TS EAMCET Mathematics Previous Questions with Key – Test 3

1)Let $X = \left\{ \begin{pmatrix} a & b \\ c & d \end{pmatrix} : a, b, c, d \in R \right\}$. Define $f : X \to R$ by $f(A) = \det(A)$ $\forall A \in X$. The, f is

1) one-one but not onto

2)onto but not one-one

3)one-one and onto

4)neither one-one nor onto

2)Let $x \neq 0$, $|x| < ½$ and $f(x) = 1 + 2x + 4x^3 + \ldots.$ Then $f^{-1}(x) =$

1) $\frac{x-1}{2x}$

2) $\frac{x-1}{2}$

3) $\frac{x-1}{x}$

4)1-2x

3)For all positive integers k, if the greatest divisor of $25^k + 12k - 1$ is d then $4\sqrt{d} =$

1)36

2)8

3)20

4) 24

4) If $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$ then $(A, A')' =$

1) $\begin{bmatrix} 14 & 32 & 50 \\ 32 & 122 & 194 \\ 50 & 194 & 256 \end{bmatrix}$

2) $\begin{bmatrix} 14 & 50 & 32 \\ 32 & 122 & 194 \\ 50 & 194 & 122 \end{bmatrix}$

3) $\begin{bmatrix} 14 & 32 & 50 \\ 50 & 194 & 122 \\ 32 & 122 & 77 \end{bmatrix}$

4) $\begin{bmatrix} 14 & 32 & 50 \\ 32 & 77 & 122 \\ 50 & 122 & 194 \end{bmatrix}$

5) If $\Delta_1 = \begin{vmatrix} 1 & a^2 & a^3 \\ 1 & b^2 & b^3 \\ 1 & c^2 & c^3 \end{vmatrix}$ and $\Delta_2 = \begin{vmatrix} bc & b+c & 1 \\ ca & c+a & 1 \\ ab & a+b & 1 \end{vmatrix}$ then $\frac{\Delta_1}{\Delta_2} =$

1) $ab + bc + ca$

2) abc

3) $2(ab + bc + ca)$

4) $(a + b + c)^2$

6) If $x = a, y = b, z = c$ is the solution of the system of simultaneous linear equations $x + y + z = 4,\ x - y + z = 2,\ x + 2y + 2z = 1$ then $ab + bc + ca =$

1) 0 2) -25 3) 1 4) -4

7) The common roots of the equations $z^3 + 2z^2 + 2z + 1 = 0$ and $z^{2018} + z^{2017} + 1 = 0$ satisfy the equation

1) $z^2 – z + 1 = 0$

2) $z^4 + z^2 + 1 = 0$

3) $z^6 + z^3 + 1 = 0$

4) $z^{12} + z^6 – 1 = 0$

8) The area (in sq. units) of the triangle whose vertices are the points represented by the complex numbers 0, z, $ze^{i\alpha}$ $(0 < \alpha < \pi)$ is

1) $\frac{1}{2}|z|^2$

2) $\frac{1}{2}|z|^2 \sin\alpha$

3) $\frac{1}{2}|z|^2 \sin\alpha \cos\alpha$

4) $\frac{1}{2}|z|^2 \cos\alpha$

9) If $z + \frac{1}{z} = 1$, then $\frac{(z^{20}+1)(z^{40}+1)(z^{60}+1)}{z^{60}} =$

1) -2 2) 2 3) 1 4) -1

10) If $\omega_0, \omega_1, \ldots, \omega_{n-1}$ are the n^{th} roots of unity, then $(1+ 2\omega_0)(1 + 2\omega_1)(1 + 2\omega_2) \ldots\ldots (1 + 2\omega_{n-1}) =$

1) $1 + (1-)^n 2^n$

2) $1 + 2^n$

3) $(-1)^n + 2^n$

4) $1 + (-1)^{n-1} 2^n$

11) If $k \in R$ then roots of $(x-2)(x-3) = k^2$ are always

1)real and distinct

2)real and equal

3)complex numbers

4)rational numbers

12) If $x^2 - 3ax + 14 = 0$ and $x^2 + 2ax - 16 = 0$ have a common root then $a^4 + a^2 =$

1)2

2)90

3)6

4)20

13)If $\alpha_1, \alpha_2, \ldots\alpha_n$ are the roots of $x^n + px + q$, then $(\alpha_n - \alpha_2)\ldots(\alpha_n - \alpha_{n-1}) =$

1)$n\alpha_n^{n-1} + q$

2)$\alpha_1^2 + \alpha_2^2 + \ldots + \alpha_{n-1}^2$

3) $\alpha_n^{n-1} + p$

4) $n\alpha_n^{n-1} + q$

14) All the roots of the equation $x^5 + 15x^4 + 94x^3 + 305x^2 + 507x + 353 = 0$ are increased by some real number k in order to eliminate the 4th degree term from the equation. Now, the coefficient of x in the transformed equation

1)2

2)1

3)6

4)0

15) The number of ways in which four letters can be put in four addressed envelops so that no letter goes into envelope meant for it is

1)8

2)12

3)16

4)9

16) If the integer represented by 100! Has K consecutive zeros at the end, then K =

1)24

2)36

3)64

4)28

17) If n is a positive integer and the coefficient of x^{10} in the expansion of $(1 + x)^{15}$ is equal to the coefficient of x^5 in the expansion of $(1 – x)^{-n}$, then n =

1)15 2)12 3)11 4)10

18) If $x = \frac{2.5}{3.6} - \frac{2.5.8}{3.6.9}\left(\frac{2}{5}\right) + \frac{2.5.8.11}{3.6.9.12}\left(\frac{2}{5}\right)^2 - \ldots\infty$, then $7^{2}(12x + 55)^{3} =$

1)$3^8\ 5^3$

2)$3^8\ 5^5$

3)$3^3\ 5^8$

4)$3^3\ 5^8$

19) If F_1 and F_2 are irreducible factors of $x^4 + x^2 + 1$ with real coefficients and

$\frac{x^3 - 2x^2 + 3x - 4}{x^4 + x^2 + 1} = \frac{Ax + b}{F_1} + \frac{Cx + D}{F_2}$ then $A + B + C + D =$

1)-2

2)1

3)-3

4)-4

20) The number of all the possible integral values of $n > 2$ such that $\sin\frac{\pi}{2n} + \cos\frac{\pi}{2n} = \frac{\sqrt{n}}{2}$ is

1)5

2)4

3)3

4)infinity

21) If α and β are angles in the first quadrant such that $\tan\alpha = \frac{1}{7}$ and $\sin\beta = \frac{1}{\sqrt{10}}$, then $\alpha + 2\beta =$

1)30°

2)45°

3)75°

4)90°

22) $\cos\left(\frac{\pi}{7}\right)\cos\left(\frac{2\pi}{7}\right)\cos\left(\frac{4\pi}{7}\right)$

1) $\frac{-1}{8}$

2) $\frac{1}{8}$

3) $-\frac{3\sqrt{3}}{8}$

4) 1

23) If $0<\theta\frac{\pi}{2}$, then solution of the equation sinθ - 3sin2θ + sin3θ = cosθ - 3cos2θ + cos3θ is

1) $\frac{\pi}{16}$

2) $\frac{\pi}{12}$

3) $\frac{\pi}{8}$

4) $\frac{\pi}{6}$

24) $\mathrm{Sin}^{-1}\left(\frac{12}{13}\right)+\mathrm{Cos}^{-1}\left(\frac{4}{}\right)+\mathrm{Tan}^{-1}\left(\frac{63}{}\right)=$

1) 2π

2) π

3) 0

4) $-\pi$

25) If sinhx = ¾ and coshy = $\frac{5}{3}$ then x + y =

1) log 2

2) log 6

3) log 3

4) log 5

26) In a triangle ABC, if a =5, b = 6, c = 7, then the length of the median drawn form B is

1) $2\sqrt{7}$

2) $2\sqrt{6}$

3) $\sqrt{7}$

4) $\sqrt{6}$

27) In ΔABC, if $\cot\frac{A}{2} : \cot\frac{B}{2} : \cot\frac{C}{2} = 4:3:2$, then a : b : c =

1) 2 : 3 : 4 2) 6 : 5 : 7

3) 4 : 5 : 6 4) 5 : 6 : 7

28) In ΔABC, if cos A cos B + sin A sin B sin C = 1 and C = $\frac{\pi}{2}$ then, A : B =

1) 1 : 4

2) 1 : 3

3) 1 : 2

4) 1 : 1

29) If a, b, c are distinct real numbers and P, Q, R are three points whose position vectors are respectively $a\bar{i} + b\bar{j} + c\bar{k}, b\bar{i} + c\bar{j}$ and $c\bar{i} + a\bar{j} + b\bar{k}$, then $\angle QPR$ =

1)$Cos^{-1}(a + b + c)$ 2) $\frac{\pi}{2}$

3) $\frac{\pi}{3}$ 4) $Cos^{-1}\left(\frac{a^2+b^2+c^2}{abc}\right)$

30) Let $\bar{a} = \sin^2 x\bar{i} + \cos^2 x\bar{j} + \bar{k}, (x \in R)$. If the pairs of vectors $\bar{a}, \bar{i}; \bar{a}, \bar{j}$ and $\bar{a}, \bar{k}$

Adjacent sides of 3 distinct parallelograms and A is the sum of the squares of areas of these parallelograms, then A lies in the interval

1)(0, 1)   2)[3, 4]   3)[0, 2]   4)[1, 2]

31) Assertion (A): $\bar{a}, \bar{b}, \bar{c}, \bar{d}$ are position vectors of 4 points such that $2\bar{a} - 3\bar{b} + 7\bar{c} - 6\bar{d} = \bar{0} \Rightarrow \bar{a}, \bar{b}, \bar{c}, \bar{d}$ are coplanar.

Reason(R): Vector equation of the plane passing through three points whose position vectors are $\bar{a}, \bar{b}, \bar{c}$ is

$\bar{r} = (1 - x - y)\bar{a} + x\bar{b} + y\bar{c}$.

Which of the following is true?

1)Both (A) and (R) are true and (R) is the correct explanation of (A)

2)Both (A) and (R) are true, but (R) is not the correct explanation of (A)

3)(A) is true, but (R) is false

4)(A) is false, but (R) is true

32) If $|\bar{a}| = 4, |\bar{b}| = 5, |\bar{a} - \bar{b}| = 3$ and θ is the angle between the vectors $\bar{a}$ and $\bar{b}$ then $\tan^2\theta =$

1) $\frac{4}{3}$

2) $\frac{3}{4}$

3) $\frac{16}{9}$

4) $\frac{9}{16}$

33) $\bar{e}$ is a unit vector perpendicular to the plane determined by the points $2\bar{i} + \bar{j} + \bar{k}, \bar{i} - \bar{j} + \bar{k}$ and $-\bar{i} + \bar{j} - \bar{k}$. If $\bar{a} = 2\bar{i} - 3\bar{j} + 6\bar{k}$ then the projection vector of $\bar{a}$ on $\bar{e}$ is

1) $\frac{11}{14}(-2\bar{i} + \bar{j} + 3\bar{k})$

2) $\frac{1}{3}(\bar{i} - 2\bar{j} + 2\bar{k})$

3) $\frac{1}{7}(2\bar{i} - 3\bar{j} + 6\bar{k})$

4) $\frac{1}{\sqrt{14}}(2\bar{i} - \bar{j} + 3\bar{k})$

34) If $\bar{a} = 2\bar{i} + \bar{j} - 3\bar{k}, \bar{b} = \bar{i} - 2\bar{j} + 3\bar{k}, \bar{c} = -\bar{i} + \bar{j} - 4\bar{k}$ and $\bar{d} = \bar{i} + \bar{j} + 2\bar{k}$ then $(\bar{a} \times \bar{b}) \times (\bar{c} \times \bar{d}) =$

1) $-7i + \bar{j} + 3\bar{k}$

2) $8\bar{i} - 3\bar{6} + 60\bar{k}$

3) $5\bar{i} + \bar{j} - \bar{k}$

4) $-8\bar{i} - 36\bar{j} + 12\bar{k}$

35) The mean and standard deviation of a distribution of weights of a group of 20 boys are 40 kgs and 5 kgs respectively. If two boys of weights 43 kg and 37 kg are excluded from this group, then the variance of the distribution of weights of the remaining group of boys is

1)26.18 2)5.27 3)26.78 4)5.17

36)Consider the following data

	Group I	Group II	Group III
Number of observations	50	60	90
Mean	113	120	115
Standard deviation	6	8	7

With respect to the consistencies of the above groups, the increasing order of them is

1)I, III, II

2)II, I, III

3)III, II, I

4)I, II, III

37) In a battery manufacturing factory, machines, P, Q and R manufacture 20%, 30%, and 50% respectively of the total output. The chances that a defective battery is produced by these machines are 1% 1.5% and 2% respectively. If a battery is selected as random from production then the probability that it is defective is

1) $\frac{69}{2000}$ 2) $\frac{33}{2000}$ 3) $\frac{1}{40}$ 4) $\frac{29}{2000}$

38) Supposed A and B are events of a random experiment such that $P(A)=\frac{1}{3}, P(A\cap B)=\frac{1}{5}$ and $P(A\cup B)=\frac{3}{5}$.

Then match the items of List-I with the items of List-II

List-I	List-II
a) $P\left(\frac{A}{B}\right)$	i) $\frac{2}{15}$
b) $P(\bar{B})$	ii) $\frac{4}{15}$
c) $P(A\cap\bar{B})$	iii) $\frac{8}{15}$
d) $P(B\cap\bar{A})$	iv) $\frac{2}{3}$
	v) $\frac{3}{7}$

1) a-iv, b-i, c-iii, d-ii 2) a-v, b-i, c-ii, d-iii

3) a-iv, b-ii, c-i, d-v 4) a-v, b-iii, c-i, d-ii

39) In a test, a student either guesses or copies or knows the answer multiple choice question with four choices having one correct answer. The probability that he guesses the answer is $\frac{1}{3}$ and the probability that he copies it is $\frac{1}{12}$. The probability that his answer is correct given that he copied it is $\frac{1}{6}$. The probability that he knew the answer, given that he has correctly answered it, is

1) $\frac{6}{7}$ 2) $\frac{15}{49}$ 3) $\frac{7}{12}$ 4) $\frac{10}{13}$

40) The probability that a mechanic making an error while using a machine on the n^{th} day is given by $P(E_n) = \frac{1}{2^n}$. If he has operated the machine for 4 days, the probability that he had not made a mistake on 3 out of 4 days is

1)½

2)¼

3) $\frac{243}{512}$

4) $\frac{343}{1024}$

41) If the probability of a bad reaction from a vaccination is 0.01, then the probability that exactly two out of 300 people will get bad reaction is

1) $\frac{7}{2e^3}$

2) $\frac{9}{2e^3}$

3) $\frac{7}{e^3}$

4) $\frac{9}{e^3}$

42) If A = (1, 2), B = (2, 1) and P is a variable point satisfying the condition |PA – PB| = 3, then the locus of P is

1) $8x^2 + 2xy + 8y^2 + 27x + 27y + 45 = 0$

2) $4x^2 + xy + 4y^2 – 27x - 27y + 90 = 0$

3) $3x^2 + 8xy + 32y^2 – 108x – 108y + 99 = 0$

4) $8x^2 – 2xy + 8y^2 – 27x – 27y + 45 = 0$

43) For $a \neq b \neq c$, if the lines $x + 2ay + a = 0$, $x + 3by + b = 0$ and $x + 4cy + c = 0$ are concurrent, then a, b, c are in

1) Arithmetic progression

2) Geometric progression

3) Harmonic progression

4) Arithmetico geometric progression

44) A point moves in the XY- plane such that the sum of its distances from two mutually perpendicular lines is always equal to 3. The area enclosed by the locus of the point is (in sq. units)

1) 27

2) 18

3) 9

4) $\frac{9}{2}$

45) The equations of two altitudes of an equilateral triangle are $\sqrt{3}x - y + 8 - 4\sqrt{3} = 0$ and $\sqrt{3}x + y - 12 - 4\sqrt{3} = 0$. The equation of the third altitude is

1) $\sqrt{3}x + y = 4$

2) $y = 10$

3) $x = 10$

4) $x - \sqrt{3}y = 4$

46) If P_1, P_2, P_3,..., P_n are n points on the line y = x all lying in the first quadrant, such that $(OP_n) = n(OP_{n-1})$ (O is origin), $OP_1 = 1$ and $P_n = (2520\sqrt{2}, 2520\sqrt{2})$, then n =

1)5

2)6

3)7

4)8

47) The straight line x + y + 1 = 0 bisects an angle between the pair of lines of which one is 2x + 3y – 4 = 0. Then the equation of the other line is

1)3x – 2y + 9 = 0

2)3x – 2y – 9 = 0

3)3x + 2y + 9 = 0

4)x – y 1 = 0

48) The combined equation of the pair of straight lines passing through the point of intersection of the pair of lines $x^2 + 4xy + 3y^2 - 4x - 10y + 3 = 0$ and having slops $\frac{1}{2}$ and $-\frac{1}{3}$ is

1)$x^2-y^2-8x-2y+15=0$

2)$x^2+7xy+12y^2 - x - 4y = 0$

3)$x^2 + 7xy + 10y^2 - 8y - 2 = 0$

4)$x^2 + xy - 6y^2 - 7x - 16y + 6 = 0$

49) If a circle $C_1 : x^2 + y^2 = 16$ intersects another circle C_2 with radius 5 such that the common chord is of maximum length and has a slope equal to ¾ then the centre of the circle C_2 is

1) $\left(-\frac{9}{5}, \frac{12}{5}\right)$

2) $\left(\frac{9}{5}, \frac{12}{5}\right)$

3) $\left(-\frac{5}{9}, \frac{5}{6}\right)$

4) $\left(\frac{7}{5}, \frac{12}{5}\right)$

50) The equation of the circle which touches the circle $x^2 + y^2 - 6x + 6y + 17 = 0$ externally and having the lines $x^2 - 3xy - 3x + 9y = 0$

1) $x^2 + y^2 - 2x + 5y - 1 = 0$

2) $x^2 + y^2 + 2x + 3y + 1 = 0$

3) $x^2 + y^2 - 6x - 2y + 1 = 0$

4) $x^2 + y^2 + 4x - 3y + 3 = 0$

51) Let A be the centre of the circle $x^2 - y^2 - 2x - 4y - 20 = 0$. If the tangents drawn at the points B(1, 7) and D(4, -2) on the given circle meet at the point C, then the area of the quadrilateral ABCD is

1) 60

2) 65

3) 70

4) 75

52) Let $x - 4 = 0$ be the radical axis of two circles which are intersecting orthogonally. If $x^2 + y^2 = 36$ is one of those circles, then the other circle is

1) $x^2 + y^2 - 16x + 36 = 0$

2) $x^2 + y^2 - 18x + 36 = 0$

3) $x^2 + y^2 - 18x + 24 = 0$

4) $x^2 + y^2 - 6x + 8y + 36 = 0$

53) The length of common chord of the circles

$x^2 + y^2 - 6c - 4y + 13 - c^2 = 0$

$x^2 + y^2 - 4x - 6y + 13 - c^2 = 0$

1) $\sqrt{4c^2 -}$

2) $\frac{1}{2}\sqrt{4c^2 - 2}$

3) $\sqrt{c^2 - 2}$

4) $\sqrt{4c^2 - 1}$

54) If P is (3, 1) and Q is a point on the curve $y^2 = 8x$, then the line segment PQ is

1) $4y^2 - 12x - 6y + 21$

2) $4y^2 - 16x - 4y + 25 = 0$

3) $4y^2 + 8x - 3y - 18 = 0$

4) $4y^2 - 12x + 8y - 15 = 0$

55) Let P(2, 4), Q(18-12) be the points on the parabola $y^2 = 8x$. The equation of straight line having slope ½ and passing through the point of intersection of the tangents to the parabola drawn at the points P and Q is

1) $2x - y = 1$

2) $2x - y = 2$

3) $x - 2y = 1$

4) $x - 2y = 2$

56) Let A be a vertex of the ellipse $S \equiv \frac{x^2}{4} + \frac{y^2}{9} - 1 = 0$ and F be a focus of the ellipse $S' = \frac{x^2}{9} + \frac{y^2}{4} - 1 = 0$. Let P be a point on the major axis of the ellipse s′=0, which divides OF $\overline{\text{In}}$ the ratio 2 :1 (O is the origin). If the length of the chord of the ellipse S = 0 through A and P is $\frac{3\sqrt{101}}{k}$, then k =

1) 5

2) 4

3) 7

4) 8

57) Tangents are drawn to the ellipse $\frac{x^2}{25} + \frac{y^2}{16} = 1$ at all the four ends of its latusrecta. Then the area (in square units) of the quadrilateral formed by these tangents is

1) $\frac{125}{6}$ 2) $\frac{250}{3}$

3) $\frac{80}{3}$ 4) $\frac{260}{3}$

58) The lines of the form x $\cos\phi + y \sin\phi = p$ are chords of the hyperbola $4x^2 - y^2 = 4a^2$ which subtend a right angle at the centre of the hyperbola. If these chords touch a circle with centre at (0, 0), then the radius of that circle is

1) $\frac{2a}{\sqrt{3}}$

2) $\frac{a}{\sqrt{3}}$

3) $\sqrt{2}a$

4) $\frac{a}{\sqrt{2}}$

59) Let A (3, 2, -4) and B(9, 8, -10) be two points. Let P_1 divide AB in the ratio 1 : 2 and P_2 divide AB in the ratio 2 : 1. If the point P (α, β, γ) divides P_1 P_2 in the ratio 1 : 1, the $\alpha + 2\beta + 2\gamma =$

1)1

2)2

3)3

4)4

60) If the direction cosines of the two lines satisfy the equations $l + m + n = 0$, $2lm + 2ln - mn = 0$, then the acute angle between these lines is

1) $\cos^{-1}\left(\frac{1}{3}\right)$ 2)30°

3) $\cos^{-1}\left(\frac{2}{3}\right)$ 4)60°

61) If the equation of the plane passing through the point (2, -1, 3) and perpendicular to the plane $3x - 2y + z = 9$ and $x + y + z = 9$ is $x + by + cz + d = 0$ then d =

1) $\frac{11}{3}$

2) 0

3)3

4) $\frac{1}{3}$

62) 6 $\lim_{x \to a} \frac{\sqrt{a+2x} - \sqrt{3a}}{\sqrt{x} - \sqrt{a}} =$
2
)

1) $-\frac{5}{\sqrt{3}}$

2) $-\frac{1}{\sqrt{3}}$

3) $\frac{1}{\sqrt{3}}$

4) $\frac{2}{\sqrt{3}}$

63) If a function f(x) defined by f(x)= $\begin{cases} ax + b & x \le -1 \\ 2x^2 + 2bx - \frac{a}{2}, & -1 < x < 1 \\ 7, & x \ge 1 \end{cases}$ is continuous of R then (a, b) =

1)(-22, -1) 2)(22, -3)

3)(11, -6) 4)(-11, -6)

64) The derivative of $y = (\sin x)^{x^2}$ with respect to x is

1) $(\sin x)^{x^2}\log(\sin x)$

2) $x^2(\sin)^{x^2}\log(\sin x)$

3) $2x(\sin x)^{x^2}\cos x + 2x(\sin x)^{x^2}\log(\sin x)$

4) $x^2(\sin x)^{x^2-1}\cos x + 2x(\sin x)^{x^2}\log(\sin x)$

65) If $y = \dfrac{(x+1)^2\sqrt{x-1}}{(x+4)^3 e^x}$, then $\dfrac{dy}{dx} =$

1) $\dfrac{(x+1)^3\sqrt{x-1}}{(x+4)^2 e^x}\left[\dfrac{2}{x+1} + \dfrac{1}{2(x-1)} - \dfrac{3}{x+4} - 1\right]$

2) $\dfrac{(x+1)^2\sqrt{x-1}}{(x+4)^3 e^x}\left[\dfrac{2}{x+1} + \dfrac{1}{2(x-1)} + \dfrac{3}{x+4} - 1\right]$

3) $\dfrac{(x+1)^2\sqrt{x-1}}{(x+4)^3 e^x}\left[\dfrac{2}{x+1} + \dfrac{1}{2(x-1)} - \dfrac{3}{x+4} - 1\right]$

4) $\dfrac{(x+1)\sqrt{x-1}}{(4+x)^2 e^x}\left[\dfrac{2}{x+1} + \dfrac{1}{2(x-1)} - \dfrac{3}{4+x} - 1\right]$

66) The slope of the tangent to the curve $f(x) = \tanh^{-1}(\sin x)$ at $x = \pi$ is

1)1

2)0

3)-1

4)-2

67) The approximate value of $y = (0.01)^3 + 2(1.01)^{\frac{3}{2}} + 5$ is

1) 8.26

2) 8.04

3) 8.02

4) 8.16

68) If $y = 2x$ is a tangent to the curve $y^2 = ax^3 + b$ at $(1, 2)$ then $(a, b) =$

1) $(8, 4)$

2) $\left(\frac{2}{3}, 1\right)$

3) $\left(\frac{8}{3}, \frac{4}{3}\right)$

4) $\left(\frac{8}{3}, \frac{2}{3}\right)$

69) An angle between the curves $x^2 - y^2 = 4$ and $x^2 + y^2 = 4\sqrt{2}$ is

1) $\frac{\pi}{2}$

2) $\frac{\pi}{4}$

3) $\frac{\pi}{3}$

4) $\frac{\pi}{6}$

70) Let f(x) be continuous on [0, 4], differentiable on (0, 4), f(0) = 4 and f(4) = -2. If $g(x) = \frac{f(x)}{x+2}$, then the value of $g'(c)$ for some Lagrange's $c \in (0, 4)$ is

1) $\sqrt{2}\ \mathrm{Sin}^{-1}(\sin x + \cos x) + c$

2) $\sqrt{2}\ \mathrm{Cos}^{-1}(\sin x + \cos x) + c$

3) $\sqrt{2}\ \mathrm{Cos}^{-1}(\sin x - \cos x) + c$

4) $\sqrt{2}\ \mathrm{Sin}^{-1}(\sin x - \cos x) + c$

71) $\int (\sqrt{\tan x} + \sqrt{\cot x})\,dx =$

1) $\sqrt{2}\mathrm{Sin}^{-1}(\sin x + \cos x) + c$

2) $\sqrt{2}\mathrm{Cos}^{-1}(\sin x + \cos x) + c$

3) $\sqrt{2}\mathrm{Cos}^{-1}(\sin x - \cos x) + c$

4) $\sqrt{2}\mathrm{Sin}^{-1}(\sin x - \cos x) + c$

72) $\int \frac{\square\,dx}{(2ax + x^2)^{\frac{3}{2}}} =$

1) $\frac{-1}{a^2}\frac{(x+a)}{\sqrt{2ax + x^2}} + c$

2) $\frac{-(x+a)}{\sqrt{2ax + x^2}} + c$

3) $\frac{1}{2a^2}\frac{(x+a)}{\sqrt{2ax + x^2}} +$

4) $\frac{-1}{a}\frac{(x+a)}{\sqrt{2ax + x^2}} + c$

73) If $\int \frac{2dx}{\sqrt{\cot^2 x - \tan^2 x}} = \sqrt{f(x)} + c$, then $f(x) =$

1) $\cot x$

2) $\sin 2x$

3) $\cot 2x$

4) $\tan x$

74) $\int \frac{3^x}{\sqrt{9^x - 1}} dx =$

1) $\frac{1}{\log 3} \log\left| 3^x + \sqrt{9^x - 1} \right| + c$

2) $\frac{1}{\log 3} \log\left| 3^x - \sqrt{9^x - 1} \right| + c$

3) $\frac{1}{\log 9} \log\left| 3^x - \sqrt{9^x - 1} \right| + c$

4) $\frac{1}{\log 9} \log\left| 9^x - \sqrt{9^x - 1} \right| + c$

75) If $f(x) = \int_1^x \frac{1}{2+t^4} dt$, then

1) $\frac{1}{18} \le f(2) < \frac{1}{3}$

2) $f(2) < \frac{1}{2}$ (or) $f(2) > 2$

3) $f(2) < \frac{1}{3}$

4) $f(2) > \frac{1}{3}$

76) If $I_n = \int_{\frac{\pi}{2}}^{\infty} e^{-x} \cos^n x \, dx$, then $\frac{I_{2018}}{I_{2016}} =$

1) $\frac{2018 \times 2019}{(2017)^2 + 1}$

2) $\frac{2018 \times 2017}{(2018)^2 + 1}$

3) $\frac{(2018)(2016)}{(2017)^2 + 1}$

4) $\frac{(2018)(2017)}{(2019)^2 + 1}$

77) The area bounded by the curves $y = 2x^2$, $y = \text{Max}\{x-[x], x+|x|\}$ and the lines $x = 0$, $x = 2$ (in square units), is

1) 2

2) ½

3) $\frac{1}{3}$

4) $\frac{4}{3}$

78) The differential equation corresponding to the family of curves given by $y = a + be^{2x} + ce^{-3x}$

1) $y_3 - y_2 + 6y_1 = 0$

2) $y_3 + y_2 - 6y_1 = 0$

3) $y_3 - 6y_2 - y_1 = 0$

4) $y_3 + 6y_2 - y_1 = 0$

79) The general solution of the differential equation $x^2\, ydx - (x^3 + y^3)\, dy = 0$ is

1) $y^3 = 3x^3 \log (cx)$

2) $c(x^3 - y^3) = x^2$

3) $\log y - \frac{x^3}{3y^3} = c$

4) $y^2 - x^2 = c^2 (y^2 + x^2)$

80) The general solution of the differential equation $(1 + y^2)dx = (\mathrm{Tan}^{-1} y - x)dy$ is

1) $2xe^{\mathrm{Tan}^{-1}y} = e^{2\mathrm{Tan}^{-1}y} + c$

2) $xy + \mathrm{Tan}^{-1}y = c$

3) $2\mathrm{Tan}^{-1}y = (y^2 - 1)x + c$

4) $xe^{\mathrm{Tan}^{-1}} = e^{\mathrm{Tan}^{-1}}(\mathrm{Tan}^{-1}y - 1) + c$

TS EAMCET test paper Key

1	2	41	2
2	1	42	3
3	4	43	3
4	4	44	2
5	1	45	2
6	2	46	3
7	2	47	3
8	2	48	4
9	2	49	1
10	4	50	3
11	1	51	4
12	2	52	2
13	4	53	1
14	4	54	2
15	4	55	4
16	1	56	3
17	3	57	2
18	4	58	1
19	3	59	2
20	3	60	4
21	2	61	1
22	1	62	4
23	3	63	1
24	2	64	4
25	2	65	3
26	1	66	3
27	4	67	1
28	4	68	3
29	3	69	2
30	2	70	4
31	1	71	4
32	4	72	1
33	1	73	3
34	2	74	1
35	3	75	1
36	1	76	2
37	2	77	1
38	4	78	2
39	1	79	3
40	3	80	4