

INTERMEDIATE EXAMINATION - 2025

प्रश्न पुस्तिका सेट कोड
Question Booklet
Set Code

इन्टरमीडिएट परीक्षा - 2025

(ANNUAL / वार्षिक)

MATHEMATICS (ELECTIVE)

गणित (ऐच्छिक)

I. Sc. & I. A.

कुल प्रश्न : $100 + 30 + 8 = 138$ Total Questions : $100 + 30 + 8 = 138$

(समय : 3 घंटे 15 मिनट)

[Time : 3 Hours 15 Minutes]

कुल मुद्रित पृष्ठ : 40

Total Printed Pages : 40

(पूर्णांक : 100)

[Full Marks : 100]

परीक्षार्थियों के लिये निर्देश :

Instructions for the candidates :

1. परीक्षार्थी OMR उत्तर-पत्रक पर अपना प्रश्न पुस्तिका क्रमांक (10 अंकों का) अवश्य लिखें।

1. Candidate must enter his / her Question Booklet Serial No. (10 Digits) in the OMR Answer Sheet.

खण्ड - अ / SECTION - A

वस्तुनिष्ठ प्रश्न / Objective Type Questions

- प्रश्न संख्या 1 से 100 तक के प्रश्न के साथ चार विकल्प दिए गए हैं जिनमें से एक सही है।
किन्हीं 50 प्रश्नों के उत्तर दें। अपने द्वारा चुने गए सही विकल्प को OMR शीट पर चिह्नित करें।

$$50 \times 1 = 50$$

Question Nos. 1 to 100 have four options, out of which only one is correct.

Answer any 50 questions. You have to mark your selected option on the

OMR sheet.

$$50 \times 1 = 50$$

1. $\frac{d}{dx}(\sec^2 x - \tan^2 x) =$

(A) $2\sec^2 x - 2\tan x$

(B) $2\sec x - 2\tan x$

(C) 1

~~(D) 0~~

2. $\frac{d}{dx}[e^2 + 2ex] =$

(A) $2e + 2x$

(B) $4e$

~~(C) $2e$~~

(D) $2x$

3. $\frac{d}{dx} \left[\lim_{x \rightarrow a} \frac{x^n + a^n}{x + a} \right] =$

(A) $\frac{a^n}{a}$

(B) $\frac{2a^n}{a}$

(C) 1

(D) 0



4. $\frac{d}{dx}(\sin^{-1} 2x) =$

(A) $\frac{1}{\sqrt{1-4x^2}}$

(B) $\frac{2}{\sqrt{1-x^2}}$

(C) $\frac{2}{\sqrt{1-4x^2}}$

~~(D) $\frac{\pi}{2} - \cos^{-1} 2x$~~

5. $\frac{d}{dx} \left[\frac{(x+2)(x^2-2x+4)}{x^3+8} \right] =$

(A) $\frac{2x-2}{3x^2}$

(B) $\frac{(x^2-2x+4) + (2x-2)}{3x^2}$

(C) 1

(D) 0

6. $\frac{d}{dx} [2\sqrt{x}] =$

(A) $\frac{2}{\sqrt{x}}$

(B) $\frac{1}{2\sqrt{x}}$

~~(C) $\frac{1}{\sqrt{x}}$~~

(D) $\frac{-1}{\sqrt{x}}$

7. $\frac{d}{dx} [(1 - \cos 2x) + 2 \cos^2 x] =$

(A) $-4 \sin x \cdot \cos x$

(B) 1

~~(C) 0~~

(D) 2

8. $\frac{d}{dx} [\log x^2 + \log a^2] =$

(A) $\frac{1}{x^2} + \frac{1}{a^2}$

(B) $\frac{2}{x} + \frac{2}{a}$

(C) $\frac{1}{x}$

(D) $\frac{2}{x}$

9. $\frac{d}{dx} [2 \tan^{-1} x] =$

(A) $\frac{1}{1+x^2}$

(B) $\frac{1}{1+4x^2}$

(C) $\frac{2}{1+4x^2}$

~~(D) $\frac{2}{1+x^2}$~~

10. $\frac{d}{dx} [e^{x^2}] =$

(A) e^{x^2}

(B) e^{2x}

(C) $2xe^{x^2}$

(D) $2xe^{2x}$

11. $\int \frac{dx}{x^2+4} =$

(A) $\frac{1}{4} \tan^{-1} \frac{x}{4} + k$

~~(B) $\frac{1}{2} \tan^{-1} \frac{x}{2} + k$~~

(C) $\frac{1}{2} \tan^{-1} \frac{2}{x} + k$

(D) $2 \tan^{-1} \frac{x}{2} + k$

12. $\int \frac{\cos 2x}{\cos x + \sin x} dx =$

(A) $\sin x - \cos x + k$

(B) $-\sin x - \cos x + k$

~~(C) $\sin x + \cos x + k$~~

(D) $-\sin x + \cos x + k$

13. $\frac{d}{dx} \{ \cos(\pi x + \sin \pi) \} =$

(A) $-\sin(\pi x + \sin \pi)$

(B) $-\pi \sin(\pi x)$

(C) $-\sin \pi x$

(D) $\sin x$

14. $\int \tan(\tan^{-1} x) dx =$

(A) $\frac{x^2}{2} + k$

(B) $\frac{x}{2} + k$

(C) $x + k$

(D) $\log \sec(\tan^{-1} x) + k$

(15. $\int \frac{dx}{e^{-x}} =$

(A) $\frac{-1}{e^{-x}} + k$

(B) $e^x + k$

(C) $\frac{1}{e^{-x}} \cdot \frac{1}{x^2} + k$

(D) $-e^{-x} + k$

A

16. $\int \log x^2 dx =$

(A) $\frac{1}{x^2} + k$

~~(B) $\frac{2}{x} + k$~~

(C) $x \log x - x + k$

(D) $2(x \log x - x) + k$

17. $\int (\sin 3x + 4 \sin^3 x) dx =$

(A) $3 \sin x + k$

~~(B) $-3 \cos x + k$~~

(C) $\frac{\cos 3x}{3} + 12 \sin^2 x + k$

(D) $\frac{\cos 3x}{3} + 4 \cos^3 x + k$

18. $\int_{-1}^1 \sin^7 x \cos^{13} x dx =$

~~(A) 0~~

(B) 1

(C) 20

(D) 6

19. $\int_0^1 \frac{4 \tan^{-1} x}{1+x^2} dx =$

~~(A) $\frac{\pi^2}{4}$~~

(B) $\frac{\pi^2}{8}$

(C) $\frac{\pi}{4}$

(D) $\frac{\pi}{8}$

20. $\int_0^1 3x^2 dx =$

(A) 3

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

~~(C) 1~~

(D) $\frac{1}{9}$

21. $\int_0^a \frac{x dx}{2\sqrt{a^2 - x^2}} =$

(A) $\frac{a^2}{2}$

(B) $\frac{a}{2}$

(C) $\frac{a}{4}$

(D) a

22. $\int_0^a \frac{dx}{\sqrt{x}} =$

(A) $2\sqrt{x}$

~~(B) $2\sqrt{a}$~~

(C) \sqrt{x}

(D) \sqrt{a}

23. $\int_0^{\pi/2} \frac{\sqrt{\cos x}}{\sqrt{\sin x} + \sqrt{\cos x}} dx =$

(A) π

~~(B) $\pi/2$~~

~~(C) $\pi/4$~~

(D) 2π

A

24. $\int_0^{\pi/2} \log \tan x \, dx =$

(A) $\pi/4$

(B) $\pi/2$

(C) 0

(D) π

25. $\int_0^1 e^x \, dx =$

(A) e

(B) $1 - e$

(C) $e - 1$

(D) 0

26. $\int_0^{\pi/2} \sin x \cdot \cos x \, dx$

(A) 1

(B) $\frac{1}{2}$

(C) -1

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

27. $\int_0^1 (x + 2x + 3x^2 + 4x^3) \, dx =$

(A) 10

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

(C) $\frac{7}{2}$

(D) $\frac{1}{2}$

A

28. $\int_{-1}^1 \sin x \cdot \cos^3 x \, dx =$

(A) 2

(B) 1

~~(C) 0~~

(D) -1

29. $100 \int_0^1 x^{99} \, dx =$

(A) 100

(B) $\frac{1}{100}$

~~(C) 1~~

(D) 101

30. $2 \int_1^9 \frac{dx}{\sqrt{x}} =$

~~(A) 8~~

(B) 4

(C) 2

~~(D) 12~~

31. $\int \frac{dx}{x \log x} =$

(A) $\log x + k$

(B) $(\log x)^2 + k$

~~(C) $\log(\log x) + k$~~

(D) $\frac{1}{\log x} + k$

A

32. $\int \frac{x-3}{x^2-9} dx =$

(A) $\log(x-3)+k$

~~(B) $\log(x+3)+k$~~

(C) $-\frac{1}{(x+3)^2}+k$

(D) $\frac{x^2}{2}-3x+k$

33. यदि $n(A)=4$ तथा $n(B)=2$, तो $n(A \times B) =$

(A) 6

(B) 8

(C) 16

(D) इनमें से कोई नहीं

If $n(A)=4$ and $n(B)=2$, then $n(A \times B) =$

(A) 6

(B) 8

(C) 16

(D) none of these

34. यदि संक्रिया 'o' इस प्रकार परिभाषित है कि $(a \circ b) = a^3 + b^3$, तो $4 \circ (1 \circ 2) =$

(A) 729.

(B) 793

(C) 783

(D) 792

If operation 'o' is defined as $(a \circ b) = a^3 + b^3$, then $4 \circ (1 \circ 2) =$

(A) 729

(B) 793.

(C) 783

(D) 792

35. $f: A \rightarrow B$ आच्छादक फलन होगा, यदि

(A) $f(A) \subset B$

~~(B) $f(A) = B$~~

(C) $f(A) \supset B$

(D) $f(A) \neq B$

$f: A \rightarrow B$ will be an onto function, if

(A) $f(A) \subset B$

(B) $f(A) = B$

(C) $f(A) \supset B$

(D) $f(A) \neq B$

36. यदि $f: \mathbb{R} \rightarrow \mathbb{R}$, जहाँ $f(x) = 3x - 4$ तो $f^{-1}(x)$ निम्नलिखित में कौन होगा ?

(A) $\frac{1}{3}(x+4)$

(B) $\frac{1}{3}x - 4$

(C) $3x - 4$

(D) अपरिभाषित

If $f: \mathbb{R} \rightarrow \mathbb{R}$ such that $f(x) = 3x - 4$ then which of the following is $f^{-1}(x)$?

(A) $\frac{1}{3}(x+4)$

(B) $\frac{1}{3}x - 4$

(C) $3x - 4$

(D) Undefined

37. यदि संक्रिया 'o' इस प्रकार परिभाषित है कि $(a \circ b) = a^2 + b^2 - ab$, तो $(1 \circ 2) \circ 3 =$

(A) 18 (B) 27

(C) 9 (D) 12

If operation 'o' is defined as $(a \circ b) = a^2 + b^2 - ab$, then $(1 \circ 2) \circ 3 =$

(A) 18 (B) 27

(C) 9 (D) 12

38. माना कि $A = \{1, 2, 3, \dots, n\}$, तो कितने एकैकी आच्छादी फलन $f: A \rightarrow A$ परिभाषित हो सकते हैं ?

(A) n (B) $\lfloor n \rfloor$

(C) $\frac{1}{2} \lfloor n \rfloor$ (D) $\lfloor (n-1) \rfloor$

Let $A = \{1, 2, 3, \dots, n\}$. How many bijective functions $f: A \rightarrow A$ can be defined ?

(A) n (B) $\lfloor n \rfloor$

(C) $\frac{1}{2} \lfloor n \rfloor$ (D) $\lfloor (n-1) \rfloor$

39. $\tan \left\{ \frac{1}{2} \left(\tan^{-1} x + \tan^{-1} \frac{1}{x} \right) \right\} =$

(A) 1

(B) $\sqrt{3}$

(C) 0

(D) ∞

40. $\cos^{-1} x + \sec^{-1} \frac{1}{x} =$

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

(B) $\cos^{-1}(2x^2 - 1)$

(C) $\cos^{-1}(1 - 2x^2)$

(D) $\cos^{-1} 2x$

41. $\cot^{-1} \left(\tan \frac{\pi}{7} \right) =$

(A) $\frac{\pi}{7}$

(B) $\frac{5\pi}{14}$

(C) $\frac{9\pi}{14}$

(D) $\frac{3\pi}{14}$

42. $\cos^{-1} \left(\cos \frac{8\pi}{5} \right) =$

(A) $\frac{8\pi}{5}$

~~(B) $\frac{2\pi}{5}$~~

(C) $\frac{\pi}{5}$

(D) $\frac{3\pi}{5}$

43. $\tan^{-1}(-\sqrt{3}) =$

(A) $\frac{\pi}{6}$

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

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

~~(D) $-\frac{\pi}{3}$~~

44. $\tan^{-1}(\sqrt{3}) - \cot^{-1}(-\sqrt{3}) =$

(A) 0

~~(B) $-\frac{\pi}{2}$~~

(C) π

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

45. $\sin\left(\sin^{-1}\frac{2\pi}{3}\right) + \tan^{-1}\left(\tan\frac{3\pi}{4}\right) =$

~~(A) $\frac{17\pi}{12}$~~

(B) $\frac{5}{12}\pi$

(C) $\frac{\pi}{12}$

(D) $-\frac{\pi}{12}$

46. $\tan^{-1}\frac{1}{2} + \tan^{-1}\frac{1}{3} =$

(A) π

~~(B) $\frac{\pi}{4}$~~

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

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

A

47. $\sin \left\{ \sin^{-1} \frac{1}{5} + \cos^{-1} x \right\} = 1, \Rightarrow x =$

(A) 1

(B) 0

(C) $\frac{4}{5}$

(D) $\frac{1}{5}$

48. $\begin{vmatrix} 21 & 11 & 10 \\ 25 & 15 & 10 \\ 64 & 27 & 37 \end{vmatrix} =$

(A) 1190

(B) 841

~~(C) 0~~

(D) 1

49. $\begin{vmatrix} 10 & 4 \\ 13 & 5 \end{vmatrix} =$

(A) 102

(B) 2

~~(C) -2~~

(D) -102

50. $\begin{vmatrix} x & 15 \\ 4 & 4 \end{vmatrix} = 0 \Rightarrow x =$

~~(A) 15~~

(B) -15

(C) 12

(D) 60

51. $\begin{vmatrix} 3 & \sqrt{3} & \sqrt{3} \\ 4 & 0 & 0 \\ 0 & 0 & 0 \end{vmatrix} =$

(A) ~~0~~

(B) 12

(C) $4\sqrt{3}$

(D) $3 - 4\sqrt{3}$

52. $5 \begin{vmatrix} 1 & 2 \\ 3 & 4 \end{vmatrix} =$

(A) $\begin{vmatrix} 5 & 10 \\ 15 & 20 \end{vmatrix}$

(B) $\begin{vmatrix} 5 & 2 \\ 3 & 20 \end{vmatrix}$

(C) ~~$\begin{vmatrix} 5 & 10 \\ 3 & 4 \end{vmatrix}$~~

(D) $\begin{vmatrix} 1 & 10 \\ 15 & 20 \end{vmatrix}$

53. $\begin{bmatrix} 5 & -1 \\ 6 & 7 \end{bmatrix} \cdot \begin{bmatrix} 2 & 1 \\ 3 & 4 \end{bmatrix} =$

(A) $\begin{bmatrix} 7 & 11 \\ 33 & 34 \end{bmatrix}$

~~(B) $\begin{bmatrix} 7 & 1 \\ 33 & 34 \end{bmatrix}$~~

(C) $\begin{bmatrix} 7 & 1 \\ 34 & 33 \end{bmatrix}$

(D) $\begin{bmatrix} 16 & 5 \\ 39 & 25 \end{bmatrix}$

54. $A = [1 \ 2 \ 3] \Rightarrow A' =$

(A) $[1 \ 2 \ 3]$

(B) $\begin{bmatrix} 3 \\ 2 \\ 1 \end{bmatrix}$

(C) $[3 \ 2 \ 1]$

~~(D) $\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$~~



55. $\frac{d}{dx}(\log 5x) =$

(A) $\frac{1}{5x}$

~~(B) $\frac{1}{x}$~~

(C) $\frac{5}{x}$

(D) $\log 5 + \frac{1}{x}$

56. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} =$

(A) $\begin{bmatrix} 1 & 0 \\ 0 & 4 \end{bmatrix}$

~~(B) $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$~~

(C) $\begin{bmatrix} 1 & 2 \\ 0 & 4 \end{bmatrix}$

(D) $\begin{bmatrix} 1 & 2 \\ 3 & 0 \end{bmatrix}$

57. $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \Rightarrow A^{100} =$

(A) $100 A$

(B) $101 A$

(C) A

(D) $99A$

58. $\begin{bmatrix} 6 & 5 \end{bmatrix} \begin{bmatrix} -1 \\ 1 \end{bmatrix} =$

(A) $\begin{bmatrix} -6 & 5 \end{bmatrix}$

(B) $\begin{bmatrix} -6 \\ 5 \end{bmatrix}$

~~(C) $\begin{bmatrix} -1 \end{bmatrix}$~~

~~(D) $\begin{bmatrix} 1 \end{bmatrix}$~~

59. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} 4 & 0 \\ 0 & 4 \end{bmatrix} =$

(A) $\begin{bmatrix} 4 & 8 \\ 0 & 16 \end{bmatrix}$

(B) $\begin{bmatrix} 5 & 2 \\ 3 & 8 \end{bmatrix}$

~~(C) $\begin{bmatrix} 4 & 8 \\ 12 & 16 \end{bmatrix}$~~

(D) $\begin{bmatrix} 4 & 12 \\ 8 & 16 \end{bmatrix}$

60. $\begin{bmatrix} 2 & 3 \\ 5 & 7 \end{bmatrix} \begin{bmatrix} 2 \\ 5 \end{bmatrix} =$

(A) $\begin{bmatrix} 4 & 6 \\ 25 & 35 \end{bmatrix}$

(B) $\begin{bmatrix} 4 & 15 \\ 10 & 35 \end{bmatrix}$

(C) $[19 \ 45]$

~~(D) $\begin{bmatrix} 19 \\ 45 \end{bmatrix}$~~

(61) $\begin{bmatrix} 3 & -2 \end{bmatrix} \begin{bmatrix} 1 \\ -1 \end{bmatrix} =$

(A) $[3 \ 2]$

(B) $\begin{bmatrix} 3 \\ 2 \end{bmatrix}$

(C) $[1]$

~~(D) $[5]$~~

62. $\begin{bmatrix} 4 \end{bmatrix} \begin{bmatrix} 2 & -2 \end{bmatrix} =$ $\begin{bmatrix} 8 & -8 \end{bmatrix}$

~~(A) $\begin{bmatrix} 8 & -8 \end{bmatrix}$~~

(B) $[0]$

(C) $\begin{bmatrix} 8 \\ -8 \end{bmatrix}$

(D) $\begin{bmatrix} 6 & 2 \end{bmatrix}$

A

63. आव्यूह $\begin{bmatrix} 2 & 3 \\ 5 & 4 \end{bmatrix}$ का सहखंडन आव्यूह =

(A) $\begin{bmatrix} 4 & -5 \\ -3 & 2 \end{bmatrix}$

~~(B) $\begin{bmatrix} 4 & -3 \\ -5 & 2 \end{bmatrix}$~~

(C) $\begin{bmatrix} 4 & 5 \\ 3 & 2 \end{bmatrix}$

(D) $\begin{bmatrix} 4 & 3 \\ 5 & 2 \end{bmatrix}$

64. $\frac{d}{dx}(\log x^9) =$

(A) $\frac{1}{x^9}$

(B) $\frac{1}{9x}$

(C) $\frac{9}{x}$

(D) $\frac{1}{x}$

65. सरल रेखा $\frac{x-19}{13} = \frac{y-17}{11} = \frac{z-15}{9}$ के दिक् अनुपात हैं

(A) 19, 17, 15

~~(B) 13, 11, 9~~

(C) 19, 17, 9

(D) इनमें से कोई नहीं

A

The direction ratios of the straight line

$$\frac{x-19}{13} = \frac{y-17}{11} = \frac{z-15}{9} \text{ are}$$

(A) 19, 17, 15

(B) 13, 11, 9

(C) 19, 17, 9

(D) None of these

66. रेखा $\frac{x-11}{12} = \frac{y-12}{13} = \frac{z+13}{14}$ निम्नलिखित में किस बिन्दु से गुजरती है ?

(A) 11, 12, 13

(B) 11, 12, -13

(C) 12, 13, 14

(D) -11, -12, 13

Through which of the following points does the line

<https://www.bsebstudy.com>

$$\frac{x-11}{12} = \frac{y-12}{13} = \frac{z+13}{14} \text{ pass ?}$$

(A) 11, 12, 13

(B) 11, 12, -13

(C) 12, 13, 14

(D) -11, -12, 13

67. यदि दो समांतर रेखाओं के दिक् अनुपात 2, 7, 9 तथा 6, 21, x हैं तो x का मान है

(A) 9

(B) 18

(C) 27

(D) 3

A

If the direction ratios of two parallel lines are 2, 7, 9 then the value of x is

(A) 9

(B) 18

(C) 27

(D) 3

68. यदि दो समांतर रेखाओं के दिक् अनुपात a, b, c तथा x, y, z हों तो $az =$

(A) cy

(B) cx

(C) bz

(D) ax

If the direction ratios of two parallel lines are a, b, c and x, y, z then $az =$

(A) cy

(B) cx

(C) bz

(D) ax

69. यदि दो परस्पर लम्ब रेखाओं के दिक् अनुपात 5, 2, 4 तथा 4, 8, x हैं, तो x का मान है

(A) 9

(B) -9

(C) 8

(D) -8

A If the direction ratios of two mutually perpendicular lines are 5, 2, 4 and 4, 8, x then the value x is

- (A) 9 (B) -9
(C) 8 (D) -8

70. तल $9x - 8y + 7z = 10$ के समांतर एक तल का समीकरण है

- (A) $9x - 8y - 7z = 5$ (B) $9x - 8y + 7z = 5$
(C) $9x + 8y + 7z = 5$ (D) $9x - y + 7z = 5$

Equation of a plane parallel to the plane $9x - 8y + 7z = 10$ is

- (A) $9x - 8y - 7z = 5$ (B) $9x - 8y + 7z = 5$
(C) $9x + 8y + 7z = 5$ (D) $9x - y + 7z = 5$

71. $|\vec{i} - \vec{j} - 3\vec{k}| =$

- (A) 11 (B) $\sqrt{11}$
(C) $\sqrt{7}$ (D) $\sqrt{10}$

72. $(4\vec{i} + 3\vec{j})^2 =$

- (A) 7 (B) 19
(C) 25 (D) 49

73. $(7\vec{i} - 8\vec{j} + 9\vec{k}) \cdot (\vec{i} - \vec{j} + \vec{k}) =$

(A) 25

~~(B) 24~~

(C) 23

(D) 22

74. $\vec{i} \cdot \vec{i} + \vec{i} \cdot \vec{j} + \vec{j} \cdot \vec{j} + \vec{j} \cdot \vec{k} + \vec{k} \cdot \vec{k} =$

(A) 5

(B) 4

~~(C) 3~~

(D) 2

75. $(11\vec{i} + \vec{j} + \vec{k}) \cdot (\vec{i} + \vec{j} + 11\vec{k}) =$

(A) 22

~~(B) 23~~

(C) 24

(D) 20

76. $(\vec{k} \times \vec{j}) \cdot \vec{i} =$

~~(A)~~

(B) 1

~~(C) -1~~

(D) $2\vec{i}$

77. $(\vec{i} - 2\vec{j} + 5\vec{k}) \cdot (-2\vec{i} + 4\vec{j} + 2\vec{k}) =$

(A) 20

(B) 18

~~(C) 0~~

(D) 4

78. $(i \times j) + (\vec{i} \times \vec{i}) =$

(A) 2

~~(B) 1~~

~~(C) \vec{k}~~

(D) $-\vec{k}$

79. निम्नलिखित में से कौन उद्देश्य फलन है ?

(A) $x \geq 10$

(B) $y \geq 0$

~~(C) $z = 7x + 3y$~~

(D) इनमें से सभी

Which of the following is objective function ?

(A) $x \geq 10$

(B) $y \geq 0$

(C) $z = 7x + 3y$

(D) All of these

80. व्यवरोधों $x + y \leq 35$, $x \geq 0$, $y \geq 0$ के अंतर्गत $Z = 2x + y$ का अधिकतम मान है

(A) 35

(B) 105

~~(C) 70~~

(D) 140

The maximum value of $Z = 2x + y$ subject to constraints

$x + y \leq 35$, $x \geq 0$, $y \geq 0$ is

(A) 35

(B) 105

(C) 70

(D) 140

A

[121/327]

81. व्यवरोधों $x+y \leq 8$, $x \geq 0$, $y \geq 0$ के अंतर्गत $Z=3x-y$ का अधिकतम मान है

(A) $\begin{pmatrix} 0, 8 \\ -8, 0 \end{pmatrix}$

~~(B) 24~~ -8

(C) 16

(D) 8

The maximum value of $Z=3x-y$ subject to constraints $x+y \leq 8$, $x \geq 0$, $y \geq 0$ is

(A) -8

(B) 24

(C) 16

(D) 8

82. दो पासे के फेंक में जोड़ा पाने की प्रायिकता है

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

~~(B) $\frac{1}{6}$~~

(C) $\frac{5}{6}$

(D) $\frac{5}{36}$

The chance of getting a doublet in a throw of 2 dice is

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

(B) $\frac{1}{6}$

(C) $\frac{5}{6}$

(D) $\frac{5}{36}$

प्रायिकता का योग प्रमेय है

- (A) $P(A \cup B) = P(A) + P(B)$
- (B) $P(A \cup B) = P(A) + P(B) + P(A \cap B)$
- (C) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
- (D) $P(A \cup B) = P(A) \cdot P(B)$

Addition theorem of probability is

- (A) $P(A \cup B) = P(A) + P(B)$
- (E) $P(A \cup B) = P(A) + P(B) + P(A \cap B)$
- (C) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
- (D) $P(A \cup B) = P(A) \cdot P(B)$

84. यदि घटना E का अनुकूल संयोगानुपात $a : b$ हो, तो $P(E) =$

- (A) $\frac{a}{a-b}$
- (B) $\frac{a}{a+b}$
- (C) $\frac{b}{a+b}$
- (D) $\frac{b}{a-b}$

If odds in favour of event E be $a : b$, then $P(E) =$

(A) $\frac{a}{a-b}$

(B) $\frac{a}{a+b}$

(C) $\frac{b}{a+b}$

(D) $\frac{b}{a-b}$

85. प्रायिकता का गुणन नियम है

~~(A) $P(A \cap B) = P(A) \cdot P(B)$~~

(B) $P(A \cap B) = P(A) + P(B) - P(A \cup B)$

(C) $P(A \cap B) = P(A) \cdot P(B/A)$

(D) इनमें से कोई नहीं

Multiplication theorem of probability is

(A) $P(A \cap B) = P(A) \cdot P(B)$

(B) $P(A \cap B) = P(A) + P(B) - P(A \cup B)$

(C) $P(A \cap B) = P(A) \cdot P(B/A)$

(D) None of these

86. $\frac{d}{dx}(e^{3-2x}) =$

(A) e^{3-2x}

(B) $2e^{3-2x}$

(C) $-2e^{3-2x}$

(D) $-e^{3-2x}$

87. $\int 2^{x+1} dx =$

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

(B) $2^{x+1} \cdot \log 2 + k$

(C) $(x+1)2^x + k$

(D) $2^{x+1} + k$

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

(A) $\sqrt{x} + k$

(B) $\frac{1}{2}\sqrt{x} + k$

(C) $2\sqrt{x} + k$

(D) $2x + k$

89. $\int_{-1}^1 \sin^{13} x \cos^{12} x dx =$

~~(A) 0.~~

(B) 1

(C) $\frac{1}{2}$

(D) 2

A

90. $\int_0^2 e^x dx =$

(A) e^2

(B) $e^2 - 2$

~~(C) $e^2 - 1$~~

(D) $e - 1$

91. $\int_{\alpha}^{\beta} \phi(x) dx + \int_{\beta}^{\alpha} \phi(x) dx =$

(A) 2

(B) 1

(C) 0

(D) $2 \int_{\alpha}^{\beta} \phi(x) dx$

92. $\frac{d}{dx} \left\{ \begin{vmatrix} x & x \\ 2 & x \end{vmatrix} \right\} =$ <https://www.bsebstudy.com>

(A) $x^2 - 2x$

~~(B) $2x - 2$~~

(C) $2x + 2$

(D) $x - 2$

(93. $\frac{d}{dx} \left\{ \lim_{n \rightarrow 1} \frac{x^n - 1}{n + 1} \right\} =$

~~(A) 0~~

(B) $\frac{1}{2}$

(C) $\frac{1}{2}x$

(D) 1

94. $\frac{d}{dx} \{ \log_3 x \times \log_x 3 \} =$

(A) $\frac{1}{9}$

(B) 9

(C) $2 \log 3$

(D) 0

95. $\frac{d}{dx} (\log x^{100}) =$

~~(A)~~ $\frac{1}{x^{100}}$

(B) $\frac{1}{x}$

~~(C)~~ $\frac{100}{x}$

(D) $\frac{1}{100x}$

96. $\frac{d}{dx} \left[\sin^{-1} (2x\sqrt{1-x^2}) \right] =$

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

(B) $\frac{1}{\sqrt{1-x^2}}$

(C) $\frac{2}{\sqrt{1-x^2}}$

(D) $\frac{1}{\sqrt{1-4x^2(1-x^2)}}$



97. $\int e^{2 \log x} dx =$

(A) $e^{2 \log x} + k$

(B) $\frac{x^2}{2} + k$

(C) $\frac{x^3}{3} + k$

(D) $3x^3 + k$

98. $\frac{d}{dx} \left\{ \begin{vmatrix} x & 15 \\ 4 & 4 \end{vmatrix} \right\} =$

(A) ~~$4x$~~

(B) 4

(C) -60

(D) -4

99. $\int x^m \cdot x^n dx =$

(A) $\frac{x^{m+1} \cdot x^{n+1}}{m+n+2} + k$

(B) $\frac{x^{m+n}}{m+n} + k$

(C) $\frac{x^{m+n+1}}{m+n+1} + k$

(D) $(m+n)x^{m+n-1} + k$

100. $\int e^3 \cdot e^x dx =$

(A) $e^x + k$

~~(B) $\frac{e^{3+x}}{3} + k$~~

(C) $e^{x+3} + k$

(D) $3e^{x+3} + k$