) 1/2 sq units d) 1/4 sq units
Q13	The area bounded by the curve $y^2 = 16x$ and line x = a is $\frac{16}{3}$ sq units , then a is equal to a) $4/\sqrt{3}$ b) 1 c) $4\sqrt{3}$ d) 2
Q14	For the area bounded by the curve y = ax, the line x = 2 and x-axis to be 2 sq units, the value of a must be equal to a) 2 b) 4 c) 6 d) 8
Q15	The area bounded by the parabola $y^2=8x$,x-axis and the latus rectum is a) 16/3 sq units b) 23/3 sq units c) 32/3 sq units d) $\frac{16\sqrt{2}}{3}$ sq units
Q16	Area of the region bounded by the curve y = |x + 1| + 1, x = −3, x = 3 and y = 0 is a) 8 sq units b) 16 sq units c) 32 sq units d) None of these

Q 17	The area of the region bounded by the curves $y = x^2 + 2$, x=0 and x=2 is a) 20/2 sq units b) 20/3 sq units c) 14/3 sq units d) 9/2 sq units
Q 18	Area (in square units) lying in the first quadrant and bounded by the circle $x^2 + y^2 = 2$ and the lines x=0 and x=2 is a) π b) $\frac{\pi}{2}$ c) $\frac{\pi}{3}$ d) $\frac{\pi}{4}$
Q 19	The area bounded by the line y = x, x-axis and lines x = – 1 to x = 2, is a) 0 sq units b) 1/2 sq units c) 3/2 sq units d) 5/2 sq units
Q 20	Area (in sq units) bounded by the curve $x = x\|x\|$, x axis and the ordinates x = -1 and x = 1 is given by a) 0 b) 1/3 c) 2/3 d) 4/3
Q 21	Smaller area enclosed by the circle $x^2 + y^2 = 4$ and the line $x + y = 2$ is a) 2(π-2) b) π-2 c) 2π-1 d) none of these
Q 22	The area bounded by the curve y = cos x between x = 0 and x = 2π is a) 2 sq units b) 4 sq units c) 1 sq units d) 6 sq units

Q 23	The area bounded by the parabola $x = 4 - y^2$ and y-axis is a) 3/32 sq units b) 32/3 sq units c) 33/2 sq units d) 16/3 sq units
Q 24	The area bounded by the curve y = sin x between the ordinates x = 0, x = π and the x-axis is a) 2 sq units b) 4 sq units c) 3 sq units d) 1 sq unit
Q 25	The area of the region $\{(x,y): x^2 + y^2 \leq 4\}$ in sq units is a) π b) 2π c) 4π d) 8π
Q 26	The area bounded by the curve y=|x+3| between x = - 6 and x = 0 is a) 9 sq units b) 9/2 sq units c) 8 sq units d) 4 sq units
Q 27	The area bounded by the line y = 3x+2, the x-axis and the ordinates x = -1 and x = 1 is a) 1/6 sq units b) 25/6 sq units c) 13/3 sq units d) none of these
Q 28	The area of the region bounded by the curve $y = x^2$ and the line y=16 is a) 32/3 sq units b) 256/3 sq units c) 64/3 sq units d) 128/3 sq units

Q 29	The area bounded by the parabola $y^2 = 4ax$, latus rectum and x-axis is a) 0 sq units b) $\frac{4}{3}a^2$ sq units c) $\frac{2}{3}a^2$ sq units d) $\frac{1}{3}a^2$ sq units
Q 30	The area bounded by the curve $y = \log_e x$, x-axis and the line x = e is a) e sq units b) 1 sq unit c) 1 – 1/e sq units d) 1 + 1/e sq units

ANSWERS
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER:7 APPLICATION OF INTEGRALS

Q1	D
Q2	A
Q3	A
Q4	B
Q 5	B
Q 6	B
Q 7	B
Q 8	A
Q 9	C
Q10	A
Q11	C
Q 12	B
Q13	B
Q14	B
Q15	C
Q16	B
Q 17	B
Q 18	A
Q 19	D
Q 20	C
Q 21	B
Q 22	B
Q 23	B
Q 24	A
Q 25	C
Q 26	A
Q 27	C
Q 28	B
Q 29	B
Q 30	B

NAME OF TEACHER: MONIKA KALSI

NAME OF KV : K V ONGC ANKLESHWAR

KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION

OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)

CLASS: XII MATHEMATICS (041)

CHAPTER : DIFFERENTIAL EQUATIONS

	MCQ
Q1	Which of the following is a second order differential equation? (a) $(y')^2 + x = y^2$ (b) $y'y'' + y = sinx$ (c) $y''' + (y'')^2 + y = 0$ (d) $y' = y^2$
Q2	The degree of the differential equation $(y'')^2 + (y')^3 = xsin(y')$ is: (a) 1 (b) 2 (c) 3 (d) not define
Q3	The number of arbitrary constants in the general solution of differential equation of fourth order is/ are (a) 0 (b) 2 (c) 3 (d) 4
Q4	The number of arbitrary constants in the particular solution of a differential equation of third order is /are (a) 3 (b)2 (c) 1 (d)0
Q 5	If m and n are the order and degree of the differential equation $(y_2)^5 + \frac{4(y_2)^3}{y_3} + y_3 = x^2 - 1, then$ (a) m=3,n=3 (b)m=3,n=2 (c) m=3,n=5 (d) m=3,n=1
Q 6	The solution of the differential equation $2x\frac{dy}{dx} - y = 3$ represents (a) circles (b)straight lines (c) ellipses (d) parabolas

Q 7	Integrating factors of the differential equation $cos\, x\ \frac{dy}{dx} + \ ysin\, x = 1$, is (a) sin x (b) sec x (c) tan x (d) cos x
Q 8	The solution of the differential equation $\frac{dy}{dx} - \frac{y(x+1)}{x} = 0$ is given by (a) y= x e $^{x+ c}$ (b) x=y e^{x} (c) y=x +c (d) x y=e^{x} +c
Q 9	If p and q are the degree and order of the differential equation $\left(\frac{d^2y}{dx^2}\right)^2 + 3\frac{dy}{dx} + \frac{d^3y}{dx^3} = 4,$ then the value of 2p – 3q is (a) 7 (b) -7 (c) 3 (d) -
Q10	The equation of curve passing through (4,0) is given by $\frac{dy}{dx} - \frac{y}{x} = \frac{-5x}{(x+2)(x-3)}$. If the point (5, a) lies on the curve , then the value of a is (a) 67/12 (b) 5 sin(7/12) (c) 5 log(7/12) (d)$7\frac{5}{12}$
Q11	Which of the following differential equations is satisfied by $y = ae^{mx} + b\, e^{-mx}$? (a) $\frac{dy}{dx}$ +my=0 (b) $\frac{dy}{dx}$ -my=0 (c) $\frac{d^2y}{dx^2}$-m^{2}y=0 (d)$\frac{d^2y}{dx^2}$ +m^{2}y=0
Q 12	tan^{-1} x+ tan $^{-1}$y= c is the general solution of the differential equation (a)$\frac{dy}{dx} = \frac{1+y^2}{1+x^2}$ (b) $\frac{dy}{dx} = \frac{1+x^2}{1+y^2}$ (c) (1+x^2)dy+(1+y^2) dx=0 (d) (1+x^2)dx+(1+y^2) dy=0

Q13	The particular solution of the differential equation $\log(\frac{dy}{dx})$ =3x+4y, given that y=0 when x=0, is given by (a) $4e^{3x}+3e^{-4y}-7=0$ (b) $4e^{3x}+3e^{-4y+}7=0$ (c) $4e^{3x}-3e^{-4y}-7=0$ (d) $4e^{3x-}3e^{-4y+}7=0$
Q14	Which of the following is a homogeneous differential equation? (a) $(xy)\,dx-(x^3+y^3)\,dy=0$ (b) $(x^3+2y^2)\,dx+2xy\,dy=0$ (c) $y^2dx+(x^2-xy-y^2)\,dy=0$ (d) $(4x+6y+5)\,dy-(3y+2x+4)\,dx=0$
Q15	Which of the following equations has y=x as one of its particular solution? (a) $\frac{d^2y}{dx^2}-x^2\frac{dy}{dx}+xy=0$ (b) $\frac{d^2y}{dx^2}-x^2\frac{dy}{dx}+xy=x$ (c) $\frac{d^2y}{dx^2}+x^2\frac{dy}{dx}+xy=0$ (d) $\frac{d^2y}{dx^2}+x\frac{dy}{dx}+xy=x$
Q16	If $y(t)$ is solution of $(t+1)\frac{dy}{dt}-ty=1, and\ y(0)=-1.$ then y(1) equals to (a) e+1/2 (b)-1/2 (c) ½ (d) e=1/2
Q 17	Which of the following is false? (a) A relation containing n arbitrary constants may give rise to differential equation of order less than n (b) A particular solution of a differential equation contains no constants (c) The degree of differential equation is always same as its order. (d) The differential equation x dy +y dx=0 is of order 1 and degree 1.

Q 18	The general solution of the differential equation: $(5+e^{2x})\sec^2 y dy-2e^{2x}\tan y\, dx=0$ is (a)Cot $y=k(5+e^{2x})$ (b)tan $y=k(5+e^{2x})$ (c) tan $y= k(5-e^{2x})$ (d)$\sec^2 y= k(5-e^{2x})$
Q 19	The order and degree of the differential equation $(1+3\frac{dy}{dx})^{2/3} = 4\frac{d^3y}{d^3x}$ are (a) (1,2/3) (b)(3,1) (c) (3,3) (d) (1,2)
Q 20	The general solution of the differential equation: $e^x dy+ (ye^x+2x) dx=0$ is (a) $ye^y+x^2=c$ (b) $xe^y+x^2=c$ (c) $xe^y+y^2=c$ (d) $ye^x+x^2=c$
Q 21	The integrating factor of the differential equation $(1-x^2)\frac{dy}{dx}+xy=ax$, $-1<x<1$ is (a) $\frac{1}{x^2-1}$ (b) $\frac{1}{\sqrt{x^2-1}}$ (c) $\frac{1}{1-x^2}$ (d) $\frac{1}{\sqrt{1-x^2}}$
Q 22	The order and degree of the differential equation $\left[1+\left(\frac{dy}{dx}\right)^2\right]^3=\frac{d^2y}{dx^2}$ respectively are: (a) 1,2 (b) 2,3 (c) 2,1 (d) 2,6
Q 23	The solution of the differential equation $\frac{dy}{dx}=\frac{1}{\log y}$ is (a)$\log y = x + c$ (b) $ylogy - y = x + c$ (c) $logy - y = x + c$ (d) $ylogy + y = x + c$
Q 24	The number of arbitrary constant in the particular solution of the differential equation $log\left(\frac{dy}{dx}\right)=3x+4y;\ \ y(0)=0$ is/are (a) 2 (b) 1 (c) 0 (d) 3

Q 25	$xlogx\frac{dy}{dx}+y=2logx$ is an example of a: (a)variable separable differential equation (b) homogeneous differential equation (c) first order linear differential equation (d) differential equation whose degree is not defined
Q 26	The differential equation $\frac{dy}{dx}=F(x,y)$ will not be a homogeneous differential equation, if $F(x,y)$is : (a)$cosx-sin\left(\frac{dy}{dx}\right)$ (b) $\frac{y}{x}$ (c) $\frac{x^2+y^2}{xy}$ (d) $cos^2\left(\frac{x}{y}\right)$
Q 27	The general solution of the differential equation $\frac{dy}{dx}=\frac{y}{x}$ is (a) log y=k x (b) y= k x (c) x y=k (d) y=k log x
Q 28	Write the sum of the order and degree of the following differential equation : $\frac{d}{dx}\left(\frac{dy}{dx}\right)=5$ (a)1 (b) 2 (c) 3 (a) 4
Q 29	The integrating factor of the differential equation (x log x)$\frac{dy}{dx}+y=2\log x$, is given by (a) log(log x) (b) e^x (c) log x (d) x
Q 30	A function F(x,y) is a homogeneous function of degree n, if (a)$F(x,y)=x^nf\left(\frac{y}{x}\right)$ (b) $F(x,y)=y^ng\left(\frac{x}{y}\right)$ (c) Both (a) & (b) (d) $F(x,y)=x^{-n}f\left(\frac{y}{x}\right)$

	ASSERTION – REASON TYPE QUESTION
	Direction: In these questions, a statement of Assertion (A) is followed by a statement of Reason(R) is given. Choose the correct answer out of the following choices : (a) Assertion and Reason both are correct statements and Reason is the correct explanation of Assertion. (b) Assertion and Reason both are correct statements but Reason is not the correct explanation of Assertion. (c) Assertion is correct statement but Reason is wrong statement. (d) Assertion is wrong statement but Reason is correct statement.
Q 31	Assertion(A):The solution of the equation $3yy' + 4x = 0$ represents family of ellipses. Reason(R): The equation of ellipse is $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1.$ is not define.
Q 32	Assertion(A):The order of the differential equation $\left[1 + \left(\frac{dy}{dx}\right)^2 + cos\left(\frac{dy}{dx}\right)\right]^{3/4} = \frac{d^3y}{dx^3}$ is 3. Reason(R): The degree of the differential equation $\left[1 + \left(\frac{dy}{dx}\right)^2 + cos\left(\frac{dy}{dx}\right)\right]^{3/4} = \frac{d^3y}{dx^3}$ is not define.
Q 33	Assertion(A): The general solution of the differential equation $x\frac{dy}{dx} + 2y = x^2$ is given by $y = \frac{x^2}{4} + cx^{-2}$. Reason(R): The general solution of the linear differential equation is given by $y(I.F.) = \int\{(I.F.)Q\}\,dx + c$.
Q 34	Assertion (A): Order of the differential equation whose solution is $y = c_1e^{x+c_2} + c_3e^{x+c_4}$ is 4. Reason (R): Order of the differential equation is equal to the number of independent arbitrary constants mentioned in the solution of the differential equation.

Q 35	Assertion (A): The number of arbitrary constants in the particular solution of a differential equation of third order 0. Reason(R):The number of arbitrary constants in the general solution of differential equation of fourth order 3.

ANSWER KEY- DIFFERENTIAL EQUATION									
MCQ									
1.(b)	2. (d)	3. (d)	4. (d)	5. (b)	6. (d)	7. (b)	8. (a)	9. (b)	10.(c)
11.(c)	12.(c)	13.(a)	14.(c)	15.(a)	16.(b)	17.(c)	18.(b)	19.(c)	20.(d)
21.(d)	22.(c)	23.(c)	24.(c)	25.(c)	26.(a)	27.(b)	28.(c)	29.(c)	30.(c)
ASSERTION – REASON TYPE QUESTION									
31.(a)	32.(b)	33.(a)	34.(d)	35.(c)					

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KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER 10 VECTORS

Q1	If $\vec{a}, \vec{b}$ *and* $\vec{c}$ are mutually perpendicular unit vectors, then value of $\left\|\vec{a} + \vec{b} + \vec{c}\right\|$ is (a) 1 (b) $\sqrt{2}$ (c) $\sqrt{3}$ (d) 2
Q2	A vector equally inclined to axes is (a) $\hat{\imath} + \hat{\jmath} + \hat{k}$ (b) $\hat{\imath} - \hat{\jmath} + \hat{k}$ (c) $\hat{\imath} + \hat{\jmath} - \hat{k}$ (d) $\hat{\imath} - \hat{\jmath} - \hat{k}$
Q3	The position vector of a point which divides the join of points with position vectors $\vec{a} + \vec{b}$ and $2\vec{a} - \vec{b}$ in the ratio 1:2 internally is (a)$\frac{3\vec{a}+2\vec{b}}{3}$ (b) $\vec{a}$ (c) $\frac{5\vec{a}-\vec{b}}{3}$ (d) $\frac{4\vec{a}+\vec{b}}{3}$
Q4	A vector in the direction of vector $\hat{\imath} - 2\hat{\jmath} + 2\hat{k}$ that has magnitude 15 is (a) $-5\hat{\imath} - 10\hat{\jmath} - 10\hat{k}$ (b) $5\hat{\imath} + 10\hat{\jmath} + 10\hat{k}$ (c) $-5\hat{\imath} + 10\hat{\jmath} + 10\hat{k}$ (d) $5\hat{\imath} - 10\hat{\jmath} + 10\hat{k}$
Q 5	If $\vec{a} = 2\hat{\imath} + 3\hat{\jmath} - \hat{k}, \vec{b} = -\hat{\imath} + 2\hat{\jmath} - 4\hat{k}$ and $\vec{c} = \hat{\imath} + \hat{\jmath} + \hat{k}$, then $(\vec{a} \times \vec{b}).(\vec{a} \times \vec{c})$ is (a) 74 (b) -74 (c) 52 (d) -52
Q 6	The projection of the vector $\vec{a} = 3\hat{\imath} - \hat{\jmath} - 2\hat{k}$ on $\vec{b} = \hat{\imath} + 2\hat{\jmath} - \hat{k}$ is. (a) $\frac{\sqrt{14}}{2}$ (b) $\frac{14}{\sqrt{2}}$ (c) $\sqrt{14}$ (d) 7
Q 7	If $\vec{a}$ and $\vec{b}$ be two vectors such that $\|\vec{a}\| = \left\|\vec{b}\right\| = \sqrt{2}$ and $\vec{a}.\vec{b}$= -1, then the angle between $\vec{a}$and $\vec{b}$ is: (a) $\frac{\pi}{3}$ (b) $\frac{\pi}{4}$ (c) $\frac{2\pi}{3}$ (d) none of these
Q 8	If $\vec{a}$ and $\vec{b}$ are two unit vectors, then which of the following values of $\vec{a}.\vec{b}$ is not possible? (a) $\sqrt{3}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{1}{\sqrt{2}}$ (d) $-\frac{1}{2}$
Q 9	The diagonals of a parallelogram are represented by the vectors $\overrightarrow{d_1} = 3\hat{\imath} + \hat{\jmath} - 2\hat{k}, \overrightarrow{d_2} = \hat{\imath} - 3\hat{\jmath} + 4\hat{k}$ The area of the parallelogram: (a) $7\sqrt{3}$ sq.units (b) $5\sqrt{3}$ sq.units (c) $3\sqrt{5}$ sq.units (d) none of these
Q10	If position vectors of P and Q are $\hat{\imath} + 3\hat{\jmath} - 7\hat{k}$ *and* $5\hat{\imath} - 2\hat{\jmath} + 4\hat{k}$ then cosine of the angle between $\overrightarrow{PQ}$ and y-axis is: (a)$\frac{5}{\sqrt{162}}$ (b) $\frac{4}{\sqrt{162}}$ (c) $\frac{11}{\sqrt{162}}$ (d) $-\frac{5}{\sqrt{162}}$

Q11	If $\vec{a}$ and $\vec{b}$ .are unit vectors, then what is the angle between $\vec{a}$ and $\vec{b}$ for $\sqrt{3}\,\vec{a} - \vec{b}$ to be a unit vector? *(a)* 30° (*b*) 45° (*c*) 60° (*d*) none of these
Q 12	The value of λ for which vectors $2\hat{i} + \hat{j} + 3\hat{k}$ and $\hat{i} - \lambda\hat{j} + 4\hat{k}$ are orthogonal is (a)12 (b) 14 (c) 16 (d) none of these
Q13	If $\left\vert\vec{a}\right\vert$ = 5, $\vert\vec{b}\vert$ = 13 and $\vert\vec{a}\times\vec{b}\vert$ = 25, then $\vec{a}\cdot\vec{b}$ is equal to (*a*) 12 (*b*) 5 (*c*) 13 (*d*) 60
Q14	Write the value of p for which $\vec{a} = 3\hat{i} + 2\hat{j} + 9\hat{k}$ and $\vec{b} = \hat{i} + p\hat{j} + 3\hat{k}$ are parallel vectors. (*a*) 2/3 (*b*) 3/2 (*c*) 1 (*d*) 0
Q15	Find $(\vec{a}+\vec{b}).(\vec{a}-\vec{b})$ if it is given that $\vert\vec{a}\vert = \vert\vec{b}\vert$. (*a*) 23 (*b*) 3 (*c*) 1 (*d*) 0
Q16	If $\vec{a}$ is a non-zero vector of magnitude a and λ a non-zero scalar, then $\lambda\vec{a}$ is unit vector if a) λ=1 b) λ=(-1) c) a=$\frac{1}{\vert\lambda\vert}$ d)a= |λ|
Q 17	The magnitude of the vector $6\hat{i} + 2\hat{j} + 3\hat{k}$ is a)5 b)7 c)12 d)1
Q 18	The position Vector of the point which divides the join of points with Position vectors $(\vec{a}+\vec{b})$ *and* $(\overrightarrow{2a}-\vec{b})$ in the ratio 1:2 is a) $\frac{\overrightarrow{3a}+\overrightarrow{2b}}{3}$ b) $\frac{\overrightarrow{3a}-\overrightarrow{2b}}{3}$ *c)* $\frac{\overrightarrow{4a}+\vec{b}}{3}$ *d)* $\vec{a}$
Q 19	The vector with initial point P(2,-3,5) and terminal point Q(3,-4,7) is a) $\hat{i} - \hat{j} + 2\hat{k}$ b) $5\hat{i} - 7\hat{j} + 12\hat{k}$ c) $-\hat{i} + \hat{j} - 2\hat{k}$ d)none of these
Q 20	The angle between the vectors $\hat{i} - \hat{j}$ and $\hat{j} - \hat{k}$ is *a)* $\frac{\pi}{3}$ b)$\frac{2\pi}{3}$ c) $\frac{-\pi}{3}$ *d)* $\frac{5\pi}{6}$

Q 21	The value of λ for which the two vectors $2\hat{i}-\hat{j}+2\hat{k}$ and $3\hat{i}+\lambda\hat{j}+\hat{k}$ are perpendicular is a)2 b)4 c)6 d)8
Q 22	The area of the parallelogram whose adjacent sides are $\hat{i}+\hat{k}$ and $2\hat{i}+\hat{j}+\hat{k}$ $a)\ \sqrt{2}$ b)$\sqrt{3}$ c) 3 d) 4
Q 23	If $\lvert\vec{a}\rvert = 8$, $\lvert\vec{b}\rvert = 3$ and $\lvert\vec{a}\times\vec{b}\rvert = 12$ then value of $\vec{a}.\vec{b}$ is a) $6\sqrt{3}$ b) $8\sqrt{3}$ c) $12\sqrt{3}$ d) None of these
Q 24	The 2 vectors $\hat{j}+\hat{k}$ and $3\hat{i}-\hat{j}+4\hat{k}$ represents the two sides AB and AC, respectively of a ΔABC. The length of the median through A is a) $\frac{\sqrt{34}}{2}$ b) $\frac{\sqrt{48}}{2}$ c) $\frac{\sqrt{18}}{1}$ d)None of these
Q 25	The projection of vector $\vec{a}=2\hat{i}-\hat{j}+\hat{k}$ along $\vec{b}=\hat{i}+2\hat{j}+2\hat{k}$ is a)2/3 b)1/3 c)2 d) $\sqrt{6}$
Q 26	If $\vec{a}$ and $\vec{b}$ are unit vectors, then what is the angle between $\vec{a}$ and $\vec{b}$ for $\sqrt{3}\vec{a}-\vec{b}$ to be a unit vector? a) 30 b)45 c)60 d)90
Q 27	The unit vector perpendicular to the vectors $\hat{i}-\hat{j}$ and $\hat{i}+\hat{j}$ forming a right handed system is a) $\hat{k}$ b) $-\hat{k}$ c) $\hat{j}+\hat{k}$ d) $\hat{j}+\hat{i}/2$
Q 28	If $\lvert\vec{a}\rvert = 3$ and -1≤k≤2 , then $\lvert k\vec{a}\rvert$ lies in the interval a) [0,6] b)[-3,6] c)[3,6] d)[1,2]
Q 29	If $\lvert\vec{a}\rvert = 4$ and (-3)≤λ≤2 , then the range of $\lvert\lambda\vec{a}\rvert$ is (a) [0, 8] (b) [– 12, 8] (c) [0, 12] (d) [8, 12]
Q 30	The projection of $\vec{a}$ = 3i + 2k on the vector $\vec{b}$ = 2i + 3j + k is a) $\frac{8}{\sqrt{35}}$ b) $\frac{8}{\sqrt{39}}$ c) $\frac{8}{\sqrt{14}}$ d) $\sqrt{14}$

ANSWERS-

Q.1	Q.2	Q.3	Q.4	Q.5	Q.6	Q.7	Q.8	Q.9	Q.10
c	a	d	d	b	a	c	a	b	d
Q.11	Q.12	Q.13	Q.14	Q.15	Q.16	Q.17	Q.18	Q.19	Q.20
a	b	d	a	d	c	b	c	a	b
Q.21	Q.22	Q.23	Q.24	Q.25	Q.26	Q.27	Q.28	Q.29	Q.30
d	b	c	a	a	a	c	a	c	c

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KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER11 : THREE DIMENSIONAL GEOMETRY

Q1	**If the direction ratios of a line are 3, -2, and 6, then the direction cosines of the line are:** **a) 3/7, -2/7, 6/7** **b) 3/√49, -2/√49, 6/√49** **c) 3/√49, -2/√13, 6/√49** **d) 3/√13, -2/√13, 6/√13**
Q2	**If the direction cosines of a line are 1/√3, 1/√3, and 1/√3, then the direction ratios of the line are:** **a) 1, 1, 1** **b) √3, √3, √3** **c) 1, 1, -1** **d) 1, -1, 1**
Q3	**The Vector equation of z-axis is** **a)** $\vec{r} = \hat{\imath}$ **b)** $\vec{r} = \hat{\jmath}$ $c) \vec{r} = \lambda\hat{k}$**,** λ *is scalar* **d)** $\vec{r}.\hat{k} = 0$
Q4	**The equation of a line passing through (1,-1,0) and parallel to** $\frac{x-2}{3} = \frac{2y+1}{2} = \frac{5-z}{-1}$ **, is** a) $\frac{x-1}{3} = \frac{y+1}{2} = \frac{z}{-1}$ b) $\frac{x-1}{3} = \frac{y+1}{1} = \frac{z}{-1}$ c) $\frac{x-1}{3} = \frac{y+1}{1} = \frac{z}{1}$ d) $\frac{x-1}{3} = \frac{y+1}{2} = \frac{z}{1}$
Q 5	**The angle between the lines** $\vec{r} = (\hat{\imath} + \hat{\jmath} + \hat{k}) + \lambda(\hat{\imath} + \hat{\jmath} + 2\hat{k})$ **and** $\vec{r} = (\hat{\imath} + \hat{\jmath} + \hat{k}) + \mu((-\sqrt{3} - 1)\hat{\imath} + (\sqrt{3} - 1)\hat{\jmath} + 4\hat{k})$ **is** **a.** $\frac{\pi}{6}$ **b.** $\frac{\pi}{3}$ **c.** $\frac{\pi}{4}$ **d.** $\frac{2\pi}{3}$
Q 6	**If the lines x=ay+b,z=cy+d and x=a'y+b',z=c'y+d' are perpendicular, then** **a. aa'+cc'=1** **b. aa'+cc'=-1** **c. ab+cd=a'b'+c'd'** **d. aa'+bb'=cc'+dd'**

Q 7	**If the lines 5x-2=3y+1=2z-2 and $\frac{x-2}{\lambda}=\frac{2y-5}{-3}, z=-2$ are perpendicular, then λ=** **a. 3** **b. 2** **c. -3** **d. 1**
Q 8	**The lines $\frac{x}{1}=\frac{y}{2}=\frac{z}{3}\ and \frac{x-1}{-2}=\frac{y-2}{-4}=\frac{z-3}{-5}$ are** **a. Coincident** **b. Skew** **c. Intersecting** **d. parallel**
Q 9	**The angle between the lines 2x=3y=-z and 6x=-y=-4z,is** **a. zero** **b. 30^0** **c. 45^0** **d. 90^0**
Q10	**The direction ratios of the line perpendicular to the lines $\frac{x-7}{2}=\frac{y+17}{-3}=\frac{z-6}{1}\ and \frac{x+5}{1}=\frac{y+3}{2}=\frac{z+4}{-2}$ are proportional to** **a. 4,5,7** **b. 4,-5,7** **c. 4,-5,-7** **d. -4,5,7**
Q11	**The shortest distance between the lines $\frac{x}{2}=\frac{y}{2}=\frac{z}{1}\ and \frac{x+2}{-1}=\frac{y-4}{8}=\frac{z-5}{4}$ lies in the interval** **a. (2,3]** **b. [0,1)** **c. (3,4]** **d. [1,2)**
Q 12	**The straight line $\frac{x-3}{3}=\frac{y-2}{1}=\frac{z-1}{0}$ is** **a. Parallel to x-axis** **b. perpendicular to x-axis** **c. Parallel to z-axis** **d. Perpendicular to z-axis**
Q13	**If the line passing through the points (5,1,a) and (3,b,1) crosses the yz-plane at the point $\left(0,\frac{17}{2},-\frac{13}{2}\right)$,then** **a. a=6,b=4** **b. a=8,b=2** **c. a=2,b=8** **d. a=4,b=6**
Q14	**If the straight lines lines $\frac{x-1}{k}=\frac{y-2}{2}=\frac{z-3}{3}\ and\ \frac{x-2}{3}=\frac{y-3}{k}=\frac{z-1}{2}$ intersect at a point, then integer k is equal to** **a) 2 b) -2 c) -5 d) 5**

Q15	**If the lines $\frac{x-1}{2}=\frac{y+2}{3}=\frac{z-1}{4}$ and $\frac{x-3}{1}=\frac{y-k}{2}=\frac{z}{1}$ intersect, then value of k is** **a. $\frac{3}{2}$** **b. $\frac{9}{2}$** **c. $-\frac{2}{9}$** **d. $-\frac{3}{2}$**
Q16	**Statement 1: (Assertion) if the vectors $\vec{a}$ and $\vec{c}$ are non-collinear, then the lines $\vec{r}=6\vec{a}-\vec{c}+\lambda(2\vec{c}-\vec{a})$ and $\vec{r}=\vec{a}-\vec{c}+\mu(3\vec{c}+\vec{a})$ are coplanar** **Statement 2(Reason) : There exist λ and μ such that the two values of $\vec{r}$ in assertion become same** **a. Statement 1 is true, statement 2 is true , statement 2 is correct explanation for statement 1** **b. Statement 1 is true, statement 2 is true , statement 2 is not a correct explanation for statement 1** **c. Statement 1 is true, statement 2 is false** **d. Statement 1 is false, statement 2 is true**
Q 17	**Statement 1: (Assertion) if a is integer,then the straight lines $\vec{r}=\hat{\imath}+2\hat{\jmath}+3\hat{k}+\lambda(a\hat{\imath}+2\hat{\jmath}+3\hat{k})$ and $\vec{r}=2\hat{\imath}+2\hat{\jmath}+\hat{k}+\mu(3\hat{\imath}+a\hat{\jmath}+2\hat{k})$ intersect at a point a=-5** **Statement 2(Reason) : two straight lines intersect if the shortest distance between them is zero** **a. Statement 1 is true, statement 2 is true , statement 2 is correct explanation for statement 1** **b. Statement 1 is true, statement 2 is true , statement 2 is not a correct explanation for statement 1** **c. Statement 1 is true, statement 2 is false** **d. Statement 1 is false, statement 2 is true**
Q 18	**The equation of y- axis in space is** **a. x=0,z=0** **b. x=0,y=0** **c. y=0,z=0** **d. y=0**
Q 19	**The point P(3,4,-3) is equidistant from** **a. x and z axis** **b. x and y axis** **c. y and z axis** **d. x,y and z axis**
Q 20	**The point equidistant from the point O(0,0,0), A(a,0,0), B(0,b,0) aand C(0,0,c) has the coordinates** **a. (a,b,c)** **b. $\left(\frac{a}{2},\frac{b}{2},\frac{c}{2}\right)$** **c. $\left(\frac{a}{3},\frac{b}{3},\frac{c}{3}\right)$** **d. $\left(\frac{a}{4},\frac{b}{4},\frac{c}{4}\right)$**

Q 21	**If a line makes angle α, β and γ with the coordinate axes respectively, then $cos2\alpha + cos2\beta + cos2\gamma =$** **a. 2** **b. -1** **c. 1** **d. 2**
Q 22	**If a line makes angle α, β and γ with the coordinate axes respectively, then $sin^2\alpha + sin^2\beta + sin^2\gamma =$** **a. -1** **b. -2** **c. 1** **d. 2**
Q 23	**The image of the point P(1,6,3) in the line $\frac{x}{1} = \frac{y-1}{2} = \frac{z-2}{3}$ is** **a. (1,1,7)** **b. (1,0,7)** **c. (7,0,1)** **d. (0,1,7)**
Q 24	**If a line makes angle $\frac{\pi}{3}$ and $\frac{\pi}{4}$ with x-axis and y-axis repectively, then the angle made by the line with z-axis is** **a. $\frac{\pi}{4}$** **b. $\frac{\pi}{3}$** **c. $\frac{\pi}{2}$** **d. $\frac{2\pi}{3}$**
Q 25	**If a line makes angle α, β and γ with the coordinate axes respectively, then $cos^2\alpha + cos^2\beta + cos^2\gamma =$** **a. -1** **b. -2** **c. 1** **d. 2**
Q 26	**The coordinates of foot of the perpendicular from P(-3,4,5) on yz and zx planes are respectively** **a. (0,4,5) and (-3,0,5)** **b. (0,4,5) and (-3,4,0)** **c. (-3,4,0) and (0,4,5)** **d. None of these**
Q 27	**The distance between the feet of perpendicular drawn from the point P(12,9,-9) on xy and yz –planes is** **a. 12** **b. 15** **c. 9** **d. 13**
Q 28	**The coordinates of the foot of the perpendicular drawn from the point P(-3,4,-5) on the x –axis are**

	a. (3,0,0) **b. (-3,0,0)** **c. (0,4,0)** **d. (0,0,-5)**
Q 29	**Statement 1: (Assertion) If a line makes angle α, β and γ with the coordinate axes respectively, then $cos2\alpha + cos2\beta + cos2\gamma = 1$** **Statement 2(Reason) : if l,m,n are direction ratios of a line , then $l^2 + m^2 + n^2 = 1$** **a. Statement 1 is true, statement 2 is true , statement 2 is correct explanation for statement 1** **b. Statement 1 is true, statement 2 is true , statement 2 is not a correct explanation for statement 1** **c. Statement 1 is true, statement 2 is false** **d. Statement 1 is false, statement 2 is true**
Q 30	**Statement 1: (Assertion) If a line makes angle α, β and γ with the coordinate axes respectively, then $cos2\alpha + cos2\beta + cos2\gamma = -1$** **Statement 2(Reason) : If a line makes angle α, β and γ with the coordinate axes respectively, then $sin^2\alpha + sin^2\beta + sin^2\gamma = 2$** **a. Statement 1 is true, statement 2 is true , statement 2 is correct explanation for statement 1** **b. Statement 1 is true, statement 2 is true , statement 2 is not a correct explanation for statement 1** **c. Statement 1 is true, statement 2 is false** **d. Statement 1 is false, statement 2 is true**

ANSWERS
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER:3 DIMENSIONAL GEOMETRY

Q1	a
Q2	**a**
Q3	**c**
Q4	**c**
Q 5	**b**
Q 6	**b**
Q 7	**a**
Q 8	**d**
Q 9	**d**
Q10	**a**
Q11	**a**
Q 12	**d**
Q13	**a**
Q14	**c**
Q15	**b**
Q16	**a**
Q 17	**a**
Q 18	**a**
Q 19	**a**
Q 20	**b**
Q 21	**b**
Q 22	**d**
Q 23	**b**
Q 24	**b**
Q 25	**c**
Q 26	**a**
Q 27	**b**
Q 28	**b**
Q 29	**d**
Q 30	**a**

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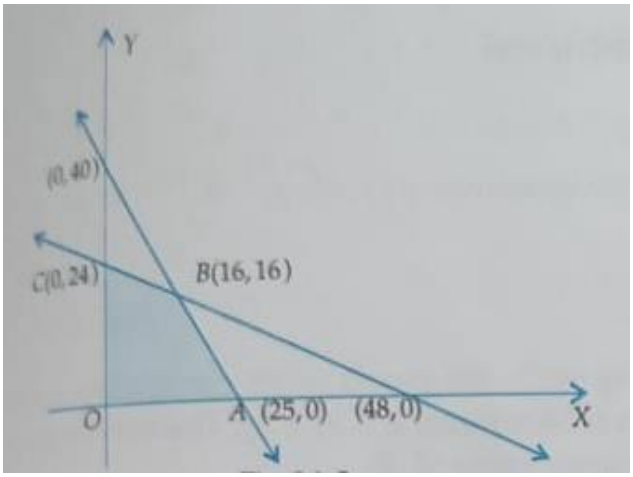
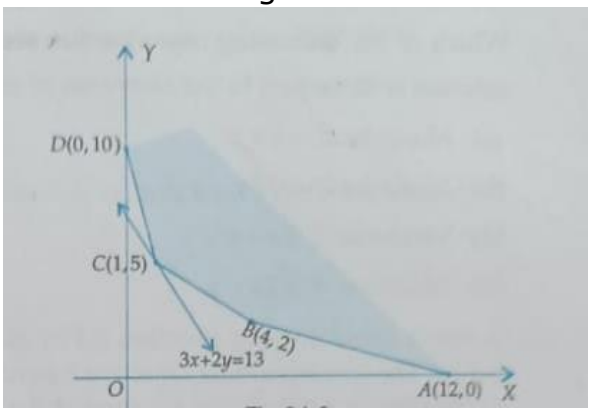
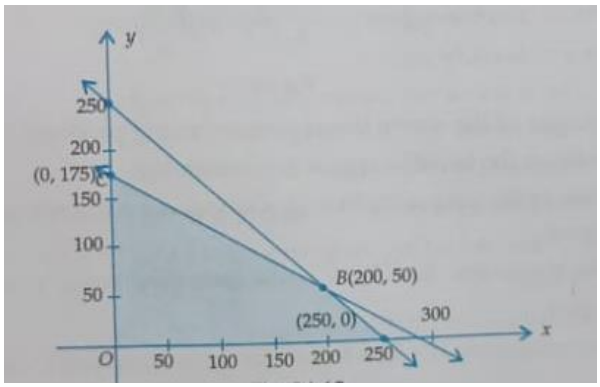
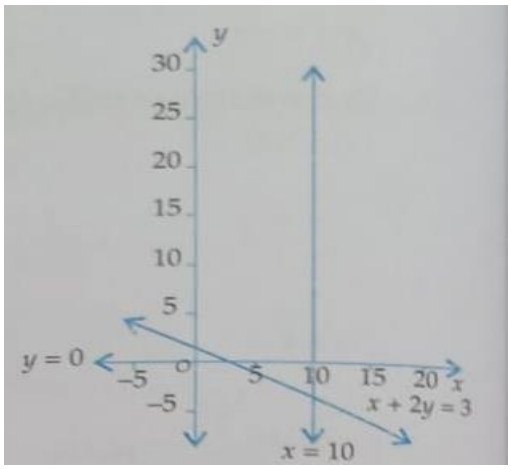
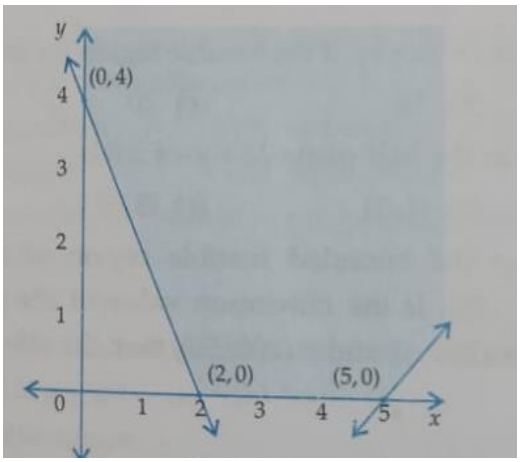
KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER 12: LINEAR PROGRAMMING PROBLEM

Q1	The solution set of the inequation $2x + y > 5$ is (a) half plane that contains the origin (b) open half plane not containing the origin (c) whole xy-plane except the points lying on the line $2x+y=5$ (d) none of these
Q2	Objective function of a LPP is (a) a constraint (b) a function to be optimized (c) a relation between the variables (d) none of these
Q3	Which of the following sets are convex? (a) $((x, y): x^2 + y^2 \geq 1)$ (b) $((x, y): y^2 \geq x\}$ (c) $((x, y): 3x^2+4y^2 \geq 5\}$ (d) $((x, y): y \geq 2, y \leq 4\}$
Q4	Let X_1 and X_2 are optimal solutions of a LPP, then (a) $X = \lambda X_1+(1-\lambda) X_2$, $\lambda \epsilon R$ is also an optimal solution (b) $X=\lambda X_1+(1-\lambda) X_2, 0\leq\lambda\leq 1$ gives an optimal solution (c) $X = \lambda X_1+ (1 + \lambda) X_2, 0\leq\lambda\leq 1$ give an optimal solution (d) $X=\lambda X_1+(1+\lambda) X_2$, $\lambda \epsilon R$ gives an optimal solution
Q 5	The maximum value of $Z=4x+2y$ subjected to the constraints $2x+3y \leq 18$, $x+y \geq 10$; $x, y \geq 0$ is (a) 36 (b) 40 (c) 20 (d) none of these
Q 6	The optimal value of the objective function is attained at the points (a) given by intersection of inequations with the axes only (b) given by intersection of inequations with x-axis only (c) given by corner points of the feasible region (d) none of these
Q 7	The maximum value of $Z=4x+3y$ subjected to the constraints $3x+2y \geq 160$, $5x+2y \geq 200$, $x + 2y \geq 80$; $x, y \geq 0$ is (a) 320 (b) 300 (c) 230 (d) none of these

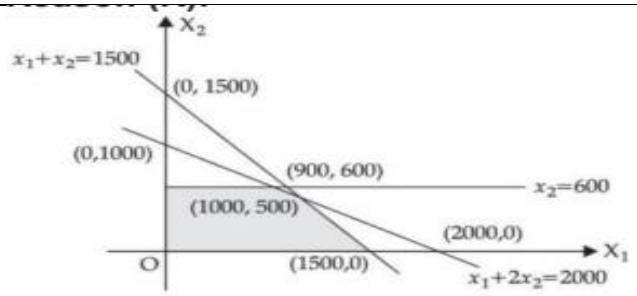
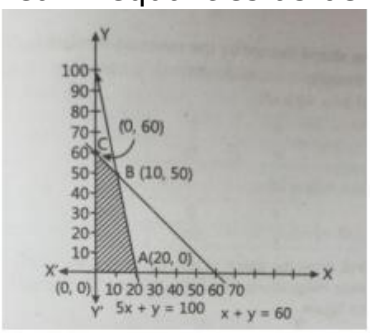
Q 8	Consider a LPP given by Minimum Z = 6x + 10 y Subjected to x ≥ 6; y ≥ 2; 2x + y ≥ 10; x, y ≥0 Redundant constraints in this LPP are (a) x 20, y ≥0 (b) x≥6,2x+y≥10 (c) 2x+y≥10 (d) none of these
Q 9	The objective function Z=4x+3y can be maximised subjected to the constraints 3x + 4y ≤ 24,8 x + 6 y ≤ 48, x ≤5, y ≤ 6) x, y ≥ 0 (a) at only one point (b) at two points only (c) at an infinite number of points (d) none of these
Q10	If the constraints in a linear programming problem are changed (a) the problem is to be re-evaluated (b) solution is not defined (c) the objective function has to be modified (d) the change in constraints is ignored
Q11	Which of the following statements is correct? (a) Every LPP admits an optimal solution (b) A LPP admits unique optimal solution (c) If a LPP admits two optimal solutions it has an infinite number of optimal solutions (d) The set of all feasible solutions of a LPP is not a converse set
Q 12	Which of the following is not a convex set? (a) ((x, y): 2x+5y <7) (b) ((x, y): $x^2 + y^2 \leq 4$) (c){x:lxl =5) (d) ((x, y): $3x^2 + 2y^2 \leq 6$
Q13	By graphical method, the solution of linear programming problem Maximize Z = 3X+5Y Subject to 3X+2Y ≤18,X ≤ 4,Y ≤ 6, X ≥ 0, Y ≥ 0 (a) X = 2, Y= 0, Z = 6 (b) X = 2, Y = 6, Z = 36 (c) X = 4, Y = 3, Z = 27 (d) X = 4, Y = 6, Z = 42
Q14	The region represented by the inequation system x, y ≥ 0, y ≤ 6, x + y ≤ 3 is (a) unbounded in first quadrant (b) unbounded in first and second quadrants (c) bounded in first quadrant (d) none of these

Q15	The point at which the maximum value of $x + y$, subject to the constraints $x + 2y \leq 70$, $2x + y \leq 95$, $x, y \geq 0$ is obtained, is (a) (30,25) (b) (20, 35) (c) (35, 20) (d) (40,15)
Q16	The value of objective function is maximum under linear constraints (a) at the centre of feasible region (b) at (0, 0) (c) at any vertex of feasible region (d) the vertex which is at a maximum distance from (0, 0)
Q 17	The graph of the inequality $2x + 3y > 6$ is (a) half plane that contains the origin (b) half plane that neither contains the origin nor the points on the line $2x + 3y=6$ (c) whole XOY-plane excluding the points on the line $2x + 3y = 6$ (d) entire XOY plane
Q 18	The objective function of an LPP is (a) a constant (b) a linear function to be optimized (c) an inequality (d) a quadratic expression
Q 19	The corner points of the feasible region determined by the system of linear constraints are (0, 10), (5,5), (15, 15), (0, 20). Let $z=px + qy$, where $p, q> 0$. Condition on p and q so that the maximum of z occurs at both the points (15, 15) and (0, 20) is (a) $p= q$ (b) $p=2q$ (c) $q=2p$ (d) $q=3p$
Q 20	The maximum value of $z=4x+3y$, if the feasible region for an LPP is as shown in Fig. (a) 100 (b) 72 (c) 112 (d) none of these 

Q 21	The minimum value of z=3x+2y, if the feasible region for an LPP is as shown in Fig 24.9, is (a) 36 (b) 16 (c) 20 (d) 13 
Q 22	The point which lies in the half-plane 2x+y-4=0 is (a) (0,8) (b) (1,1) (c) (5,5) (d) (2,2)
Q 23	The corner points of the bounded feasible region of an LPP are O (0,0), A (250, 0), B (200, 50) and C (0,175). If the maximum value of the objective function Z=2ax+by occurs at the points A (250, 0) and B (200,50), then the relation between a and b is: (a) 2a=b (b) 2a = 3b (c) a=b (d) a=2b 
Q 24	A linear programming problem (LPP) along with its constraints: Minimize: Z = 3x + 2y. Subject to: x≤4, x≥0, y ≥0 Which of the following is true about the above LPP? (a) It has no solution (c) It has two distinct solutions (b) It has a unique solution (d) It has infinitely many solutions.
Q 25	The constraints of a linear programming problem along with their graphs are shown below: x+2y≥ 3,x≥10, y≥0 Which of the following objective functions has an optimal solution with respect to the above set of constraints? (a) Minimise Z=x+y (b) Minimise Z = 0.5x + y (c) Maximise Z = x+y (d) Maximise Z = 2x + y 

Q 26	A linear programming problem (LPP) along with the graph of its constraints is shown in the figure. The corresponding objective function is Minimize: Z=3x+2y. The minimum value of the objective function is obtained at the corner point (2, 0). The optimal solution of the above linear programming problem  (a) does not exist as the feasible region is unbounded. (b) does not exist as the inequality 3x + 2y <6 does not have any point in common with the feasible region. (c) exists as the inequality 3x + 2y > 6 has infinitely many points in common with the feasible region. (d) exists as the inequality 3x + 2y <6 does not have any point in common with the feasible region.
Q 27	The feasible region of a linear programming problem is bounded. The corresponding objective function is Z=6x-7y. The objective function attains (a) only minimum (b) only maximum (c) both maximum and minimum in the feasible region. (d) either maximum or minimum but not both
Q 28	Corner points of the feasible region determined by the system of linear constraints (0,3), (1,1) and (3,0). Let z = px + qy, where p, q>0. Condition on p and q so that the minimum of z occurs at (3,0) and (1, 1) is (a) p=2q (b) 2p=q (c) p = 3q (d) p=9
Q 29	Corner points of the feasible region for an LPP are: (0,2), (3, 0), (6,0), (6, 8) and (0,5). Let z=4x+6y the objective function. The minimum value of z occurs at (a) (0,2) only (b) (3,0) only (c) the mid-point of the line segment joining the points (0, 2) and (3, 0) only (d) any point on the line segment joining the points (0, 2) and (3,0)

Q 30	The objective function Z=ax+by of an LPP has maximum value 42 at (4, 6) and minimum value 19 at (3, 2). Which of the following is true? (a) a=9,b=1 (b) a=5,b=2 (c) a=3,b=5 (d) a=5,b=3
Q 31	The corner points of the feasible region of a linear programming problem are (0,4), (8,9) and (20/3,4/3). If Z=30x+24y is the objective function, then (Maximum value of Z-Minimum value of (a) 40 (b) 96 (c) 120 (d) 144
	ASSERTION AND REASONING TYPE QUESTIONS **Choose the correct option for following assertion reasoning questions:** (a) Both A and R are true and R is the correct explanation of A (b) Both A and R are true but R is NOT the correct explanation of A (c) A is true but R is false. (d) A is false but R is true.
Q 32	Assertion (A): Feasible region is the set of points which satisfy all of the given constraints. Reason (R): The optimal value of the objective function is attained at the points on X-axis only.
Q 33	Assertion (A): It is necessary to find objective function value at every point in the feasible region to find optimum value of the objective function. Reason(R):For the constrains $2x+3y\leq 6$, $5x+3y \leq 15$, $x\geq 0$ and $y\geq 0$ corner points of the feasible region are (0,2), (0,0) and (3,0).
Q 34	Assertion (A):Consider the linear programming problem. Maximise $Z=4x+y$ Subject to constraints $x+ y\leq 50$; $x+ y \geq 100$ and $x, y \geq 0$. Then, maximum value of Z is 50. Reason (R):If the shaded region is bounded then maximum value of objective function can be determined.
Q 35	Assertion (A) : For the constraints of linear optimizing function $Z = x_1+ x_2$ given by $x_1+ x_2 \leq 1$, $3x_1 + x_2 \leq 1$,$x \geq 0$ and $y\geq 0$ there is no feasible region. Reason (R): $Z = 7x + y$, subject to $5x + y \leq 5$, $x + y \leq 3$, $x \geq 0$ and $y\geq 0$. The corner points of the feasible region are (½ ,5/2), (0,3) and (0,5).
Q 36	Assertion (A): For the constraints of a LPP problem given by $x_1 + 2x_2 \leq 2000$, $x_1 + x_2 \leq 1500$, $x_2 \leq 600$ and $x_1, x_2 \geq 0$ the points (1000, 0), (0, 500),(2, 0) lie in the positive bounded region, but point (2000, 0) does not lie in the positive bounded region.

	Reason (R): 
Q 37	Assertion (A): The maximum value of Z = 11x+7y. Subject to the constraints 2x+y ≤6, x ≤2, x,y ≥0 Occurs at the point (0,6). Reason (R): If the feasible region of the given LPP is bounded, then the maximum and minimum values of the objective function occurs at corner points.
Q 38	Assertion(A):If an LPP attains its maximum value at two corner points of the feasible region then it attains maximum value at infinitely many points. Reason (R): if the value of the objective function of a LPP is same at two corners then it is same at every point on the line joining two corner points.
Q 39	Consider, the graph of constraints stated as linear inequalities as below: 5x+y ≤100,x+y ≤60, x,y ≥0. Assertion (A): The points (10,50), (0,60) , (10,10) and (20,0) are feasible Reason (R): Points within and on the boundary of the feasible region represent feasible solutions of the constraints. 
Q 40	Assertion (A):For an objective function Z= 15x + 20y, corner points are (0,0), (10,0), (0,15) and (5,5). Then optimal values are 300 and 0 respectively. Reason (R):The maximum or minimum value of an objective function is known as optimal value of LPP. These values are obtained at corner points.
Q 41	Assertion (A): For the LPP Z= 3x+2y, subject to the constraints x+2y ≤ 2; x ≥0; y≥ 0 both maximum value of Z and Minimum value of Z can be obtained. Reason (R):If the feasible region is bounded then both maximum and minimum values of Z exists.
Q 42	Assertion (A):The linear programming problem, maximize Z = x+2y subject to constraints x-y ≤10,2x + 3y ≤ 20 and x≥ 0; y ≥0. It gives the maximum value of Z as 40/3. Reason (R):To obtain maximum value of Z, we need to compare value of Z at all the corner points of the shaded region.

ANSWERS:

1.(b)	2. (b)	3. (d)	4. (b)	5. (d)	6. (c)	7. (d)	8. (c)	9.(c)	10.(a)
11.(c)	12.(c)	13.(b)	14.(c)	15.(d)	16.(d)	17.(b)	18.(b)	19.(d)	20.(c)
21.(d)	22.(b)	23.(a)	24.(b)	25.(a)	26.(d)	27.(c)	28.(b)	29.(d)	30. (c)
31.(d)	32. (c)	33.(d)	34.(d)	35.(a)	36. (a)	37. (a)	38. (a)	39. (a)	40. (a)
41. (a)	42. (a)								

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KENDRIYA VIDYALAYA SANGATHAN AHMEDABAD REGION
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER:PROBABILITY

<table>
<tr><td>Q1</td><td>Two dice are thrown. It is known that the sum of numbers on the dice is less than6, the probability of getting a sum 3 is
(a)$\frac{1}{18}$
(b) $\frac{2}{5}$
(c) $\frac{1}{5}$
(d) $\frac{5}{18}$</td></tr>
<tr><td>Q2</td><td>Two cards are drawn from a well shuffled deck of 52 playing cards with replacement. The probability, that both cards are queen is
(a)$\frac{1}{13}$x$\frac{1}{13}$
(b) $\frac{1}{13}$+$\frac{1}{13}$
(c) $\frac{1}{13}$ X$\frac{1}{17}$
(d) $\frac{1}{13}$x $\frac{1}{51}$</td></tr>
<tr><td>Q3</td><td>The probability distribution of a discrete random variable X is given below
<table>
<tr><td>X</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>P(X)</td><td>$\frac{5}{k}$</td><td>$\frac{7}{k}$</td><td>$\frac{9}{k}$</td><td>$\frac{11}{k}$</td></tr>
</table>
The value of k is
(a) 8
(b) 32
(c) 16
(d) 48</td></tr>
<tr><td>Q4</td><td>If two events are independent, then
(a)they must be mutually exclusive
(b) the sum of their probabilities must be equal to 1
(c) both(a) and (b) are correct
(d) none of the above is correct</td></tr>
</table>

Q 5	Events A and B are independent if (a)P(A∩B) =P(A/B) P(B) (b) P(A∩B) =P(B/A) P(A) (c) P(A∩B) =P(A)+P(B) (d) P(A∩B) =P(A)P(B)
Q 6	If P(A) =$\frac{3}{10}$, P(B) =$\frac{2}{5}$ and P(AUB) =$\frac{3}{5}$,then P(B/A) + P(A/B) = (a)$\frac{1}{4}$ (b) $\frac{1}{3}$ (c)$\frac{5}{12}$ (d) $\frac{7}{12}$
Q 7	If P(A) = 1/2, P(B) = 0, then P(A|B) is (a)0 (b) $\frac{1}{2}$ (c)not defined (d) 1
Q 8	If P(A∩B) = 0.15, P(B') = 0.10, then P(A/B) = (a)$\frac{1}{3}$ (b) $\frac{1}{4}$ (c)$\frac{1}{6}$ (d) $\frac{1}{5}$
Q 9	A bag contains 5 red and 3 blue balls. If 3 balls are drawn at random without replacement, the probability of getting exactly one red ball is (a)$\frac{45}{196}$ (b) $\frac{135}{392}$ (c)$\frac{15}{56}$ (d) $\frac{15}{29}$

Q10	Probability that A speaks truth is 4/5. A coin is tossed. A reports that a head appears. The probability that actually there was head is (a) $\frac{4}{5}$ (b) $\frac{1}{2}$ (c) $\frac{1}{5}$ (d) $\frac{2}{5}$
Q11	If A and B are any two events such that P(A) + P(B) – P (A and B) =P(A), then (a) P(B|A) = 1 (b) P(A|B) = 1 (c) P(B|A) = 0 (d) P(A|B) = 0
Q 12	If A and B are two events such that P(A) ≠ 0 and P (B | A) = 1, then (a) A ⊂ B (b) B ⊂ A (c) B = φ (d) A = φ
Q13	The probability of obtaining an even prime number on each die, when a pair of dice is rolled is (a) 0 (b) 1/3 (c) 1/12 (d) 1/36
Q14	Two events A and B will be independent, if (a) A and B are mutually exclusive (b) P(A'B') = [1 – P(A)] [1 – P(B)] (c) P(A) = P(B) (d) P(A) + P(B) = 1

Q15	If $P(A\|B) > P(A)$, then which of the following is correct: (a) $P(B\|A) < P(B)$ (b) $P(A \cap B) < P(A) \cdot P(B)$ (c) $P(B\|A) > P(B)$ (d) $P(B\|A) = P(B)$
Q16	A flashlight has 8 batteries out of which 3 are dead. If two batteries are selected without replacement and tested, the probability that both are dead is (a) $\frac{33}{56}$ (b) $\frac{9}{64}$ (c) $\frac{1}{14}$ (d) $\frac{3}{28}$
Q 17	A box contains 3 orange balls ,3 green balls and 2 blue balls. Three balls are drawn at random from the box without replacement, The probability of drawing 2 green balls and one blue ball is (a) $\frac{2}{21}$ (b) $\frac{3}{28}$ (c) $\frac{1}{28}$ (d) $\frac{167}{168}$
Q 18	Two numbers are chosen from {1,2,3,4,5,6} one after the other without replacement. The probability that one of the smaller value is less than 4 is a) $\frac{4}{25}$ (b) $\frac{1}{15}$ (c) $\frac{1}{5}$ (d) $\frac{14}{15}$
Q 19	If A and B are independent events, then which of the following is not true (a) $P(A\|B) = P(A)$

	(b) $P(B\|A) = P(B)$ (c) $P(B\|A) = P(A\|B)$ (d) None of these
Q 20	Events A and B are said to be mutually exclusive iff (a) $P(A \cap B) = P(A) + P(B)$ (b) $P(A \cap B) = P(A)P(B)$ (c) $A \cap B = \varphi$ (d)None of these
Q 21	In a college 30% students fail in Physics ,25% fail in Mathematics and 10% fail in both .One student is chosen at random.The probability that she fails in Physics if she fails in Mathematics is (a)1/10 (b) 2/5 (c) 9/20 (d) 1/3
Q 22	A and B are two students .There chances of solving a problem correctly are 1/3 and ¼ respectively. If the probability of their making a common error is 1/20 and they obtain the same answer, then the probability of their answer to be correct is (a)1/12 (b)1/40 (c)13/120 (d)10/13
Q 23	If the sum of numbers obtained on throwing a pair of dice is 9 ,then the probability that the number on one of the dice is 4 ,is (a)1/9 (b)4/9 (c)1/18 (d)1/2

Q 24	If P(A) =7/13,P(B) =9/13 and P(A∩ B) =4/13 .Then P(A' /B) is equal to (a)6/13 (b)4/13 (c)4/9 (d)5/9
Q 25	If A and B are two independent events such that P(A) =1/3 and P(B) =1/4, then P(B'/A) is (a)1/4 (b)1/8 (c)3/4 (d) 1
	Directions (Q.-26 to 30): In these questions, a statement of Assertion is followed by a statement of Reason is given. Choose the correct answer out of the following choices : (a) Assertion and Reason both are correct statements and Reason is the correct explanation of Assertion. (b) Assertion and Reason both are correct statements but Reason is not the correct explanation of Assertion. (c) Assertion is correct statement but Reason is wrong statement. (d) Assertion is wrong statement but Reason is correct statement.
Q 26	**Assertion**: Consider the experiment of drawing a card from a deck of 52 playing cards, in which the elementary events are assumed to be equally likely. If E and F denote the events the card drawn is a spade and the card drawn is an ace respectively, then P (E|F) = 1 /4 and P (F|E) = 1 /13 **Reason**: E and F are two events such that the probability of occurrence of one of them is not affected by occurrence of the other. Such events are called independent events

Q 27	**Assertion**: The probability that candidates A and B can solve the problem is 1/ 5, 2 /5 and, then probability that problem will be solved is given by 12 /25. **Reason:** If events A & B are independent, then $P(A \cap B) = P(A) \times P(B)$.
Q 28	**Assertion**: An urn contains 5 red and 5 black balls. A ball is drawn at random, its colour is noted and is returned to the urn. Moreover, 2 additional balls of the colour drawn are put in the urn and then a ball is drawn at random. Then, the probability that the second ball is red is 1/ 2. **Reason**: A bag contains 4 red and 4 black balls; another bag contains 2 red and 6 black balls. One of the two bags is selected at random and a ball is drawn from the bag which is found to be red. Then, the probability that the ball is drawn from the first bag is 2/ 3.
Q 29	A man P speaks truth with probability p and another man Q speaks truth with probability 2p. **Assertion** : If P and Q contradict each other with probability 1/2, then there are two values of p. **Reason**: A quadratic equation with real coefficients has two real roots.
Q 30	Let A and B be two events associated with an experiment such that $P(A \cap B) = P(A)P(B)$. **Assertion**: $P(A\|B) = P(A)$ and $P(B\|A) = P(B)$ **Reason** : $P(A \cup B) = P(A) + P(B)$.

ANSWERS
OBJECTIVE TYPE QUESTIONS (SESSION 2024-25)
CLASS: XII MATHEMATICS (041)
CHAPTER: PROBABILITY

ANSWERS

1	2	3	4	5	6	7	8	9	10
c	a	b	d	d	d	c	c	c	a
11	12	13	14	15	16	17	18	19	20
b	a	d	b	c	d	b	a	c	c
21	22	23	24	25	26	27	28	29	30
b	d	d	d	c	a	d	b	c	c

NAME OF TEACHER: A P SRIVASTAVA

NAME OF KV : K V NO3 AFS MAKARPURA VADODARA