TS EAMCET Mathematics Previous Questions with Key – Test 5

1)If $f:[0, \infty) \rightarrow [0, \infty)$ is defined by $f(x) = \frac{x}{1+x}$, then f is

1)neither one-one not onto

2)one-one but not onto

3)onto but not one-one

4)both one-one and onto

2)The range of the function $f(x) = -\sqrt{-x^2-6x-5}$ is

1)[-2, 0]

2)[0, 2]

3)(-∞, -2]

4)[-2, 2]

3)If $A = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$, then for all $n \in N$

1)$A^n = nA$

2)$A^n = nA + (n-1)I$

3)$A^n = (n-1)A - nI$

4)$A^n = nA-(n-1)I$

4)The rank of the matrix $\begin{bmatrix} 3 & 2 & 1 & -4 \\ 2 & 3 & 0 & -1 \\ 1 & -6 & 3 & -8 \end{bmatrix}$ is

1)1

2)2

3)3

4)4

5)Let, A, B, C be 3 × 3 non – singular matrices and I be the identity matrix of order three. If $ABA = BA^2 B$ and $A^3 = I$, then $AB^4 - B^4A =$

1)$O_{3\times3}$ 2) $\frac{I}{2}$ 3)I 4)2I

6)If the system of equations

$x + y + 2z = 3$

$x + 2y + 3z = 4$

$x + cy + 2cz = 5$

1)c=1

2)c = 3

3)$c \in R$

4)$c \neq 1$

7)If z = x + iy is a complex number satisfying $\left|\frac{z-2i}{z+2i}\right|$=2 and the locus of z is a circle then its radius is

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

2) $\sqrt{\frac{71}{9}}$

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

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

8)If $(x-iy)^{\frac{1}{3}}$=a + ib, then $\frac{ax-by}{a-b}$ =

1)$a^3 - b^3$

2)$a^3 + a^2b + ab^2 + b^3$

3)$a^3 + 3a^2b + 3ab^2 + b^3$

4)$a^4 - b^4$

9)If z= x + iy is a complex number and |1 + iz| = |1 = iz|, then

1)Re(z) > 0

2)|z| = 1

3) $z = \bar{z}$

4) $z = -\bar{z}$

10)The sum of the least positive arguments of the distinct cube roots of the complex number (1-i√3) is

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

2) $\frac{17\pi}{3}$

3) $\frac{23\pi}{3}$

4) $\frac{11\pi}{3}$

11)Let R-(α, β) be the range of $\frac{x+3}{(x-1)(x+2)}$. Then the sum of the intercepts of the line αx + βy + 1 = 0

1)-8

2)10

3)8

4)-10

12)If α, β are the roots of the equation $x^2 + 5x + 2 = 0$ then $\left(\frac{\alpha}{2+5\alpha}\right)^2+\left(\frac{\beta}{2+5\beta}\right)^2 =$

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

13)If the roots of $x^4 - 10x^3 + 37x^2 - 60x + 36 = 0$ are α, α, β, β (α < β), then 2α + 3β - 2αβ =

1)1

2)0

3)-1

4)4

14)The polynomial equation of degree 5 whose roots are the translates of the roots of $x^5 - 2x^4 + 3x^3 - 4x^3 - 4x^2 + 5x - 6 = 0$ by -2 is

1)$x^5 - 8x^4 + 27x^3 + 46x^2 + 41x + 12 = 0$ 2)$x^5 + 8x^4 + 27x^3 + 46x^2 + 41x + 12 = 0$

3)$x^5 + 6x^4 + 28x^3 + 46x^2 + 41x + 12 = 0$ 4)$x^5 + 8x^4 + 28x^3 + 46x^2 + 41x + 12 = 0$

15)The number of natural numbers less than 1000 in which no digit is repeated is

1)729 2)738 3)792 4)836

16)The coefficient of x^3 in the expansion of $\frac{1-2x}{(2x+1)(2-x)}$ is

1)$-\frac{509}{80}$ 2)$\frac{509}{80}$ 3)$-\frac{103}{16}$ 4)$\frac{103}{16}$

17)If the coefficient of r^{th}, $(r + 1)^{th}$ and $(r + 2)^{th}$ terms in the expansion of $(1 + x)^n$ are respectively in the ratio 2 : 4 : 5, then (r, n) =

1)(2, 7)

2)(3, 8)

3)(3, 9)

4)(4, 9)

18)If n is a positive integer greater than 1 then,

$3(^nC_0)-8(^nC_1)+13(^nC_2)-18(^nC_3)+\ldots$ Upto (n + 1) terms =

1)-5

2)$\frac{2^{n+1}-1}{n}$

3)$\frac{2^n-1}{2}$

4)0

19)$\frac{3x-2}{(x+1)^2(x+3)}=\frac{A}{x+1}+\frac{B}{(x+1)^2}+\frac{C}{x+3}$, then A + B + C =

1)$\frac{11}{4}$

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

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

4)$-\frac{11}{4}$

20)If $\sin\theta + \sin^2\theta = 1$ and $\cos^{12}\theta + a\cos^{10}\theta + b\cos^8\theta + c\cos^6\theta + d = 0$ then

1)ab = cd

2)ac = bd

3)ab + cd = 0

4)ac + bd = 0

21) $\cos 20^\circ \cos 40^\circ \cos 60^\circ \cos 80^\circ =$

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

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

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

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

22) If $A + B + C = \frac{\pi}{4}$, then $4 \cos \frac{A}{2} \cos \frac{C}{2} - \cos \frac{\pi}{8} =$

1) $\cos\left(\frac{\pi}{4} - A\right) + \cos\left(\frac{\pi}{4} - B\right) + \cos\left(\frac{\pi}{4} - C\right)$

2) $\cos\left(\frac{\pi}{8} - A\right) + \cos\left(\frac{\pi}{8} - B\right) + \cos\left(\frac{\pi}{8} - C\right)$

3) $\sin\left(\frac{\pi}{4} - A\right) + \sin\left(\frac{\pi}{4} - B\right) + \sin\left(\frac{\pi}{4} - C\right)$

4) $\sin\left(\frac{\pi}{8} - A\right) + \sin\left(\frac{\pi}{8} - B\right) + \sin\left(\frac{\pi}{8} - C\right)$

23) Let $A = \{x \in R / |\sqrt{3} \cos x - \sin x| \geq 2, 0 \leq x \leq 2\pi\}$. If $x_1 \in A$, $x_2 \in A$ then $\frac{x_1}{x_2} =$

1) $\frac{5}{23}$

2) $\frac{11}{17}$

3) $\frac{5}{11}$

4) $\frac{11}{23}$

24)All the value of x satisfying the equation $2\ \text{Tan}^{-1} 2x = \text{Sin}^{-1}\left(\frac{4x}{1+4x^2}\right)$ lie in the interval

1)[-½, ½]

2)[-1, 1]

3)[½, ∞)

4)(-∞, -½]

25)$\sinh^{-1} 2 + \cosh^{-1} 2 - \tanh^{-1}\frac{2}{3} + \coth^{-1}(-2) =$

1) $\log\left(\frac{4+2\sqrt{3}+2\sqrt{5}+\sqrt{15}}{\sqrt{15}}\right)$

2) $\log\left(\frac{4+2\sqrt{3}+\sqrt{5}+\sqrt{15}}{\sqrt{15}}\right)$

3) $\log\left(\frac{(2+\sqrt{3})(2+\sqrt{5})\sqrt{5}}{\sqrt{3}}\right)$

4) $\log\left(\frac{(2+\sqrt{3})(2+\sqrt{5})\sqrt{3}}{\sqrt{5}}\right)$

26)The greatest angle of the triangle whose side are $x^2 + x + 1$, $2x + 1$ and $x^2 - 1$ is

1)75°

2)90°

3)105°

4)120°

27)In a ΔABC, if a : b : c = 4 : 5 : 6, then the ratio of the radius of its circumcircle to that of its incricle

1)16 : 7

2)12 : 7

3)15 : 8

4)16 : 9

28)In a ΔABC, the midpoint of BC is D. If AD is perpendicular to AC, then cos A cos C =

1) $\frac{1}{3}\frac{c^2+a^2}{ab}$

2) $\frac{2(c^2+a^2)}{ab}$

3) $\frac{2(c^2-a^2)}{3ac}$

4) $\frac{3(a^2+b^2)}{2bc}$

29)The position vectors of three points A, B and C are (1, 3, x), (3, 5, 8) and (y, -1, -6) respectively. If A, B and C are collinear, then (x, y) =

1) $\left(\frac{2}{3},-3\right)$ 2) $\left(\frac{10}{3},3\right)$ 3) $\left(\frac{10}{3},-3\right)$ 4) $\left(-3,\frac{10}{3}\right)$

30)A line L passes through the points $\bar{i}+2\bar{j}+\bar{k}$ and $-2\bar{i}+3\bar{k}$. A plane P passes through the origin and the points $4\bar{k}, 2\bar{i}+\bar{j}$. The point where the line L meets the plane P is

1) $-\bar{i}-\bar{j}+3\bar{k}$ 2) $-8\bar{i}-4\bar{j}+7\bar{k}$

3) $8\bar{i}+4\bar{j}+\bar{k}$ 4) $3\bar{i}+\bar{j}+2\bar{k}$

31)If P, Q, R are the mid points of the sides AB, BC and CA of ΔABC respectively, then $\overline{PC}-\overline{BQ}=$

1) $\overline{CP}$

2) $\overline{PQ}$

3) $\overline{BR}$

4) $\overline{AR}$

32)Let $\bar{a}=\bar{i}+\bar{j}, \bar{b}=\bar{j}+\bar{k}$ and $\bar{c}=\bar{i}+\bar{k}$. If $\bar{d}$ is a unit vector such that $\bar{a}.\bar{d}=0$ and $\bar{b}.(\bar{c}\times\bar{d})=0$, then $\bar{d}=$

1) $\pm\frac{1}{\sqrt{2}}(\bar{i}+\bar{j})$

2) $\pm\frac{1}{\sqrt{2}}(\bar{i}-\bar{j})$

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

4) $\pm\left(\frac{1}{\sqrt{2}}\bar{j}+\frac{1}{\sqrt{2}}\bar{k}\right)$

33)If $\bar{a}=\bar{i}+\bar{j}$ and $\bar{b}=3\bar{i}-2\bar{j}$, then the vector $\bar{r}$ satisfying the equations $\bar{r}\times\bar{a}=\bar{b}\times\bar{a}$ and $\bar{r}\times\bar{b}=\bar{a}\times\bar{b}$ is

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

2) $-\bar{i}-4\bar{j}-2\bar{k}$

3) $4\bar{i}-\bar{j}$

4) $4\bar{i}-\bar{j}$

34)The shortest distance between the lines $\bar{r} = (3t-4)\bar{i} - 2t\bar{j} - (1+3t)\bar{k}$ and $\bar{r} = (6+s)\bar{i} + (2-2s)\bar{j} + 2(1+s)\bar{k}$ is

1)3

2)6

3)9

4)12

35)Let σ_1, σ_2 be the standard deviations of two distributions D_1 and D_2 respectively and D_1 be more consistent than D_2. If the means of D_1 and D_2 are same, then the percentage increase in the standard deviation of D_2 over the standard deviation of D_1 is

1) $\frac{\sigma_1-\sigma_2}{\sigma_2}\times 100$ 2) $\frac{\sigma_1-\sigma_2}{\sigma_1}\times 100$

3) $\frac{\sigma_2-\sigma_1}{\sigma_2}\times 100$ 4) $\frac{\sigma_2-\sigma_1}{\sigma_1}\times 100$

36)Consider the following distribution

x_i:	2	4	6	8	10
f_i:	1	2	3	2	1

The sum of the mean deviation from the mean and the mean deviation from the median of this distribution is

1)6 2) $\frac{16}{9}$ 3)54 4) $\frac{32}{9}$

37)Ten persons with badges numbered 1 to 10 are in a room. If three of them are asked to leave the room, Then the probability to have the person with the smallest badge number as 5 among the three persons that left the room, is

1) $\frac{3}{10}$ 2) $\frac{1}{6}$ 3) $\frac{1}{12}$ 4) $\frac{2}{5}$

38)A bag P contains 3 blue and 5 red balls. Another bag Q contains 4 blue and 6 red balls. A ball is drawn at random from one of the bags and is found to be red. The probability that is from bag Q is

1) $\frac{24}{49}$ 2) $\frac{28}{49}$ 3) $\frac{36}{49}$ 4) $\frac{42}{49}$

39)Match the items List-I that of List-II:

A bag contains 4 red, 2 white and 5 blue balls. Three balls are drawn at a time randomly from the bag.

List-I	List-II
a)Probability of getting 1 red, 1 white and 1 blue ball	ii) $\frac{3}{44}$
b)Probability of getting 2 white and 1 blue ball	ii) $\frac{21}{55}$
c)Probability of getting 2 red and 1 white ball	iii) $\frac{38}{55}$
d)Probability that none of the balls is white	iv) $\frac{3}{11}$
	v) $\frac{9}{110}$

The correct answer is

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

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

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

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

40)In a game of throwing 3 coins, a player will loose R.s. 5 for each head and gain Rs. 10 for each tail. If a random variable $X : S \to R$ is defined as X(a) = net gain ($a \in S$), then the mean of the random variable is (in rupees)

1)$\frac{15}{2}$ 2)$-\frac{15}{2}$

3)15 4)25

41)A person fails 4 times in a game when he plays 9 times. If he plays 15 times, the probability of having success at most one is

1)$\frac{65}{9}\left(\frac{5}{9}\right)^{14}$ 2)$\frac{65}{9}\left(\frac{5}{9}\right)^{15}$

3)$\frac{79}{9}\left(\frac{4}{9}\right)^{14}$ 4)$\frac{79}{9}\left(\frac{4}{9}\right)^{15}$

42)If A = (-1, 2) and B = (1, -2) are two points and P is a variable point such that the area of ΔPAB is always one, then the equation of the locus of P is

1)$4x^2 + 4xy + y^2 = 1$ 2)$x^2 + 10xy + 25y^2 - 34x - 170y = 0$

3)$x^2 - 6xy + 9y^2 - 22x - 66y - 23 = 0$ 4)$16x^2 + 24xy + 9y^2 - 62x + 34y + 46 = 0$

43)The point (4, 1) undergoes the following transformations successively:

i)Reflection about the line y = x

ii)Translation through a distance 2 unit in the direction of positive X-axis

iii)Rotation through and angle $\frac{\pi}{4}$ about origin in the anticlockwise direction

Then the final position of the point is

1)$\left(\frac{7}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$

2)$(\sqrt{2}, 7\sqrt{2})$

3)$(-\sqrt{2}, 7\sqrt{2})$

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

44)The image of the point (2, 4) with respect to the straight line 2x + 3y – 6 = 0 is

1)$\left(-\frac{14}{13}, -\frac{8}{13}\right)$ 2)$\left(\frac{14}{13}, \frac{8}{13}\right)$ 3)$\left(-\frac{2}{13}, -\frac{4}{13}\right)$ 4)$\left(-\frac{2}{7}, -\frac{8}{7}\right)$

45)The equation of the base of an equilateral triangle is 12x + 5y – 65 = 0. If one of its vertices is (2, 3), then the length of the side is

1)$\frac{14}{13}$ 2)$\frac{2}{\sqrt{3}}$ 3)$\frac{4}{\sqrt{3}}$ 4)$\frac{2}{13}$

46)A triangle is formed by Y – axis, the straight line L passing through the points (3, 0), $\left(1,\frac{4}{3}\right)$ and the straight line perpendicular to the line L and passing through the point (8, 1). Then the area of that triangle (in square units) is

1)16

2)21

3)36

4)39

47)For c ≠ 0, c ≠ 1 if the straight lines x + y =1, 2x – y = c and bx + 2by = c have one common point, then

1) $c<1 \Rightarrow b \in \left(-3\frac{3}{4}\right)$ 2) $c<1 \Rightarrow b \in \left(-\frac{3}{4},3\right)$

3) $c<1 \Rightarrow b \in \left(-3,\frac{3}{2}\right)$ 4) $c<1 \Rightarrow b \in \left(-\frac{3}{4},\frac{3}{4}\right)$

48)If the lines represented by x2 – 2hxy – y2 = 0 are rotated about (0, 0) through and angle α one is clockwise direction and the other in the counter clockwise direction, then the combined equation of the bisectors of the angle between the lines thus obtained is

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

2) $x^2 - 2hxy + y^2 + \ = 0$

3) $hx^2 - hy^2 + 2xy = 0$

4) $hx^2 - hy^2 + xy = 0$

49)The normal S = 0 at P(1, 3) is x + 2y = 7 and it has another normal at Q(3, 5) which is the polar of the point A(7, -½) with respect to the circle $x^2 + y^2 - 4x + 6y - 12 = 0$. Then the equation of the circle S = 0 is

1)$x^2 + y^2 - 10x - 2y + 6 = 0$

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

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

4)$x^2 + y^2 - 7x + 3y - 12 = 0$

50)If x + ky – 4 = 0 and x + y – 5 = 0 are conjugate lines respect to the circle $(x - 1)^2 + (y - 1)^2 = 3$, then k =

1)1

2)2

3)3

4)4

51)The length of the chord intercepted by the circle $x^2 + y^2 + 2x + 4y - 20 = 0$ on the line 3x + 4y – 6= 0 is

1)$5\sqrt{21}$

2)$\frac{4}{5}\sqrt{21}$

3)$\frac{8}{5}\sqrt{21}$

4)$5\sqrt{2}$

52)Let Q be a point on the circle B: $x^2 + y^2 = a^2$ and (h, k) be a fixed point. If the locus of the point which divides the join of P and Q in the ratio p : q is a circle C, then the centre of C is

1)$\left(\frac{p+q}{p}, \frac{p+q}{q}\right)$

2)$\left(\frac{hp+kq}{p}, \frac{hp+kq}{q}\right)$

3)$\left(\frac{hq}{p}, \frac{kq}{q}\right)$

4)$\left(\frac{hq}{p+q}, \frac{kq}{p+q}\right)$

53)A circle C passes through (2a, 0) and the line 2x = a is the radical axis of the circle C and the circle $x^2 + y^2 = a^2$, then

1)centre of C is (-a, 0) and C passes through (0, 0) and (-a, -a)

2)circle C is $x^2 + y^2 - 2ax - 2ay = 0$

3)centre of C is (a, 0) and C passes through (0, 0) and (a, a)

4)centre of C is (0, -a) and C passes through (-a, -a) and (0, 0)

54)If two distinct chords drawn from the point A(4, 4) on the parabola $y^2 = 4x$ are bisected by the line y = ax, then the interval in which a lies is

1)$\left(\frac{1}{2}-\frac{1}{\sqrt{2}}, \frac{1}{2}+\frac{1}{\sqrt{2}}\right)$

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

3)$\left(\frac{1+\sqrt{2}}{2}, \frac{5+\sqrt{2}}{2}\right)$

4)$(2, \infty)$

55)The locus of the midpoint of the line segment joining the focus to a moving point on the parabola $y^2 = 4ax$ is a conic. The equation of the directrix of the directrix of that conic is

1)y =a

2)x =a

3)y =0

4)x =0

56)For the ellipse $4x^2 + y^2 - 8x + 2y + 1 = 0$, the focus and the equation of the directrix are respectively

1)$\left(-1-\frac{4}{\sqrt{3}},1\right), y+\sqrt{3}+1=0$

2)$(-1-\sqrt{3}, 1), \sqrt{3}\,y + \sqrt{3} + 4 = 0$

3)$\left(1,-1-\frac{4}{\sqrt{3}}\right), y+\sqrt{3}+1=0$

4)$(1, -1-\sqrt{3}), \sqrt{3}\,y + \sqrt{3} + 4 = 0$

57)If $3x + y + p = 0$ ($P > 0$) is a tangent to the ellipse $x^2 + 3y^2 = 3$ and $16x + qy + 14 = 0$ ($q > 0$) is a normal to the ellipse $x^2 + 8y^2 = 33$ then p + q =

1)8 2)5 3)9 4)6

58)The locus of the mid points of the chords of the circle $x^2 + y^2 = 16$ which are tangents to the hyperbola $9x^2 - 16y^2 = 144$ is

1)$12x^2 - 8y^2 = x^2 + y^2$

2)$9x^2 + 12y^2 = (x^2 + y^2)$

3)$16x^2 - 8y^2 = (x^2 + y^2)$

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

59)If the line segment joining the points P (2, 4, 1) and Q (3, 8, 1) is divided by the plane 3x – ky – 6z = 0 externally in the ratio 4 : 5 then k =

1)-1

2)1

3)2

4)3

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

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

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

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

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

61)The perpendicular distance of the point (1, -1, 2) form the plane x + 2y + z = 4, is

1)$\sqrt{17}$

2)$\sqrt{6}$

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

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

62)If f(x) satisfies 97 f(x) + mf$\left(\frac{1}{x}\right)$=0,whre f(x) = $\lim_{n\to\infty} n\left(n^{1/n}-1\right)$, x > 0, then the value of m is

1)$\frac{1}{97}$

2)97

3)0

4)1

63)If f(x) $\begin{cases} \frac{\sqrt{1+ax}-\sqrt{1-ax}}{x}, & -1 \le x < 0 \\ \frac{x^2+2}{x-2}, & 0 \le x \le 1 \end{cases}$

is continuous on [-1, 1], then a =

1)1

2)-2

3)1

4)2

64)The function that is not differentiable at x = 1 is

1)$f_1(x) = |x|$, $-\infty < x < \infty$

2) $f_2(x) = \begin{cases} 1+\sin(x-1), & -\infty < x \le 1 \\ x, & x \ge 1 \end{cases}$

3) $f_3(x) = \begin{cases} x^2+7x-7, & -\infty x \le 1 \\ \frac{3x-1}{2}, & x \ge 1 \end{cases}$

4) $f_4(x) = \begin{cases} |x-1|+|x-2|, & -\infty < x \le 1 \\ 1+x-x^3, & x \ge 1 \end{cases}$

65)Match the items of List-I with those of List-II

List-I	List-II
a) $\frac{d}{dx}\left(\tan^{-1}\left(\sqrt{\frac{1-\cos x}{1+\cos x}}\right)\right)$	i) $\log\left(x\sqrt{1+x^2}\right)$
b) $\frac{d}{dx}\left(\frac{3+\lvert x-1\rvert}{3x+4}\right)$	ii) $-\frac{4x}{(1+x^2)^2}$
c) $\sinh^{-1}x$	iii) ½
b) $\frac{d^2}{dx^2}\left(\cos^{-1}\left(\frac{1-x^2}{1+x^2}\right)\right)$	iv) $\frac{1}{\sqrt{1+x^2}}$
	v) not differentiable at x = 1

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

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

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

4)a-iii, b-v, c-I, d-ii

66)If y = 2 cos (2logx) + 3 sin (2logx), then $x^2 y'' + xy' + 2y = 0$

1)-2y

2)2y

3)0

4)4

67)Consider the following statements

A is relative error in the area of a square when the relative error in its side is 0.4

B is relative error in the volume of a sphere when the relative error in its radius is 0.3

C is relative error in the surface area of a closed cylinder whose height is equal radius, when the relative error in its height is 0.2

D is approximate error in $y = x^2 + x - 3$ when x= 2 and $\delta x = 0.1$

The ascending order of the values of errors in these statements is

1)B, C, A, D

2)A, C, B, D

3)C, D, A, B

4)D, A, C, B

68)If the curves $\frac{x^2}{4}+\frac{y^2}{9}=1$ and $\frac{x^2}{16}-\frac{y^2}{k}=1$ cut each other orthogonally, then k =

1)144

2)-9

3)25

4)-21

69)The value c of the Lagrange's mean value theorem for the function f(x) = x(x-1)(x-2) in the interval [0, ½] is

1)$1-\frac{\sqrt{7}}{2\sqrt{3}}$ 2)$1-\frac{\sqrt{7}}{\sqrt{3}}$ 3)$\frac{1}{3}$ 4)$\frac{1}{6}$

70)If Q is the point on the parabola $y^2 = 4x$ that is nearest to the point P(2, 0), then PQ =

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

71)If $\int \sin^{-1}\left(\frac{\sqrt{x}}{a+x}\right)dx = A(x) +$ constant, then A(x) =

1) $a\tan^{-1}\sqrt{\frac{x}{a}} + ax$

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

3) $(a + x)\tan^{-1}\sqrt{x} + a\sqrt{x}$

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

72) $\int \frac{co2x.\sin 4x}{\cos^4 x(1+\cos^2 2x)}dx = +$

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

2) $\log\left(\frac{1+\cos^2 2x}{1+\cos 2x}\right) + \tan^2 x + c$

3) $\log\left(\frac{1+\cos 2x}{1+\cos^2 2x}\right) + \sec^2 x + c$

4) $\log\left(\frac{(1+\cos 2x)^2}{1+\cos^2 2x}\right) + \sec^2 x + c$

73) $\int(\log x)^3 x^4\, dx =$

1) $\frac{x^5}{625}$ $[125p^3-75p^2 + 30p - 6] + c$ (where p = log x)

2) $\frac{x^5}{625}$ $[125p^3-25p^2 + 30p - 5] + c$ (where p = log x)

3) $\frac{x^5}{625}$ $[125p^3-60p^2 - 25p + 5] + c$ (where p = log x)

4) $\frac{x^5}{625}$ $[625p^3-75p^2 + 30p + 6] + c$ (where p = log x)

74)If $\int \frac{\sqrt{x}}{\sqrt{x}-\sqrt[3]{x}}dx = x + Ex^{5/6} + Dx^{2/3} + Cx^{1/2} + Bx^{1/3} + Ax^{1/6} + \log(\sqrt[6]{x}-1)^6 + k$,

then A + B + C+ D + E

1) $\frac{137}{10}$ 2) $\frac{129}{10}$ 3) $\frac{119}{10}$ 4) $\frac{117}{10}$

75) $\int_0^{\frac{1}{2}} |\sin 4\pi x|\,dx =$

1) π-1 2) $\frac{2}{\pi}$ 3) $\frac{1}{\pi}$ 4)0

76)If (n)= $\frac{1}{n}[(n+1)(n+2)(n+3)...(2n)]^{\frac{1}{n}}$, then $\lim_{n\to\infty} f(n) =$

1) $\frac{4}{e}$ 2) $\log\left(\frac{4}{e}\right)$ 3) $\frac{2}{e}$ 4) $\log\left(\frac{2}{e}\right)$

77)The area of the region bounded by y = |x| and y =1 - |x| is

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

78)Consider the following differential equations

$D_1 : y = 4\frac{dy}{dx} + 3x\frac{dx}{dy}$

$D_2 : \frac{d^2y}{dx^2} = \left(3 + \left(\frac{dy}{dx}\right)^2\right)^{4/3}$

$D_3 : \left[1 + \left(\frac{dy}{dx}\right)\right]^2 = \left(\frac{dy}{dx}\right)^2$

The ratio of the sum of the orders of D_1, D_2, and D_3 to the sum of their degrees is

1)1 : 2

2)1 : 1

3)2 : 3

4)3 : 2

79)The general solution of the differential equation $\frac{dy}{dx} = 1 + x + y + xy$ is

1) $\log(1+x) = y + \frac{x^2}{2} + k$

2) $y = x + \frac{x^2}{2} + k$

3) $\log(1+y) = \frac{x^3}{3} + k$

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

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

1) $xTan^{-1}y = e^{(Tan^{-1})} + k$

2) $xTan^{-1}y = e^{Tan^{-1}} - 1 + k$

3) $xe^{Tan^{-1}}y = (Tan^{-1} - y - e^{y}) + k$

4) $x = (Tan^{-1} - y - 1) + ke^{-Tan^{-1}y}$

TS EAMCET 2018 Engineering Stream
Final Key
Date: 07-05-2018 FN (Shift 1)

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