

AMS PREVIOUS YEAR QUESTIONS SET

1. Find $\frac{dy}{dx}$ if $y=e^x \cdot \sin x$ (2marks)
2. Evaluate $\int \cos^2 x \, dx$ (2marks)
3. Evaluate $\int \frac{1}{3x+7} dx$ (2 marks)
4. Find $\frac{dy}{dx}$ if $y=\log(xe^x)$ (4marks)
5. Evaluate $\int \frac{\cos \sqrt{x}}{\sqrt{x}} dx$ (4marks)
6. Evaluate $\int \frac{1}{x^2+3x+2} dx$ (4 marks)
7. Evaluate $\int \frac{1}{5+4\cos x} dx$ (4 marks)
8. Evaluate $\int \frac{1-\tan x}{1+\tan x} dx$ (4 marks)
9. Evaluate $\int \frac{\log x}{x(\log x+2)(\log x+3)} dx$ (4marks)
10. Evaluate $\int_0^7 \frac{\sqrt[3]{x}}{\sqrt[3]{x}+\sqrt[3]{7-x}} dx$ (4marks)
11. Find the area of circle by using definite integration $x^2 + y^2=25$ (6 marks)
12. Find the order and the degree of differential equation $\frac{d^2 y}{dx^2} = [1 + (\frac{dy}{dx})^2]^{\frac{3}{2}}$ (3marks)
13. Solve differential equation $x\sqrt{1-y^2}dx + y\sqrt{1-x^2}dy=0$ (3 marks)
14. The velocity of particle is given by $V= t^2-6t+7$ find the distance covered in 3 seconds (3 marks)
15. Find $\frac{dy}{dx}$ if $x \sin y + y \sin x =0$ (2marks)
16. Find $\frac{dy}{dx}$ if $y = a^x + x^a + a^a + \sqrt{x}$ (2 marks)
17. Evaluate $\int \frac{1}{x^2+4} dx$ (2 marks)
18. Evaluate $\int x e^x dx$ (2 marks)
19. Evaluate $\int \frac{(x-1)e^x}{x^2 \sin^2 \frac{x}{e}} dx$ (4 marks)
20. Evaluate $\int \frac{dx}{4\cos^2 x + 9\sin^2 x}$ (4 marks)
21. Evaluate $\int \frac{\log x}{x[2+\log x][3+\log x]} (4 \text{ marks})$
22. Evaluate $\int x \cdot \tan^{-1} x dx$ (4marks)
23. Evaluate $\int \frac{x}{(x+1)(x+2)} dx$ (4 marks)
24. Evaluate $\int_2^5 \frac{\sqrt{x}}{\sqrt{7-x}+\sqrt{x}} (4 \text{ marks})$
25. Verify that $y=\log x$ is a solution of differential equation $x\frac{d^2 y}{dx^2} + \frac{dy}{dx} = 0$ (3 marks)
26. The velocity of particle is given by $v=t^2-6t+7$ find the distance covered in 3 sec initially $x=0$ when $t=0$ (3 marks)
27. Solve $(1+x^2)dy - (1+y^2)dx = 0$ (3marks)
28. Solve $\frac{dy}{dx} + y \cot x = \cos x$ (3 marks)

29. Evaluate $\int x(x-1)^2 dx$

30. Evaluate $\int \sin^2 2x dx$

31. Find $\frac{dy}{dx}$ if $y = e^x \sin^{-1} x$

32. If $13x^2 + 2x^2y + y^3 = 1$ find $\frac{dy}{dx}$ at $(1, -2)$

33. If $x = a(\theta + \sin \theta)$, $y = a(1 - \cos \theta)$ find $\frac{dy}{dx}$ at $\theta = \frac{\pi}{2}$

34. Evaluate $\int x \sin^{-1} x / \sqrt{1-x^2} dx$

35. Evaluate $\int \frac{\cos x}{1 + \sin^2 x} dx$

36. Evaluate $\int \frac{dx}{3 - 2\sin x}$

37. Evaluate $\int \frac{\log x}{x(2 + \log x)(3 + \log x)} dx$

38. Find $\frac{dy}{dx}$ if $y = \log \left(\frac{\sin x}{1 + \cos x} \right)$

39. Evaluate $\int \frac{x+1}{x^2(x-2)} dx$

40., $\int \frac{\sqrt[3]{x+5}}{\sqrt[3]{x+5} + \sqrt[3]{9-x}} dx$

41. Find the order and degree of differential equation $\frac{d^2y}{dx^2} = \left(y + \frac{dy}{dx} \right)^{\frac{3}{2}}$

42. solve $x \frac{dy}{dx} - y = x^2$

43. Evaluate $\int \frac{1}{\sin^2 x \cos^2 x} dx$

44. Evaluate $(1 + \sqrt{x})^2 / \sqrt{x} dx$

45. Find $\frac{dy}{dx}$ if $x^2 + y^2 = xy$

46. If $x = 3\sin 4\theta$, $y = 4\cos 3\theta$ Find $\frac{dy}{dx}$

47. If $y = \log (\sec x + \tan x)$ find $\frac{dy}{dx}$

48. Find $\frac{dy}{dx}$ if $y = x^x + (\cos x)^x$

49. Evaluate $\int_0^{\frac{\pi}{2}} \frac{1}{1 + \cot x} dx$

50. Evaluate $\int \frac{dx}{2 + 3\cos x}$

51. Evaluate $\int \frac{1}{\sqrt{3-x-x^2}} dx$

52. Evaluate $\int \frac{x}{x^2 + 3x - 4} dx$

53. Solve $(x+1) \frac{dy}{dx} - y = e^x (x+1)^2$

54. Find the value of a if $f(x) = ax + 10$ and $f(1) = 13$

55. Find $\frac{dy}{dx}$ if $y = x^e + e^x + e^e + \sqrt{x}$

56. Evaluate $\int e^x + x^e + e^e dx$

57. Evaluate $\int \frac{\cos(\log x)}{x} dx$

58. Find $\frac{dy}{dx}$ if $x^3 + y^3 + xy = 0$

