AP EAMCET Mathematics Previous Questions with Key – Test 8

1)If f: A → B and g: B → C are two functions such that gof: A → C is a bijection, then which one of the following is always true?

1)f and g are bijections

2)f is an injection and g is a surjection

3)f is a surjection and g is an injection

4)f is a bijection but g is not a bijection

2) If f: R → R is such that f(x + y) = f(x) + f(y) for all x, y ∈ R, f(1) = 7 and $\sum_{r=1}^{n} f(r) = 14112$, then n =

1)9

2)13

3)63

4)62

3)If $\left(1+\frac{3}{1}\right)\left(1+\frac{5}{4}\right)\left(1+\frac{7}{9}\right).....\left(1+\frac{2n+1}{n^2}\right)=121$, then n =

1)11

2)10

3)9

4)8

4)The values of t such that the matrix $\begin{pmatrix} 1 & 3 & 2 \\ 2 & 5 & t \\ 4 & 7-t & -6 \end{pmatrix}$ has no inverse, are

1)3, 2

2)3, -2

3)-3, 2

4)-3, -2

5)If the point p(α, β, γ) lies on the plane 2x + y + z = 1 and $[\alpha\ \beta\ \gamma]\begin{pmatrix} 1 & 9 & 1 \\ 8 & 2 & 1 \\ 7 & 3 & 1 \end{pmatrix} = [0\quad 0\quad 0]$, than

$\alpha^2 + \beta^2 + \gamma^2 =$

1)34

2)43

3)68

4)86

6)If the system of linear equations given by x + y + z = 3, 2x + 2y - z = 3, x + y – z = 1 is consistent and if (x_0, y_0, z_0) is a solution, then $2x_0 + 2y_0 + z_0 =$

1)0

2)5

3)7

4)6

7)If $z = \frac{\sqrt{3}+i}{2}$ then $\left(z^{101} + i^{103}\right)^{105} =$

1)z

2)z^2

3)z^3

4)-z

8)If $u + iv = \frac{3i}{x+iy+2}$, then y =

1)$\frac{9u}{u^2+v^2}$

2)$\frac{3u}{u^2+v^2}$

3)$\frac{6u}{u^2+v^2}$

4)$\frac{12u}{u^2+v^2}$

9)Let A(3 - i), B(2 + i) be two points in the Argand plane. If the point P represents the complex number z = x + iy, which satisfies |z – 3 + i| = |z - 2 - i |, then the locus of the points P is

1)the circle with AB as diameter

2)the line passing through A and B

3)the perpendicular bisector of AB

4)the ellipse with AB as major axis

10)If $a = \cos\left(\frac{8\pi}{11}\right) + i\sin\left(\frac{8\pi}{11}\right)$, then Re $(a + a^2 + a^3 + a^4 + a^5) =$

1)0

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

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

4)1

11)Let a, b and c be three positive real numbers such that the sum of any two of them is greater than third. All the values of λ such that the roots of the equation $x^2 + 2(a + b + c)x + 3\lambda(ab + bc + ca) = 0$ are real, are given by

1) $\lambda < \frac{2}{3}$ 2) $\lambda \geq \frac{2}{3}$ 3) $\lambda < \frac{4}{3}$ 4) $\frac{1}{3} < \lambda < \frac{2}{3}$

12)Let $f(x) = (x-a)(x-b) - \left(\frac{a+b}{2}\right)$. If f(x) = 0 has both non-negative roots, then the minimum value of f(x)

1) $= \left(\frac{a+b}{4}\right)$ 2) $\geq \frac{(a+b)^2}{4}$

3) $\geq \frac{-(a+b)^2}{4}$ 4) $\leq \frac{-(a+b)^2}{4}$

13)If a, b and c are the roots of $x^3 + 4x + 1 = 0$, then $\frac{1}{a+b}+\frac{1}{b+c}+\frac{1}{c+a}=$

1)2

2)3

3)4

4)-4

14)If the sum of any two roots of the equation $x^3 + px^2 + qx + r = 0$ is zero, then

1)r = pq

2)$pq^2 = r$

3)$r^2 = pq$

4)pqr = 1

15)Let S = {0, 1, 2, 3, …, 100}. The number of ways of selecting $x, y \in S$ such that $x \neq y$ and x + y = 100 is

1)51

2)40

3)50

4)100

16)If all the seven letters of the word LEADING are permuted in all possible ways and the words thus formed are arranged as in the dictionary order, then the word in 2017^{th} place is

1)ELIGDAN

2)ELNADGI

3)ELINADG

4)ELNDAGI

17)From a group of 10 men and 8 women, the number of ways of forming a committee of 8 members with not more than 5 men and not less than 5 women is

1)8061 2)8060 3)20997 4)20952

18)The number of rational terms in the expansion of $\left(3^{\frac{1}{4}}+7^{\frac{1}{6}}\right)^{144}$ is

1)33

2)23

3)12

4)13

19)$\frac{1}{4}-\frac{5}{4.8}+\frac{5.7}{4.8.12}-.....=$

1)$\frac{3\sqrt{3}-2\sqrt{5}}{9\sqrt{3}}$

2)$\frac{2\sqrt{3}-3\sqrt{2}}{9\sqrt{3}}$

3)$\frac{3\sqrt{3}-2\sqrt{2}}{9\sqrt{3}}$

4)$\frac{2\sqrt{3}-3\sqrt{5}}{9\sqrt{3}}$

20)If $\frac{x^3}{(2x-1)(x-1)^2}=A+\frac{B}{2x-1}+\frac{C}{x-1}+\frac{D}{(x-1)^2}$, then 2A – 3B + 4C + 5D =

1)$\frac{21}{2}$ 2)$\frac{23}{2}$ 3)$\frac{17}{2}$ 4)$\frac{19}{2}$

21)The maximum and minimum values of the function f:R $\to$ R defined by

$f(x)=5\cos x+3\cos\left(x+\frac{\pi}{3}\right)+8$ for all x $\in$ R, are respectively

1)15, 1

2)8, -8

3)-7, -15

4)1, -15

22)If A ={x ∈ [0, 2π]/tanx – $\tan^2$ x > 0} and $B=\left\{x\in[0.2\pi]\big/|\sin x|<\frac{1}{2}\right\}$, than A ∩ B =

1)$\left(0,\frac{\pi}{6}\right)\cup\left(\pi,\frac{7\pi}{6}\right)$

2)$\left(0,\frac{\pi}{4}\right)\cup\left(\pi,\frac{7\pi}{6}\right)$

3)$\left(0,\frac{\pi}{6}\right)\cup\left(\frac{5\pi}{6},\frac{7\pi}{6}\right)$

4)$\left(\frac{\pi}{6},\frac{7\pi}{6}\right)$

23)The number of solutions of the equation 4cos2θ.cos3θ = sec θ, when 0 < θ < π, is

1)2

2)4

3)6

4)8

24)If $\cos^{-1}\left(\frac{x}{2}\right)+\cos^{-1}\left(\frac{y}{3}\right)=\theta$, then $9x^2 - 12xy\cos\theta + 4y^2$ =

1)$36\sin^2\theta$ 2)$37\sin^2\theta$ 3)$39\sin^2\theta$ 4)$36\cos^2\theta$

25)If $x=\log_e\left[\cot\left(\frac{\pi}{4}+\theta\right)\right]$ and $\theta\in\left(\frac{-\pi}{4},\frac{\pi}{4}\right)$, then consider the following statements:

I: coshx = sec 2θ

II: sinhx = -tan 2θ

Then which one of the following options is true?

1)I is true and II is false

2)I is false and II is true

3)Both I and II are true

4)Both I and II are false

26)In ΔABC if a = 2, b = √6 and c = √3 + 1, then $\sin^2 C - \sin^2 A$ =

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

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

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

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

27)In ΔABC, $a^3.\cos(B - C) + b^3.\cos(C - A) + c^3.\cos(A - B)$ =

1)a b c

2)a + b + c

3)2 abc

4)3 abc

28)In ΔABC, $\frac{r_1 - r}{a} + \frac{r_2 - r}{b} + \frac{r_3 - r}{c} =$

1) $\frac{r_1 + r_2 + r_3}{s}$ 2) $\frac{r_1 + r_2 + r_3}{2s}$ 3) $\frac{r_1 + r_2 + r_3}{2}$ 4) $\frac{r_1 + r_2 + r_3}{3s}$

29) $\bar{a}, \bar{b}, \bar{c}$ are three vectors such that $|\bar{a}| = 3, |\bar{b}| = 5, |\bar{c}| = 7$. If $\bar{a}, \bar{b}, \bar{c}$ perpendicular to the vectors $\bar{b}+\bar{c},\ \bar{c}+\bar{a},\ \bar{a}+\bar{b}$ respectively, then $\sqrt{(\bar{a}+\bar{b}+\bar{c})^2 - 2} =$

1)15 2)9 3)22 4)25

30)If $\bar{a}, \bar{b}, \bar{c}$ are non coplanar vectors, then the point of intersection of the line passing through the points $2\bar{a}+3\bar{b}-\bar{c}$, $3\bar{a}+4\bar{b}-2\bar{c}$ with the line joining the points $\bar{a}-2\bar{b}+3\bar{c}$, $\bar{a}-6\bar{b}+6\bar{c}$ is

1) $\bar{a}+\bar{b}+\bar{c}$

2) $\bar{a}+2\bar{b}$

3) $\bar{a}+\bar{c}$

4) $\frac{\bar{a}+2\bar{b}+\bar{c}}{2}$

31)If $\bar{a},\bar{b},\bar{c}$ are unit vectors and the maximum value of $|\bar{a}-\bar{b}|^2+|\bar{b}-\bar{c}|^2+|\bar{c}-\bar{a}|^2$ is k, then,

$k\left(2\bar{a}^2+3\bar{b}^2-4\bar{c}^2\right)=$

1)6

2)8

3)9

4)12

32)Let $\bar{a}=2\bar{i}+\bar{j}-2\bar{k}$ and $\bar{b}=\bar{i}+\bar{j}$ be two vectors. $\bar{c}$ is a vector such that $\bar{a}.\bar{c}=|\bar{c}|$ and $|\bar{c}-\bar{a}|=2\sqrt{2}$. If the angle between $\bar{a}\times\bar{b}$ and $\bar{c}$ is 30°, then $|(\bar{a}\times\bar{b})\times\bar{c}|$ is equal to

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

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

3)2

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

33)If $\bar{a}=\bar{i}+\bar{j}+\bar{k},\bar{b}=2\bar{i}-\bar{j}+3\bar{k}$ and $\bar{c}=\bar{i}-\bar{j}$ and if $6\bar{i}+2\bar{j}+3\bar{k}=\lambda_1(\bar{a}\times\bar{b})+\lambda_2(\bar{b}\times\bar{c})+\lambda_3(\bar{c}\times\bar{a})$, than $(\lambda_1,\lambda_2,\lambda_3)=$

1)$\left(\frac{11}{5},\frac{4}{5},\frac{19}{5}\right)$ 2)$\left(\frac{4}{5},\frac{11}{5},\frac{19}{5}\right)$ 3)$\left(\frac{4}{5},\frac{19}{5},\frac{11}{5}\right)$ 4)$\left(\frac{19}{5},\frac{11}{5},\frac{4}{5}\right)$

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

1)$5\sqrt{114}$

2)$5\sqrt{94}$

3)$5\sqrt{124}$

4)$5\sqrt{104}$

35)The standard deviation of the numbers 22, 26, 28, 20, 24, 30 is

1)2

2)2.4

3)3.24

4)3.42

36)The marks obtained by students A and B in 3 examinations are given below

Marks of A	30	20	40
Marks of B	70	0	5

The ratio of the coefficient of variation of marks of A and the coefficient of variation of marks of B is

1)3 : 1

2)$5 : 8\sqrt{3}$

3)1 : 3

4)$5 : 3\sqrt{61}$

37)If a number is chosen at random from out of the digited numbers formed by using the digits 0, 1, 2, 3, 4, 6 without repetition, then the probability that it is divisible by 4, is

1)$\frac{17}{100}$ 2)$\frac{17}{50}$ 3)$\frac{13}{50}$ 4)$\frac{13}{25}$

38)Four cards are drawn at random from a pack of playing cards. The probability of getting exactly two cards from the same suit and the remaining two cards from two different suits is

1)$\frac{72\times169}{425\times49}$ 2)$\frac{24\times169}{425\times49}$

3)$\frac{18\times169}{425\times49}$ 4)$\frac{6\times169}{425\times49}$

39)A random variable X has the following probability distribution

$X=x_i$	-2	-1	0	1	2
$P(X=x_i)$	$\frac{1}{6}$	k	$\frac{1}{4}$	k	$\frac{1}{6}$

The variance of this random variable is

1)0

2)$\frac{5}{24}$

3)$\frac{3}{24}$

4)$\frac{7}{4}$

40)For a binomial variate X with parameters n = 5 and $p = \frac{3}{4}$, if $\alpha = \frac{1}{9}P(X \geq 3)$ and β = P(X ≤ 2), then 256 (β - α)

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

41)Let A, B and C be three points in a plane. The locus of a points P moving such that $PA^2 + PB^2 = 2PC^2$ is a

1)Straight line 2)Pair of straight lines

3)Circle 4)Parabola

42)When the coordinate axes are rotated by an angle $Tan^{-1}\left(\frac{3}{4}\right)$ about the origin, then the equation $x^2 + y^2 = 9$ is transformed to the equation

1)$x^2 - y^2 = 9$

2)$x^2 + y^2 + 2xy = 4$

3)$x^2 + y^2 = 9$

4)$x^2 - y^2 + 9 = 0$

43)Let a, b and c be distinct and none of them is equal to 1. If the lines x + ay + a = 0, bx + y + b = 0 and cx + cy + 1 = 0 are concurrent, then the value of $\frac{a}{a-1}+\frac{b}{b-1}+\frac{c}{c-1}$ is

1)1

2)-1

3)2

4)0

44)If ad – bc ≠ 0, then the area (in sq. units) of the parallelogram formed by the lines ax + by + 2 = 0, ax + by + 5 = 0, cx + dy + 3 = 0 and cx + dy + 7 = 0 is

1)$\frac{1}{|ad-bc|}$

2)$\frac{5}{|ad-bc|}$

3)$\frac{7}{|ad-bc|}$

4)$\frac{12}{|ad-bc|}$

45)The circumcentre of the triangle with vertices at (-2, 3), (1, -2) and (2, 1) is

1)$\left(\frac{6}{7},\frac{2}{7}\right)$ 2)$\left(-\frac{6}{7},\frac{2}{7}\right)$ 3)$\left(\frac{6}{7},-\frac{2}{7}\right)$ 4)$\left(-\frac{6}{7},-\frac{2}{7}\right)$

46)If the straight line 2x + 3y + 1 = 0 bisects the angle between a pair of lines, one of which in this pair is 3x + 2y + 4 = 0, then the equation of the other line in that pair of lines is

1)3x + 4y – 9 = 0

2)6x – 7y – 14 = 0

3)9x + 46y – 28 = 0

4)9x – 23y – 12 = 0

47)The area (in sq. units) of the triangle formed by the straight line x + y = 3 and the angular bisectors of the pair of straight lines $x^2 - y^2 + 2y = 1$, is

1)1 2)2 3)3 4)6

48)The product of the lengths of the perpendiculars drawn from the point (-1, 5) to the pair of lines $2x^2 - xy - 3y^2 + 6x + y + 4 = 0$ is

1)$\frac{68}{\sqrt{2}}$

2)$\frac{68}{\sqrt{26}}$

3)$\frac{65}{\sqrt{2}}$

4)$\frac{65}{\sqrt{26}}$

49)ABCD is a square with side 16 units and A is the origin. If the equation of the circle circumscribing the square ABCD is $x^2 + y^2 = 4k(x + y)$, then k =

1)2

2)4

3)16

4)64

50)If $P(x_1, y_1)$ is a point such that the lengths of the tangents from it to the circles $x^2 + y^2 - 4x - 6y - 12 = 0$ and $x^2 + y^2 + 6x + 18y + 26 = 0$ are in the ratio 2 : 3, then the locus of P is

1)$x^2 + y^2 + 24x - 36y + 62 = 0$

2)$x^2 + y^2 - 24x + 36y + 62 = 0$

3)$x^2 + y^2 - 24x - 54y - 88 = 0$

4)$x^2 + y^2 + 24x + 36y + 62 = 0$

51)If the line $2x + y + 12 = 0$, $kx - 3y - 10 = 0$ are conjugate with respect to the circle $x^2 + y^2 - 4x + 3y - 1 = 0$, then k =

1)4

2)-9

3)-3

4)-5

52)The length of the transverse common tangent of the circles $x^2 + y^2 - 2x + 4y + 4 = 0$ and $x^2 + y^2 + 4x - 2y + 1 = 0$ is

1) $\sqrt{3}$ 2) $\sqrt{17}$ 3) $\sqrt{15}$ 4)3

53)If the angle between the circles $x^2 + y^2 - 12x - 6y + 41 = 0$ and $x^2 + y^2 + kx + 6y - 59 = 0$ is 45°, then a value of k is

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

54)If The lengths of the tangents drawn from a point P to the three circles $x^2 + y^2 - 4 = 0$, $x^2 + y^2 - 2x + 3y = 0$ and $x^2 + y^2 + 7y - 18 = 0$ are equal, then the coordinates of P are

1)(2, 5)

2)(3, 4)

3)(4, 3)

4)(5, 2)

55)For the parabola $y^2 + 6y - 2x + 5 = 0$, match the items in List-I with the suitable item in List-II given below:

List – I	List – II
I) Vertex	A) $\left(-\frac{3}{2}, -3\right)$
II) Focus	B) $\left(\frac{3}{2}, -3\right)$
III) Equation of the directrix	C) $2x + 5 = 0$
IV) Equation of the axis	D) $2x + y + 3 = 0$
	E) $y + 3 = 0$
	F) (-2, -3)

The correct matching is

1)I – F; II – A; III- E; IV: C

2)I – F; II – A; III- C; IV: E

3)I – A; II – B; III- C; IV: D

4)I – F; II – A; III- C; IV: D

56)If 5x – 2y + k = 0 is a tangent to the parabola $y^2 = 6x$, then their point of contact is

1) $\left(\frac{6}{5},\frac{6}{5}\right)$

2) $\left(\frac{6}{5},\frac{6}{25}\right)$

3) $\left(\frac{6}{25},\frac{6}{5}\right)$

4) $\left(\frac{6}{25},\frac{6}{25}\right)$

57)If S and S′ are the foci of an ellipse, B is one end of the minor axis and $\angle SBS' = 90°$, then the eccentricity of that ellipse is

1) $\frac{\sqrt{3}}{2}$ 2) $\frac{\sqrt{7}}{4}$ 3) $\frac{1}{\sqrt{2}}$ 4) $\frac{1}{2}$

58)The points of intersection of the perpendicular tangents drawn to the ellipse $4x^2 + 9y^2 = 36$ lie on the curve

1) $x^2 + y^2 = 13$

2) $x^2 - y^2 = 5$

3) $x + y = 5$

4) $\frac{x^2}{9}+\frac{y^2}{4}=1$

59)If the eccentricity of a hyperbola is $\frac{5}{3}$, then the eccentricity of its conjugate hyperbola is

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

2) $\frac{5}{4}$

3) $\frac{5}{2}$

4) $\frac{8}{5}$

60)If the vertices of a ΔABC are A= (2, 3, 5), B= (-1, 3, 2), C= (3, 5, -2), then the area of the ΔABC (in sq. units) is

1) $6\sqrt{2}$ 2) $8\sqrt{3}$ 3) $9\sqrt{2}$ 4) $8\sqrt{2}$

61)If a line makes angles $Tan^{-1}\sqrt{7}, Tan^{-1}\frac{\sqrt{5}}{\sqrt{3}}$ with X-axis, Y-axis respectively, then the angle made by it with Z-axis is

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

2) $\frac{\pi}{6}$ or $\frac{5\pi}{6}$

3) $\frac{\pi}{3}$ or $\frac{2\pi}{3}$

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

62)A plane passes through the point (3, 5, 7). If the direction ratios of its normal are equal to the intercepts made by the plane x + 3y + 2z = 9 with the coordinate axes, then the equation of that plane is

1)x + y + z = 5 2)6x + 2y + 3z = 105

3)12x + 4y + 6z = 49 4)6x + 2y + 3z = 49

63) If f: [0, 2) → R is defined by f(x) = $\begin{cases} 1+\frac{2x}{k} & , for\ 0 \le x < 1 \\ kx & , for\ 1 \le x < 2 \end{cases}$

Where K > 0, and f is such that $\lim_{x\to 1^-} f(x) = \lim_{x\to 1^+} f(x)$, then the value of k^2 is

1)2

2)1

3)4

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

64)If the function f: R → R defined by f(x) = $\begin{cases} \dfrac{\sin(a+1)x+\sin x}{x} & , x\le 0 \\ b & , x=1 \\ \dfrac{\sqrt{x+x^2}-\sqrt{x}}{x^{3/2}} & , x>0 \end{cases}$

Is continuous on R, then a + b =

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

65)Let f be defined on D = R – {-1, 1} by $f(x)=\dfrac{|x|}{1-|x|}$, Then

1)f is differentiable on D

2)f is differentiable on D except at x = 0

3)f is continuous but not differentiable on D

4)f is differentiable but not continuous on D

66)If x = sec θ – cos θ, y = $\sec^n$ θ – $\cos^n$ θ then $\dfrac{dy}{dx}=$

1)$\sqrt{\dfrac{y^2+4}{x^2+4}}$ 2)$n\sqrt{\dfrac{y^2+4}{x^2+4}}$ 3)$\sqrt{\dfrac{x^2+4}{y^2+4}}$ 4)$n\sqrt{\dfrac{x^2+4}{y^2+4}}$

67)If y = a sinx + (5 + 2x) cos x, then y″ + y =

1)4 cos x

2)-4 cos x

3)4 sin x

4)-4 sin x

68)The area (in sq. units) of the triangle formed by the tangent and the normal at the point $\left(\dfrac{a}{\sqrt{2}},\dfrac{b}{\sqrt{2}}\right)$ to the curve $\dfrac{x^2}{a^2}+\dfrac{y^2}{b^2}=1$ and the X-axis is

1)$\dfrac{a}{b}\left(a^2+b^2\right)$ 2)4ab

3)$\dfrac{b}{4a}\left(a^2+b^2\right)$ 4)2ab

69)The interval in which the function f(x) = $2x^2$ – logx, for x > 0 decreases, is

1)(2, 4)

2)$\left(0, \frac{1}{4}\right)$

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

4)$\left(0, \frac{1}{2}\right)$

70)If f(x) = (x - 1) (x - 2) (x - 3) for x ∈ [0, 4], then the value of c ∈ (0, 4) satisfying Lagrange's mean value theorem, is

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

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

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

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

71)The cure f(x)= e^x sinx is defined in the interval [0, 2π]. The value of x for which the slope of the tangent drawn to the curve at x is maximum, is

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

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

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

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

72) $\int \frac{x-1}{(x+1)\sqrt{x(x^2+x+1)}}dx =$

1) $Tan^{-1}\left(\frac{\sqrt{x^2+x+1}}{x}\right)+c$

2) $2.Tan^{-1}\left(\frac{x^2+x+1}{x}\right)+c$

3) $Tan^{-1}\left(\frac{x^2+x+1}{x}\right)+c$

4) $2.Tan^{-1}\left(\sqrt{x+\frac{1}{x}+1}\right)+c$

73) $\int \frac{\cos^3 x+\cos^5 x}{\sin^2 x+\sin^4 x}\,dx=$

1) $\sin x - 6Tan^{-1}(\sin x) + c$

2) $\sin x - 2(\sin x)^{-1} + c$

3) $\sin x - 2(\sin x)^{-1} - 6Tan^{-1}(\sin x) + c$

4) $\sin x - 2(\sin x)^{-1} + 5Tan^{-1}(\sin x) + c$

74) $\int \frac{dx}{\tan x+\cot x+\sec x+\text{cosec}\, x}=$

1) $\frac{1}{2}(\sin x-\cos x+x)+c$

2) $\frac{1}{2}(\sin x-\cos x-\tan x+\cot x)+c$

3) $\frac{1}{2}(\sin x-\cos x-x)+c$

4) $\frac{1}{2}(\sin x+\cos x-\tan x-\cot x)+c$

75) If $f(x)=\int \text{cosec}^5 x\,dx$, then $f\left(\frac{\pi}{4}\right)=$

1) $-\frac{1}{4}\left[3\sqrt{2}-5\log\left(\sqrt{2}+1\right)\right]+c$

2) $-\frac{1}{8}\left[5\sqrt{2}-3\log\left(\sqrt{2}+1\right)\right]+c$

3) $-\frac{1}{8}\left[7\sqrt{2}+3\log\left(\sqrt{2}+1\right)\right]+c$

4) $\frac{1}{8}\left[5\sqrt{2}+\log\left(\sqrt{2}+1\right)\right]+c$

76)If a and b are positive integers such that b > a, then $\lim_{n\to\infty}\left[\frac{1}{na}+\frac{1}{na+1}+\frac{1}{na+2}+...+\frac{1}{nb}\right]=$

1) $\log\left(\frac{b}{a}\right)$

2) $\log\left(\frac{a}{b}\right)$

3)log(ab)

4)log(a + b)

77) $\int_0^{\pi}\frac{x\tan x}{\sec x+\tan x}dx=$

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

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

3) $\frac{\pi(\pi+2)}{2}$

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

78)The area (in sq. units) of the region lying in the first quadrant and enclosed by the X-axis, the straight line x -√3 y = 0 and the circle $x^2 + y^2 = 4$, is

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

79)If l and m are the degree and the order respectively of the differential equation of the family of all circles in the XY plane with radius 5 units, then 2l + 3m =

1)5

2)10

3)15

4)7

80)If $-\frac{\pi}{4} < x < \frac{\pi}{4}$**, then the general solution of the differential equation**

$\cos^2 x.\frac{dy}{dx} - (\tan 2x)y = \cos^4 x$ **is**

1) $y = \frac{1}{2}\left[\frac{\tan 2x + c}{1 - \tan^2 x}\right]$

2) $y = \frac{1}{2}\left[\frac{\cos 2x + c}{1 - \tan^2 x}\right]$

3) $y = \frac{1}{2}\left[\frac{\sin 2x + c}{1 - \tan^2 x}\right]$

4) $y = \frac{1}{2}\left[\frac{\sin x + c}{1 - \tan^2 x}\right]$

SAKSHI EDUCATION
Educating, Enlightening & Ennobling!

APEAMCET-2018 --- Engineering Stream
Final Key
Date: 23-04-18 FN (Shift 1)

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