JEE Mains & Advanced Past Years Questions

JEE-MAIN PREVIOUS YEARS

1. If $A=\begin{bmatrix}5a & -b\\ 3 & 2\end{bmatrix}$ and A adj $A = AA^T$, then $5a+b$ is equal to: **[JEE Main-2016]**

(a) -1 (b) 5
(c) 4 (d) 13

2. If $A=\begin{bmatrix}2 & -3\\ -4 & 1\end{bmatrix}$, then adj $(3A^2+12A)$ is equal to : **[JEE Main-2017]**

(a) $\begin{bmatrix}72 & -63\\ -84 & 51\end{bmatrix}$ (b) $\begin{bmatrix}72 & -84\\ -63 & 51\end{bmatrix}$

(c) $\begin{bmatrix}51 & 63\\ 84 & 72\end{bmatrix}$ (d) $\begin{bmatrix}51 & 84\\ 63 & 72\end{bmatrix}$

3. If $\begin{vmatrix}x-4 & 2x & 2x\\ 2x & x-4 & 2x\\ 2x & 2x & x-4\end{vmatrix} = (A+Bx)(x-A)^2$, then the ordered pair (A, B) is equal to : **[JEE Main-2018]**

(a) $(-4, 3)$ (b) $(-4, 5)$
(c) $(4, 5)$ (d) $(-4, -5)$

4. If $A=\begin{bmatrix}\cos\theta & -\sin\theta\\ \sin\theta & \cos\theta\end{bmatrix}$, then the matrix A^{-50} when $\theta=\frac{\pi}{12}$, is equal to **[JEE Main-2019 (January)]**

(a) $\begin{bmatrix}\frac{1}{2} & -\frac{\sqrt{3}}{2}\\ \frac{\sqrt{3}}{2} & \frac{1}{2}\end{bmatrix}$ (b) $\begin{bmatrix}\frac{\sqrt{3}}{2} & -\frac{1}{2}\\ \frac{1}{2} & \frac{\sqrt{3}}{2}\end{bmatrix}$

(c) $\begin{bmatrix}\frac{\sqrt{3}}{2} & \frac{1}{2}\\ -\frac{1}{2} & \frac{\sqrt{3}}{2}\end{bmatrix}$ (d) $\begin{bmatrix}\frac{1}{2} & \frac{\sqrt{3}}{2}\\ -\frac{\sqrt{3}}{2} & \frac{1}{2}\end{bmatrix}$

5. Let A and B be two invertible matrices of order 3×3. If det $(ABA^T)=8$ and det $(AB^{-1})=8$, then det $(BA^{-1}B^T)$ is equal to: **[JEE Main-2019 (January)]**

(a) $\frac{1}{4}$ (b) 1

(c) $\frac{1}{16}$ (d) 16

6. Let $P=\begin{bmatrix}1 & 0 & 0\\ 3 & 1 & 0\\ 9 & 3 & 1\end{bmatrix}$ and $Q=[q_{ij}]$ be two 3×3 matrices such that $Q-P^5=I_3$. Then $\frac{q_{21}+q_{31}}{q_{32}}$ is equal to : **[JEE Main - 2019 (January)]**

(a) 10 (b) 135
(c) 15 (d) 9

7. Let $A=\begin{pmatrix}0 & 2q & r\\ p & q & -r\\ p & -q & r\end{pmatrix}$. If $AA^T=I_3$, then $|p|$ is :- **[JEE Main - 2019 (January)]**

(a) $\frac{1}{\sqrt{5}}$ (b) $\frac{1}{\sqrt{3}}$

(c) $\frac{1}{\sqrt{2}}$ (d) $\frac{1}{\sqrt{6}}$

8. Let $A=\begin{pmatrix}\cos\alpha & -\sin\alpha\\ \sin\alpha & \cos\alpha\end{pmatrix}$, $(a\in R)$ such that $A^{32}=\begin{pmatrix}0 & -1\\ 1 & 0\end{pmatrix}$. Then a value of α is. **[JEE Main -2019 (April)]**

(a) $\frac{\pi}{16}$ (b) 0

(c) $\frac{\pi}{32}$ (d) $\frac{\pi}{64}$

9. If $\begin{bmatrix}1 & 1\\ 0 & 1\end{bmatrix}\begin{bmatrix}1 & 2\\ 0 & 1\end{bmatrix}\begin{bmatrix}1 & 3\\ 0 & 1\end{bmatrix}\cdots\cdots\begin{bmatrix}1 & n-1\\ 0 & 1\end{bmatrix}=\begin{bmatrix}1 & 78\\ 0 & 1\end{bmatrix}$, then the inverse of $\begin{bmatrix}1 & n\\ 0 & 1\end{bmatrix}$ is **[JEE Main -2019 (April)]**

(a) $\begin{bmatrix}1 & -13\\ 0 & 1\end{bmatrix}$ (b) $\begin{bmatrix}1 & 0\\ 12 & 1\end{bmatrix}$

(c) $\begin{bmatrix}1 & -12\\ 0 & 1\end{bmatrix}$ (d) $\begin{bmatrix}1 & 0\\ 13 & 1\end{bmatrix}$

10. The total number of matrices $A=\begin{pmatrix}0 & 2y & 1\\ 2x & y & -1\\ 2x & -y & 1\end{pmatrix}$, $(x, y\in R, x\neq y)$ for which $A^TA=3I_3$ is :- **[JEE Main -2019 (April)]**

(a) 6 (b) 2
(c) 3 (d) 4

11. If a is A symmetric matrix and B is a skew-symmetrix matrix such that $A + B = \begin{bmatrix} 2 & 3 \\ 5 & -1 \end{bmatrix}$, then AB is equal to :

[JEE Main -2019 (April)]

(a) $\begin{bmatrix} -4 & 2 \\ 1 & 4 \end{bmatrix}$ (b) $\begin{bmatrix} -4 & -2 \\ -1 & 4 \end{bmatrix}$

(c) $\begin{bmatrix} 4 & -2 \\ -1 & -4 \end{bmatrix}$ (d) $\begin{bmatrix} 4 & -2 \\ 1 & -4 \end{bmatrix}$

12. Let α be a root of equation $x^2 + x + 1 = 0$ and the matrix $A = \frac{1}{\sqrt{3}}\begin{bmatrix} 1 & 1 & 1 \\ 1 & \alpha & \alpha^2 \\ 1 & \alpha^2 & \alpha^4 \end{bmatrix}$, then the matrix A^{31} is equal to

[JEE Main-2020 (January)]

(a) A^3 (b) A^2

(c) I_3 (d) A

13. The number of all 3 × 3 matrices A, with entries from the set {– 1, 0, 1} such that the sum of the diagonal elements of AA^T is 3, is ____________.

[JEE Main-2020 (January)]

14. If $A = \begin{pmatrix} 2 & 2 \\ 9 & 4 \end{pmatrix}$ and $I = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$, then $10A^{-1}$ is equal to:

[JEE Main-2020 (January)]

(a) A – 4I (b) A – 6I

(c) 4I – A (d) 6I – A

15. If the matrices $A = \begin{bmatrix} 1 & 1 & 2 \\ 1 & 3 & 4 \\ 1 & -1 & 3 \end{bmatrix}$, $B = \text{adj}\, A$ and $C = 3A$, then $\frac{|\text{adj}(B)|}{|C|}$ is equal to

[JEE Main-2020 (January)]

(a) 72 (b) 8

(c) 16 (d) 2

16. Let $a, b, c \in R$ be all non- zero and satisfy $a^3 + b^3 + c^3 = 2$. If the matrix

$$A = \begin{pmatrix} a & b & c \\ b & c & a \\ c & a & b \end{pmatrix}$$

satisfies $A^TA = I$, then a value of abc can be :

[JEE Main-2020 (September)]

(a) 3 (b) $\frac{1}{3}$

(c) $-\frac{1}{3}$ (d) $\frac{2}{3}$

17. Let A be a 2 × 2 real matrix with entries from {0, 1} and $|A| \neq 0$. Consider the following two statements :

(P) If $A \neq I_2$, then $|A| = -1$

(Q) If $|A| = 1$, then $\text{tr}(A) = 2$,

where I_2 denotes 2 × 2 identity matrix and tr(A) denotes the sum of the diagonal entries of A.

Then :

[JEE Main-2020 (September)]

(a) (P) is true and (Q) is false

(b) Both (P) and (Q) are false

(c) Both (P) and (Q) are true

(d) (P) is false and (Q) is true

18. Let A be a 3 × 3 matrix such that

$$\text{adj}\, A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 0 & 2 \\ 1 & -2 & -1 \end{bmatrix} \text{ and } B = \text{adj}(\text{adj}\, A)$$

If $|A| = \lambda$ and $|(B^{-1})^T| = \mu$, then the ordered pair, $(|\lambda|, \mu)$ is equal to

[JEE Main-2020 (September)]

(a) (3, 81) (b) $\left(9, \frac{1}{9}\right)$

(c) $\left(3, \frac{1}{81}\right)$ (d) $\left(9, \frac{1}{81}\right)$

19. Let $A = \begin{bmatrix} x & 1 \\ 1 & 0 \end{bmatrix}$, $x \in R$ and $A^4 = [a_{ij}]$. if $a_{11} = 109$, then a_{22} is equal to ______.

[JEE Main-2020 (September)]

20. Suppose the vectors x_1, x_2 and x_3 are the solutions of the system of linear equations, $Ax = b$ when the vector b on the right side is equal to b_1, b_2 and b_3 respectively. If $x_1 = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$, $x_2 = \begin{bmatrix} 0 \\ 2 \\ 1 \end{bmatrix}$, $x_3 = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$, $b_1 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$, $b_2 = \begin{bmatrix} 0 \\ 2 \\ 0 \end{bmatrix}$ and $b_3 = \begin{bmatrix} 0 \\ 0 \\ 2 \end{bmatrix}$, then the determinant of A is equal to :

[JEE Main-2020 (September)]

(a) 4 (b) $\frac{1}{2}$

(c) 2 (d) $\frac{3}{2}$

21. If $A = \begin{bmatrix} \cos\theta & i\sin\theta \\ i\sin\theta & \cos\theta \end{bmatrix}$, $\left(\theta = \frac{\pi}{24}\right)$ and $A^5 = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ where $i = \sqrt{-1}$, then which one of the following is not true?

[JEE Main-2020 (September)]

(a) $a^2 - b^2 = \sqrt{-1}$ (b) $a^2 - c^2 = 1$

(c) $a^2 - d^2 = 0$ (d) $0 \le a^2 + b^2 \le 1$

22. Let $\theta = \frac{\pi}{5}$ and $A = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}$. If $B = A + A^4$, then det (B) : [JEE Main-2020 (September)]

(a) lies in (2, 3).
(b) is zero.
(c) is one.
(d) lies in (1, 2)

23. If $A = \begin{pmatrix} 0 & \sin\alpha \\ \sin\alpha & 0 \end{pmatrix}$ and $\det\left(A^2 - \frac{1}{2}I\right) = 0$, then a possible value of α is : [JEE Main-2021 (March)]

(a) $\frac{\pi}{4}$
(b) $\frac{\pi}{6}$
(c) $\frac{\pi}{2}$
(d) $\frac{\pi}{3}$

24. The system of equations $k\alpha + y + z = 1, x + ky + z = k$ and $x + y + zk = k^2$ has no solution if k is equal to : [JEE Main-2021 (March)]

(a) 0
(b) –1
(c) –2
(d) 1

25. Consider the following system of equations:

$$x + 2y - 3z = a$$
$$2x + 6y - 11z = b$$
$$x - 2y + 7z = c$$

where *a*, *b* and *c* are real constants. Then the system of equations: [JEE Main-2021 (February)]

(c) has no solution for all *a*, *b* and *c*
(b) has a unique solution when $5a = 2b + c$
(c) has infinite number of solutions when $5a = 2b + c$
(d) has a unique solution for all *a*, *b* and *c*

26. Consider the three planes

$P_1 : 3x + 15y + 21z = 9$

$P_2 : x - 3y - z = 5$, and

$P_3 : 2x + 10y + 14z = 5$

Then, which one of the following is true? [JEE Main-2021 (February)]

(a) P_1 and P_2 are parallel.
(b) P_1, P_2 and P_3 all are parallel.
(c) P_1 and P_3 are parallel.
(d) P_2 and P_3 are parallel.

27. The value of $\begin{vmatrix} (a+1)(a+2) & a+2 & 1 \\ (a+2)(a+3) & a+3 & 1 \\ (a+3)(a+4) & a+4 & 1 \end{vmatrix}$ is : [JEE Main-2021 (February)]

(a) –2
(b) 0
(c) $(a+2)(a+3)(a+4)$
(d) $(a+1)(a+2)(a+3)$

JEE-ADVANCED PREVIOUS YEARS

1. Let $P = [a_{ij}]$ be a 3 × 3 matrix and let $Q = [b_{ij}]$, where $b_{ij} = 2^{i+j}a_{ij}$ for $1 \le i, j \le 3$. If the determinant of P is 2, then the determinant of the matrix Q is [IIT JEE-2012]

(a) 2^{10}
(b) 2^{11}
(c) 2^{12}
(d) 2^{13}

2. If P is a 3 × 3 matrix such that $P^T = 2P + I$, where P^T is the transpose of P and I is the 3 × 3 identity matrix, then there exists a column matrix $X = \begin{bmatrix} x \\ y \\ z \end{bmatrix} \ne \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$ such that [IIT JEE-2012]

(a) $PX = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$
(b) $PX = X$
(c) $PX = 2X$
(d) $PX = -X$

3. If the adjoint of a 3 × 3 matrix P is $\begin{bmatrix} 1 & 4 & 4 \\ 2 & 1 & 7 \\ 1 & 1 & 3 \end{bmatrix}$, then the possible value(s) of the determinant of P is (are) [IIT JEE-2012]

(a) –2
(b) –1
(c) 1
(d) 2

4. For 3×3 matrices M and N, which of the following statement(s) is (are) **NOT** correct ? [JEE Advanced-2013]

(a) $N^T M N$ is symmetric or skew symmetric, according as M is symmetric or skew symmetric
(b) $M N - N M$ is skew symmetric for all symmetric matrices M and N
(c) $M N$ is symetric for all symmetric matrices M and N
(d) (adj M) (adj N) = adj(MN) for all invertible matrices M and N

5. Let M be a 2 × 2 symmetric matrix with integer entries. Then M is invertible if [JEE Advanced-2014]

(a) the first column of M is the transpose of the second row of M
(b) the second row of M is the transpose of first column of M

(*c*) M is a diagonal matrix with nonzero entries in the main diagonal

(*d*) the product of entries in the main diagonal of M is not the square of an integer

6. Let X and Y be two arbitrary, 3×3, non-zero, skew-symmetric matrices and Z be an arbitrary 3×3, non-zero, symmetric matrix. Then which of the following matrices is (are) skew symmetric ? **[JEE Advanced-2015]**

(*a*) $Y^3Z^4 - Z^4Y^3$ (*b*) $X^{44} + Y^{44}$

(*c*) $X^4Z^3 - Z^3X^4$ (*d*) $X^{23} + Y^{23}$

7. Let $P = \begin{bmatrix} 3 & -1 & -2 \\ 2 & 0 & \alpha \\ 3 & -5 & 0 \end{bmatrix}$, where $\alpha \in \mathbb{R}$. Suppose $Q = [q_{ij}]$ is a matrix such that $PQ = kI$, where $k \in \mathbb{R}, k \neq 0$ and I is the identity matrix of order 3. If $q_{23} = -\dfrac{k}{8}$ and $\det(Q) = \dfrac{k^2}{2}$, then **[JEE Advanced-2016]**

(*a*) $\alpha = 0, k = 8$ (*b*) $4\alpha - k + 8 = 0$

(*c*) $\det(P \operatorname{adj}(Q)) = 2^9$ (*d*) $\det(Q \operatorname{adj}(P)) = 2^{13}$

8. Let $P = \begin{bmatrix} 1 & 0 & 0 \\ 4 & 1 & 0 \\ 16 & 4 & 1 \end{bmatrix}$ and I be the identity matrix of order 3. If $Q = [q_{ij}]$ is a matrix such that $P^{50} - Q = I$, then $\dfrac{q_{31} + q_{32}}{q_{21}}$ equals **[JEE Advanced-2016]**

(*a*) 52 (*b*) 103

(*c*) 201 (*d*) 205

9. Which of the following is (are) NOT the square of a 3×3 matrix with real entries? **[JEE Advanced-2017]**

(*a*) $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$ (*b*) $\begin{bmatrix} 1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$

(*c*) $\begin{bmatrix} -1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$ (*d*) $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

10. For a real number α, if the system

$$\begin{bmatrix} 1 & \alpha & \alpha^2 \\ \alpha & 1 & \alpha \\ \alpha^2 & \alpha & 1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 1 \\ -1 \\ 1 \end{bmatrix}$$

of linear equations, has infinitely many solutions, the $1 + \alpha + \alpha^2 =$ **[JEE Advanced-2017]**

11. How many 3×3 matrices M with entries from $\{0, 1, 2\}$ are there, for which the sum of the diagonal entries of $M^T M$ is 5 ? **[JEE Advanced-2017]**

(*a*) 198 (*b*) 162

(*c*) 126 (*d*) 135

12. Let S be the of all column metrices $\begin{bmatrix} b_1 \\ b_2 \\ b_3 \end{bmatrix}$ such that $b_1, b_2, b_3 \in \mathbb{R}$ and the system of equations (in real variables)

$$-x + 2y + 5z = b_1$$
$$2x - 4y + 3z = b_2$$
$$x - 2y + 2z = b_3$$

has at least one solution. Then which of the folowing system (s) (in real variables) has (have) at least one solution of each $\begin{bmatrix} b_1 \\ b_2 \\ b_3 \end{bmatrix} \in S$? **[JEE Advanced-2018]**

(*a*) $x + 2y + 3z = b_1$, $4y + 5z = b_2$ and $x + 2y + 6z = b_3$

(*b*) $x + y + 3z = b_1$, $5x + 2y + 6z = b_2$ and $-2x - y - 3z = b_3$

(*c*) $-x + 2y - 5z = b_1$, $2x - 4y + 10z = b_2$ and $x - 2y + 5z = b_3$

(*d*) $x + 2y + 5z = b_1$, $2x + 3z = b_2$ and $x + 4y - 5z = b_3$

13. Let $M = \begin{bmatrix} \sin^4\theta & -1 - \sin^2\theta \\ 1 + \cos^2\theta & \cos^4\theta \end{bmatrix} = \alpha I + \beta M^{-1}$

where $\alpha = \alpha(\theta)$ and $\beta = \beta(\theta)$ are real number, and I is the 2×2 identity matrix. If

α^* is the minimum of the set $\{\alpha(\theta) : \theta \in [0, 2\pi)\}$ and

β^* is the minimum of the set $\{\beta(\theta) : \theta \in [0, 2\pi)\}$,

then the value of $\alpha^* + \beta^*$ is **[JEE Advanced-2019]**

(*a*) $-\dfrac{37}{16}$ (*b*) $-\dfrac{29}{16}$

(*c*) $-\dfrac{31}{16}$ (*d*) $-\dfrac{17}{16}$

14. Let $M = \begin{bmatrix} 0 & 1 & a \\ 1 & 2 & 3 \\ 3 & b & 1 \end{bmatrix}$ and adj $M = \begin{bmatrix} -1 & 1 & -1 \\ 8 & -6 & 2 \\ -5 & 3 & -1 \end{bmatrix}$ where a and b are real numbers. Which of the following options is are correct ? **[JEE Advanced -2019]**

(*a*) $a + b = 3$

(*b*) $\det(\operatorname{adj} M^2) = 81$

(*c*) $(\operatorname{adj} M)^{-1} + \operatorname{adj} M^{-1} = -M$

(*d*) if $M \begin{bmatrix} \alpha \\ \beta \\ \gamma \end{bmatrix} = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$, then $\alpha - \beta + \gamma = 3$

15. Let $P_1 = I = \begin{bmatrix}1&0&0\\0&1&0\\0&0&1\end{bmatrix}, P_2 = \begin{bmatrix}1&0&0\\0&0&1\\0&1&0\end{bmatrix},$

$$P_3 = \begin{bmatrix}0&1&0\\1&0&0\\0&0&1\end{bmatrix}, P_4 = \begin{bmatrix}0&1&0\\0&0&1\\1&0&0\end{bmatrix}, P_5 = \begin{bmatrix}0&0&1\\1&0&0\\0&1&0\end{bmatrix},$$

$$P_6 = \begin{bmatrix}0&0&1\\0&1&0\\1&0&0\end{bmatrix} \text{ and } X = \sum_{k=1}^{6} P_K \begin{bmatrix}2&1&3\\1&0&2\\3&2&1\end{bmatrix} P_K^T$$

[JEE Advanced -2019]

where P_K^T denotes the transpose of the matrix P_K. Then which of the following options is/are correct ?

(a) $X - 30I$ is an invertible matrix

(b) The sum of diagonal entries of X is 18

(c) If $X\begin{bmatrix}1\\1\\1\end{bmatrix} = \alpha\begin{bmatrix}1\\1\\1\end{bmatrix}$, then $\alpha = 30$

(d) X is a symmetric matrix

16. Let $x \in R$ and lat $P = \begin{bmatrix}1&1&1\\0&2&2\\0&0&3\end{bmatrix}, Q = \begin{bmatrix}2&x&x\\0&4&0\\x&x&6\end{bmatrix}$ and $R = POQ^{-1}$.

Then which of the following.options is/are correct ?

[JEE Advanced - 2019]

(a) For $x = 1$, there exists a unit vector $\alpha\hat{i} + \beta\hat{j} + \gamma\hat{k}$ for which $R\begin{bmatrix}\alpha\\\beta\\\gamma\end{bmatrix} = \begin{bmatrix}0\\0\\0\end{bmatrix}$

(b) There exists a real number x such that $PQ = QP$

(c) $\det R = \det\begin{bmatrix}2&x&x\\0&4&0\\x&x&5\end{bmatrix} + 8$, for all $x \in R$

(d) For $x = 0$, if $R\begin{bmatrix}1\\a\\b\end{bmatrix} = 6\begin{bmatrix}1\\a\\b\end{bmatrix}$, then $a + b = 5$

17. Let M be a 3×3 invertible matrix with real entries and let I denote the 3×3 identity matrix. If $M^{-1} = \text{adj}(\text{adj } M)$, then which of the following statement is/are ALWAYS TRUE ?

[JEE(Advanced) - 2020]

(a) $M = I$ (b) $\det M = I$

(c) $M^2 = I$ (d) $(\text{adj } M)^2 = I$

18. The trace of a square matrix is defined to be the sum of its diagonal entries. If A is a 2×2 matrix such that the trace of A is 3 and the trace of A^3 is -18, then the value of the determinant of A is ______ **[JEE(Advanced) - 2020]**

JEE Mains & Advanced Past Years Questions

JEE-MAIN PREVIOUS YEARS

1. (*b*)	**2.** (*c*)	**3.** (*b*)	**4.** (*c*)	**5.** (*c*)	**6.** (*a*)	**7.** (*c*)	**8.** (*d*)	**9.** (*a*)	**10.** (*d*)
11. (*c*)	**12.** (*a*)	**13.** [672]	**14.** (*b*)	**15.** (*b*)	**16.** (*b*)	**17.** (*d*)	**18.** (*c*)	**19.** [10]	**20.** (*c*)
21. (*a*)	**22.** (*d*)	**23.** (*a*)	**24.** (*c*)	**25.** (*c*)	**26.** (*c*)	**27.** (*a*)			

JEE-ADVANCED PREVIOUS YEARS

1. (*d*)	**2.** (*d*)	**3.** (*a,d*)	**4.** (*c,d*)	**5.** (*c,d*)	**6.** (*c,d*)	**7.** (*b,c*)	**8.** (*b*)	**9.** (*a,c*)	**10.** (*a*)
11. (*a*)	**12.** (*a,c,d*)	**13.** (*b*)	**14.** (*a,c,d*)	**15.** (*b,c,d*)	**16.** (*c,d*)	**17.** (*b,c,d*)	**18.** (5)		