



# MATHS

## BOOKS - KCET PREVIOUS YEAR PAPERS

### KARNATAKA CET 2018

#### Mathematics

1. For the LPP, maximize  $z = x + 4y$  subject to the constraints  $x + 2y \leq 2$ ,  $x + 2y \geq 8$ ,  $x, y \geq 0$ .

A.  $z_{\max} = 4$

B.  $z_{\max} = 8$

C.  $z_{\max} = 16$

D. Has no feasible solution

**Answer: D**



**Watch Video Solution**

2. Fro the probability distribution given be

|           |                 |                |                |
|-----------|-----------------|----------------|----------------|
| $X = x_i$ | 0               | 1              | 2              |
| $P_i$     | $\frac{25}{36}$ | $\frac{5}{18}$ | $\frac{1}{36}$ |

the standard deviation ( $\sigma$ ) is

A.  $\sqrt{\frac{1}{3}}$

B.  $\frac{1}{3} \sqrt{\frac{1}{3}}$

C.  $\sqrt{\frac{5}{36}}$

D. None of the above

**Answer: B**



**Watch Video Solution**

3. A bag contains 17 tickets numbered from 1 to 17.

A ticket is drawn without replacing the first one.

The probability that both the tickets may show

even numbers is

A.  $\frac{7}{34}$

B.  $\frac{8}{17}$

C.  $\frac{7}{16}$

D.  $\frac{7}{17}$

**Answer: A**



**Watch Video Solution**

4. A flashlight has 10 batteries out of which 4 are dead . If 3 batteries are selected without replacement and tested , then the probability that all 3 are dead is

A.  $\frac{1}{30}$

B.  $\frac{2}{8}$

C.  $\frac{1}{15}$

D.  $\frac{1}{10}$

**Answer: A**



**Watch Video Solution**

**5. If  $|x + 5| \geq 10$ , then**

A.  $x \in (-15, 5)$

B.  $x \in (-5, 5]$

C.  $x \in ( - \infty, 5] \cup [5, \infty)$

D.  $x \in [ - \infty, 5] \cup [5, \infty)$

**Answer: C**



**Watch Video Solution**

6. Everybody in a room shakes hands with everybody else. The total number of handshakes is 45. The total number of persons in the room is

A. 9

B. 10

C. 5

D. 15

**Answer: D**



**Watch Video Solution**

7. The constant term in the expansion of

$$\left(x^2 - \frac{1}{x^2}\right)^{16} \text{ is}$$

A.  ${}^{16}C_8$

B.  ${}^{16}C_7$

C.  ${}^{16}C_9$

D.  ${}^{16}C_{10}$

**Answer: A**



**Watch Video Solution**

8. If  $P(n) : '2^{2n} - 1$  is divisible by  $k$  for all  $n \in \mathbb{N}'$  is true, then the value of 'k' is

A. 6

B. 3

C. 7

D. 2



**Answer: B**



**Watch Video Solution**

**9.** Find the equation of the line parallel to the line  $3x - 4y + 2 = 0$  and passing through the point  $(-2, 3)$

A.  $3x - 4y + 18 = 0$

B.  $3x - 4y - 18 = 0$

C.  $3x + 4y + 18 = 0$

D.  $3x + 4y - 18 = 0$

**Answer: A**



**Watch Video Solution**

10. If  $\left(\frac{1-i}{1+i}\right)^{96} = a + ib$ , then (a,b) is

A. (1,1)

B. (1,0)

C. (0,1)

D. (0,-1)

**Answer: B**



**Watch Video Solution**

11. The distance between the foci of a hyperbola is 16 and its eccentricity is  $\sqrt{2}$ . Its equation is

A.  $x^2 - y^2 = 32$

B.  $\frac{x^2}{4} - \frac{y^2}{9} = 1$

C.  $2x^2 - 3y^2 = 7$

D.  $y^2 - x^2 = 32$

**Answer: A**



**Watch Video Solution**

**12.** In how many ways can 5 girls and 3 boys be selected in a row so that no two boys are together ?

A. 14040

B. 14440

C. 14000

D. 14400

**Answer: D**



**Watch Video Solution**

13. If  $a, b, c$  are three consecutive terms of an A.P. and  $x, y, z$  are three consecutive terms of a G.P., then the value of  $x^{b-c} \cdot y^{c-a} \cdot z^{a-b}$  is

- A. 0
- B.  $xyz$
- C.  $-1$
- D. 1

**Answer: D**



**Watch Video Solution**

14. The value of  $\lim_{x \rightarrow 0} \frac{|x|}{x}$  is

A. 1

B. -1

C. 0

D. Does not exist

**Answer: D**



**Watch Video Solution**

15. Let  $f(x) = x - \frac{1}{x}$ , then  $f'(-1)$  is

A. 0

B. 2

C. 1

D.  $-2$

**Answer: B**



**Watch Video Solution**

**16.** The negation of the statement "72 is divisible by 2 and 3" is

- A. 72 is not divisible by 2 or 72 is not divisible by 3
- B. 72 is divisible by 2 or 72 is dividable by 3
- C. 72 is divisible by 2 and 72 is divisible by 3
- D. 72 is not divisible by 2 and 3

**Answer: A**



**Watch Video Solution**

17. The probability of happening of an event A is 0.5 and that of B is 0.3 . If A and B are mutually



exclusive events, then probability of neither A nor

B is

A. 0.4

B. 0.5

C. 0.2

D. 0.9

**Answer: C**



**Watch Video Solution**

18. In a simultaneous throw of pair of dice , the probability of getting a total more than 7 is

A.  $\frac{7}{12}$

B.  $\frac{5}{36}$

C.  $\frac{5}{12}$

D.  $\frac{7}{36}$

**Answer: C**



**Watch Video Solution**

19. If A and B are mutually exclusive events, given that  $P(A) = \frac{3}{5}$ ,  $P(B) = \frac{1}{5}$ , then P (A or B) is

A. 0.8

B. 0.6

C. 0.4

D. 0.2

**Answer: A**



**Watch Video Solution**

20. Let  $f, g : R \rightarrow R$  be two functions defined as

$$f(x) = |x| + x \text{ and } g(x) = |x| - x \forall x \in R.$$

Then  $(f \circ g)(x)$  for  $x < 0$  is

A. 0

B.  $4x$

C.  $-4x$

D.  $2x$

**Answer: C**



**Watch Video Solution**

21. A is a set having 6 distinct elements . The number of distinct functions from A to A which are not bijections is

A.  $6! - 6$

B.  $6^6 - 6$

C.  $6^6 - 6!$

D.  $6!$

**Answer: C**



**Watch Video Solution**

22. Let  $f: R \rightarrow R$  be defined by

$$f(x) = \begin{cases} 2x & x > 3 \\ x^2 & 1 < x \leq 3 \\ 3x & x \leq 1 \end{cases}$$

Then  $f(-1) + f(2) + f(4)$  is

- A. 9
- B. 14
- C. 5
- D. 10

**Answer: A**



**Watch Video Solution**

23. If  $\sin^{-1} x + \cos^{-1} y = \frac{2\pi}{5}$ , then

$\cos^{-1} x + \sin^{-1} y$  is

A.  $\frac{2\pi}{5}$

B.  $\frac{3\pi}{5}$

C.  $\frac{4\pi}{5}$

D.  $\frac{3\pi}{10}$

**Answer: B**



**Watch Video Solution**

24. The value of the expression

$$\tan\left(\frac{1}{2}\cos^{-1}\frac{2}{\sqrt{5}}\right) \text{ is}$$

A.  $2 - \sqrt{5}$

B.  $\sqrt{5} - 2$

C.  $\frac{\sqrt{5} - 2}{2}$

D.  $5 - \sqrt{2}$

**Answer: B**



**Watch Video Solution**



25. If  $A = \begin{bmatrix} 2 & -2 \\ -2 & 2 \end{bmatrix}$ , then  $A^n = 2^k A$ , where k

=

A.  $2^{n-1}$

B.  $n+1$

C.  $n - 1$

D.  $2(n-1)$

**Answer: D**



**Watch Video Solution**

26. If  $\begin{bmatrix} 1 & 1 \\ -1 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2 \\ 4 \end{bmatrix}$ , then the values of  $x$  and  $y$  respectively are

A.  $-3, -1$

B.  $1, 3$

C.  $3, 1$

D.  $-1, 3$

**Answer: D**



**Watch Video Solution**

27. If  $A = \begin{bmatrix} \cos \alpha & \sin \alpha \\ -\sin \alpha & \cos \alpha \end{bmatrix}$ ,  $AA' =$

A. A

B. zero matrix

C. A'

D. I

**Answer: D**



**Watch Video Solution**

28. If  $x, y, \in , R$ , then the value of the determinant

$$A = \begin{bmatrix} (5^x + 5^{-x})^2 & (5^x - 5^{-x})^2 & 1 \\ (6^x + 6^{-x})^2 & (6^x - 6^{-x})^2 & 1 \\ (7^x + 7^{-x})^2 & (7^x - 7^{-x})^2 & 1 \end{bmatrix} \text{ is}$$

A. 10

B. 12

C. 1

D. 0

**Answer: D**



**Watch Video Solution**

29. The value of determine  $\begin{vmatrix} a - b & b + c & a \\ b - a & c + a & b \\ c - a & a + b & c \end{vmatrix}$  is

A.  $a^3 + b^3 + c^3$

B.  $3abc$

C.  $a^3 + b^3 + c^3 - 3abc$

D.  $a^3 + b^3 + c^3 + 3abc$

**Answer: C**



**Watch Video Solution**

30. If  $(x_1, y_1)$ ,  $(x_2, y_2)$  and  $(x_3, y_3)$  are the vertices of a triangle whose area is  $k$  square units, then

$$\begin{vmatrix} x_1 & y_1 & 4 \\ x_2 & y_2 & 4 \\ x_3 & y_3 & 4 \end{vmatrix}^2 \text{ is}$$

A.  $32k^2$

B.  $16k^2$

C.  $64k^2$

D.  $48k^2$

**Answer: C**



**Watch Video Solution**

31. Let  $A$  be a square matrix of order  $3 \times 3$ , then

$$|5A| =$$

A.  $5|A|$

B.  $125|A|$

C.  $25|A|$

D.  $15|A|$

**Answer: B**



**Watch Video Solution**

32.

If

$$f(x) = \begin{cases} \sqrt{1+kx} - \sqrt{1-kx} & \text{if } -1 \leq x < 0 \\ \frac{2x+1}{x-1} & \text{if } 0 \leq x \leq 1 \end{cases}$$

is continuous at  $x = 0$ , then the value of  $k$  is

A.  $k = 1$

B.  $k = -1$

C.  $k = 0$

D.  $k = 2$

**Answer: B**



**Watch Video Solution**



33. If  $\cos y = x \cos (a+y)$  with  $\cos a \neq \pm 1$ , then  $\frac{dy}{dx}$

is equal to

A.  $\frac{\sin a}{\cos^2(a + y)}$

B.  $\frac{\cos^2(a + y)}{\sin a}$

C.  $\frac{\cos a}{\sin^2(a + y)}$

D.  $\frac{\cos^2(a + y)}{\cos a}$

**Answer: B**



**Watch Video Solution**

34. If  $f(x) = |\cos x - \sin x|$ , then  $f'(\pi/6)$  is equal to

A.  $-\frac{1}{2}(1 + \sqrt{3})$

B.  $\frac{1}{2}(1 + \sqrt{3})$

C.  $-\frac{1}{2}(1 - \sqrt{3})$

D.  $\frac{1}{2}(1 - \sqrt{3})$

**Answer: A**



**Watch Video Solution**

35. If  $y = \sqrt{x + \sqrt{x + \sqrt{x + \dots \infty}}}$ , then

$$\frac{dy}{dx} =$$

A.  $\frac{1}{y^2 - 1}$

B.  $\frac{1}{2y + 1}$

C.  $\frac{2y}{y^2 - 1}$

D.  $\frac{1}{2y - 1}$

**Answer: D**



**Watch Video Solution**

36. If  $f(x) = \begin{cases} \frac{\log_e x}{x-1} & x \neq 1 \\ k & x = 1 \end{cases}$  is continuous at

$x = 1$ , then the value of  $k$  is

A.  $e$

B.  $1$

C.  $-1$

D.  $0$

**Answer: B**



**Watch Video Solution**

37. Approximate change in the volume  $V$  of a cube of side  $x$  metres caused by increasing the side by 3% is

A.  $0.09x^3 m^3$

B.  $0.03x^3 m^3$

C.  $0.06x^3 m^3$

D.  $0.04x^3 m^3$

**Answer: A**



**Watch Video Solution**

38. The maximum value of  $\left(\frac{1}{x}\right)^x$  is

A.  $e$

B.  $e^e$

C.  $e^{1/e}$

D.  $\left(\frac{1}{e}\right)^{1/e}$

**Answer: C**



[Watch Video Solution](#)

39.  $f(x) = x^x$  has stationary point is

A.  $x = e$

B.  $x = \frac{1}{e}$

C.  $x = 1$

D.  $x = \sqrt{e}$

**Answer: B**



**Watch Video Solution**

**40.** The maximum area of a rectangle inscribed in the circle  $(x + 1)^2 + (y - 3)^2 = 64$  is

A. 64 sq. units

B. 72 sq. units

C. 128 sq. units

D. 8 sq. units

**Answer: C**



**Watch Video Solution**

41.  $\int \frac{1}{1 + e^x} dx$  is equal to

A.  $\log_e \left( \frac{e^x + 1}{e^x} \right) + c$

B.  $\log_e \left( \frac{e^x - 1}{e^x} \right) + c$

C.  $\log_e \left( \frac{e^x}{e^x + 1} \right) + c$



$$D. \log_e \left( \frac{e^x}{e^x - 1} \right) + c$$

**Answer: C**



**Watch Video Solution**

42.  $\int \frac{1}{\sqrt{3 - 6x - 9x^2}} dx$  is equal to

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

B.  $\sin^{-1} \left( \frac{3x + 1}{6} \right) + c$

C.  $\frac{1}{3} \sin^{-1} \left( \frac{3x + 1}{\sqrt{2}} \right) + c$

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

Answer: C



Watch Video Solution

$$43. \int e^{\sin x} \left( \frac{\sin x + 1}{\sec x} \right) dx$$

A.  $\sin x \cdot e^{\sin x} + c$

B.  $\cos x \cdot e^{(\sin x + c)}$

C.  $e^{\sin x} + c$

D.  $e^{\sin x} (\sin x + 1) + c$

Answer: A



Watch Video Solution

44.  $\int_{-2}^2 |x \cos \pi x| dx$  is equal to

A.  $\frac{8}{\pi}$

B.  $\frac{4}{\pi}$

C.  $\frac{2}{\pi}$

D.  $\frac{1}{\pi}$

**Answer: A**



**Watch Video Solution**

45.  $\int_0^1 \frac{dx}{e^x + e^{-x}}$  is equal to

A.  $\frac{\pi}{4} - \tan^{-1}(e)$

B.  $\tan^{-1}(e) - \frac{\pi}{4}$

C.  $\tan^{-1}(e) + \frac{\pi}{4}$

D.  $\tan^{-1}(e)$

**Answer: B**



**Watch Video Solution**

46.  $\int_0^{1/2} \frac{dx}{(1+x^2)\sqrt{1-x^2}}$  is equal to

A.  $\frac{1}{\sqrt{2}} \tan^{-1} \frac{\sqrt{2}}{3}$

B.  $\frac{2}{\sqrt{2}} \tan^{-1} \left( \frac{3}{\sqrt{2}} \right)$

C.  $\frac{\sqrt{2}}{2} \tan^{-1} \left( \frac{3}{2} \right)$

D.  $\frac{\sqrt{2}}{2} \tan^{-1} \left( \frac{\sqrt{3}}{2} \right)$

**Answer: A**



**Watch Video Solution**

**47.** Area of the region bounded by the curve  $y = \cos$

$x$ ,  $x = 0$  and  $x = \pi$  is

A. 1 sq. unit

B. 4 sq. unit

C. 2 sq. unit

D. 3 sq. unit

**Answer: C**



**Watch Video Solution**

**48.** The area bounded by the line  $y = x$ ,  $x$  axis and ordinates  $x = -1$  and  $x = 2$  is

A.  $3/2$  sq. units

B.  $5/2$  sq. units

C. 2 sq. unit

D. 3 sq. unit

**Answer: B**



**Watch Video Solution**

**49.** The degree and order of the differential

equation  $\frac{d^2y}{dx^2} = \sqrt[3]{1 + \left(\frac{dy}{dx}\right)^2}$  respectively are

A. 2 and 3

B. 3 and 2

C. 2 and 2

D. 3 and 3

**Answer: B**



**Watch Video Solution**

50. The solution of the differential equation  $x \frac{dy}{dx} - y = 3$  represents is a family of

A. straight lines

B. circles

C. parabolas

D. ellipses



**Answer: A**



**Watch Video Solution**

51. The integrating factor of  $\frac{dy}{dx} + y = \frac{1+y}{x}$  is

A.  $xe^x$

B.  $xe^{1/x}$

C.  $\frac{e^x}{x}$

D.  $\frac{x}{e^x}$

**Answer: C**



**Watch Video Solution**

52. If  $|\vec{a} \times \vec{b}|^2 + |\vec{a} \cdot \vec{b}|^2 = 144$  and  $|\vec{a}| = 4$ ,  
then the value of  $|\vec{b}|$  is

A. 1

B. 2

C. 3

D. 4

**Answer: C**



**Watch Video Solution**

53. If  $\vec{a}$  and  $\vec{b}$  are mutually perpendicular unit vectors, then  $(3\vec{a} + 2\vec{b}) \cdot (5\vec{a} - 6\vec{b}) =$

A. 5

B. 3

C. 6

D. 12

**Answer: B**



**Watch Video Solution**

54. If the vectors  $a\hat{i} + \hat{j} + \hat{k}$ ,  $\hat{i} + b\hat{j} + \hat{k}$  and  $\hat{i} + \hat{j} + c\hat{k}$  are coplanar ( $a \neq b \neq c \neq 1$ ), then the value of  $abc - (a + b + c) =$

- A. 2
- B. -2
- C. 0
- D. -1

**Answer: B**



**Watch Video Solution**

55. If  $\vec{a} = \hat{i} + \lambda\hat{j} + 2\hat{k}$ ,  $\vec{b} = \mu\hat{i} + \hat{j} - \hat{k}$  are orthogonal and  $|\vec{a}| = |\vec{b}|$ , then  $(\lambda, \mu) =$

A.  $\left(\frac{1}{4}, \frac{7}{4}\right)$

B.  $\left(\frac{7}{4}, \frac{1}{4}\right)$

C.  $\left(\frac{1}{4}, \frac{9}{4}\right)$

D.  $\left(\frac{-1}{4}, \frac{9}{4}\right)$

**Answer: A**



**Watch Video Solution**

56. The image of the point (1,6,3) in the line

$$\frac{x}{1} = \frac{y - 1}{2} = \frac{z - 2}{3} \text{ is}$$

- A. (1, 0, 7)
- B. (7, 0, 1)
- C. (2, 7, 0)
- D. ( - 1, - 6, - 3)

**Answer: A**



**Watch Video Solution**

57. The angle between the lines  $2x = 3y = -z$  and  $6x = -y = 04z$  is

A.  $0^\circ$

B.  $45^\circ$

C.  $90^\circ$

D.  $30^\circ$

**Answer: C**



**Watch Video Solution**

58. The value of  $k$  such that the line

$$\frac{x - 4}{1} = \frac{y - 2}{1} = \frac{z - k}{2}$$
 lies on the plane  $2x -$

$$4y + z = 7$$
 is

A.  $-7$

B.  $4$

C.  $-4$

D.  $7$

**Answer: D**



**Watch Video Solution**



59. The locus represented by  $xy + yz = 0$  is

- A. a pair of perpendicular lines
- B. a pair of parallel lines
- C. a pair of parallel planes
- D. a pair of perpendicular planes

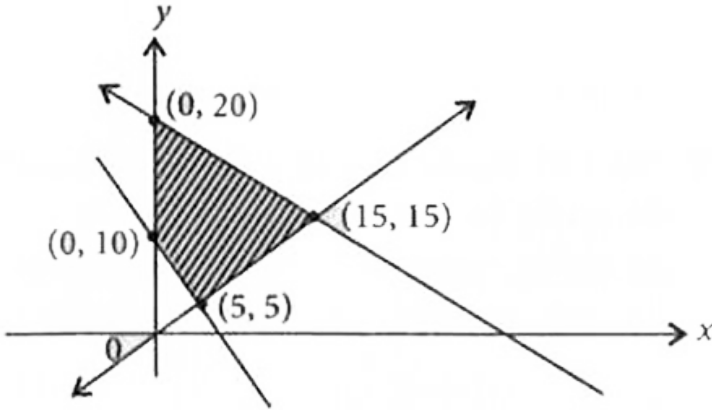
**Answer: D**



**Watch Video Solution**

60. The feasible region of an LPP is shown in the figure. If  $z = 3x + 9y$ , then the minimum value of  $z$

occurs at



- A. (5,5)
- B. (0,10)
- C. (0,20)
- D. (15,15)

**Answer: A**

 [Watch Video Solution](#)

