

SAMPLE QUIZ-1 QUESTIONS
SIKKIM MANIPAL INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MATHEMATICS

QUIZ I MA1201 Engineering Mathematics II

Prepared by Dr. Asit Saha

January 24, 2020

1. The degree of the differential equation $\frac{dy}{dx} + y = 4$ is

(a) 1 (b) 2 (c) 3 (d) 4

2. The degree of the differential equation $(\frac{dy}{dx})^2 + 2y = 9$ is

(a) 1 (b) 2 (c) 3 (d) 4

3. The degree of the differential equation $(\frac{d^2y}{dx^2})^3 + \frac{dy}{dx} + 2y = 0$ is

(a) 1 (b) 2 (c) 3 (d) 4

4. The degree of the differential equation $(\frac{d^2y}{dx^2})^{\frac{3}{2}} - (\frac{dy}{dx})^{\frac{1}{2}} = 0$ is

(a) $\frac{1}{2}$ (b) $\frac{3}{2}$ (c) 3 (d) 4

5. The order of the differential equation $\frac{dy}{dx} + y = 4$ is

(a) 1 (b) 2 (c) 3 (d) 4

6. The order of the differential equation $(\frac{dy}{dx})^2 + 2y = 9$ is

(a) 1 (b) 2 (c) 3 (d) 4

7. The order of the differential equation $(\frac{d^2y}{dx^2})^3 + \frac{dy}{dx} + 2y = 0$ is

(a) 1 (b) 2 (c) 3 (d) 4

8. The order of the differential equation $(\frac{d^4y}{dx^4})^{\frac{3}{2}} - (\frac{d^3y}{dx^3})^{\frac{1}{2}} = 0$ is

(a) $\frac{1}{2}$ (b) $\frac{3}{2}$ (c) 3 (d) 4

9. The differential equation corresponding to $y = Ax$ (A is an arbitrary constant) is

(a) $x \frac{dy}{dx} - y = 0$, (b) $\frac{d^2y}{dx^2} + y = 0$, (c) $x \frac{dy}{dx} + y = 0$, (d) None of these.

10. The differential equation corresponding to $y = A e^x + B e^{-x}$ (A and B are arbitrary constants) is

(a) $\frac{d^2y}{dx^2} - y = 0$, (b) $\frac{d^2y}{dx^2} + y = 0$, (c) $\frac{d^2y}{dx^2} - 2y = 0$, (d) None of these.

11. The differential equation corresponding to $y = A e^{2x} + B e^{-2x}$ (A and B are arbitrary constants) is

(a) $\frac{d^2y}{dx^2} - 2y = 0$, (b) $\frac{d^2y}{dx^2} + 3y = 0$, (c) $\frac{d^2y}{dx^2} - 4y = 0$, (d) None of these.

12. The differential equation corresponding to $y = A \log_e x + B$ (A and B are arbitrary constants) is

(a) $x \frac{d^2y}{dx^2} - \frac{dy}{dx} = 0$, (b) $x \frac{d^2y}{dx^2} + \frac{dy}{dx} = 0$, (c) $\frac{d^2y}{dx^2} - 4y = 0$, (d) None of these.

13. Integrating factor of the differential equation $\frac{dy}{dx} - \frac{y}{x} = e^x$ is

(a) x (b) e^x (c) $\frac{1}{x}$ (d) e^{x^2}

14. Integrating factor of the differential equation $\frac{dy}{dx} + \frac{y}{x} = e^x$ is

(a) x (b) e^x (c) e^{-x} (d) e^{x^2}

15. Integrating factor of the differential equation $\frac{dy}{dx} + y = e^x$ is

(a) x (b) e^x (c) e^{-x} (d) e^{x^2}

16. Integrating factor of the differential equation $\frac{dy}{dx} - y = e^x$ is

(a) x (b) e^x (c) e^{-x} (d) e^{x^2}

17. Integrating factor of the differential equation $\frac{dy}{dx} + 2xy = e^x$ is

(a) x (b) e^x (c) e^{-x} (d) e^{x^2}

18. Integrating factor of the differential equation $\frac{dy}{dx} - 2xy = e^x$ is

(a) x (b) e^x (c) e^{x^2} (d) e^{-x^2}

19. If the differential equation $(2x + 3y^2) dx + (kxy + y^2) dy = 0$ is exact, then value of k is

- (a) 6 (b) 2 (c) 3 (d) 4

20. If the differential equation $(2x + 3y^2) dx + (2kxy + y^2) dy = 0$ is exact, then value of k is

- (a) 6 (b) 2 (c) 3 (d) 4

21. If the differential equation $(2x + 3y^2) dx + (4kxy + y^2) dy = 0$ is exact, then value of k is

- (a) 6 (b) 2 (c) $\frac{3}{2}$ (d) $\frac{5}{2}$

22. If the differential equation $(2x + 3y^2) dx + (6kxy + y^2) dy = 0$ is exact, then value of k is

- (a) 6 (b) 1 (c) $\frac{3}{2}$ (d) $\frac{5}{2}$

23. If the differential equation $(2x + 3y^2) dx - (6kxy + y^2) dy = 0$ is exact, then value of k is

- (a) -1 (b) 1 (c) $\frac{3}{2}$ (d) $\frac{5}{2}$

24. If the differential equation $(2x + 3y^2) dx - (kxy + y^2) dy = 0$ is exact, then value of k is

- (a) -1 (b) 1 (c) $-\frac{3}{2}$ (d) $-\frac{1}{6}$

25. Complementary function of the differential equation $\frac{d^2y}{dx^2} - 4y = x$ is

- (a) $c_1 \cos 2x + c_2 \sin 2x$ (b) $c_1 e^{2x} + c_2 e^{-2x}$ (c) $c_1 e^x + c_2 e^{-2x}$ (d) None of these.

26. Complementary function of the differential equation $\frac{d^2y}{dx^2} + 4y = x$ is

- (a) $c_1 \cos 2x + c_2 \sin 2x$ (b) $c_1 e^{2x} + c_2 e^{-2x}$ (c) $c_1 e^x + c_2 e^{-2x}$ (d) None of these.

27. Complementary function of the differential equation $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} = x$ is

- (a) $c_1 \cos 2x + c_2 \sin 2x$ (b) $c_1 e^{2x} + c_2 e^{-2x}$ (c) $c_1 + c_2 e^{-2x}$ (d) None of these.

28. Complementary function of the differential equation $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} = x$ is

- (a) $c_1 \cos 2x + c_2 \sin 2x$ (b) $c_1 e^{2x} + c_2$ (c) $c_1 + c_2 e^{-2x}$ (d) None of these.

29. Complementary function of the differential equation $\frac{d^2y}{dx^2} + \frac{dy}{dx} = x$ is

- (a) $c_1 \cos 2x + c_2 \sin 2x$ (b) $c_1 e^{-x} + c_2$ (c) $c_1 + c_2 e^x$ (d) None of these.

30. Complementary function of the differential equation $\frac{d^2y}{dx^2} - \frac{dy}{dx} = x$ is

- (a) $c_1 \cos 2x + c_2 \sin 2x$ (b) $c_1 e^{2x} + c_2$ (c) $c_1 + c_2 e^x$ (d) None of these.

31. Complementary function of the differential equation $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = x$ is
- (a) $c_1 \cos 2x + c_2 \sin 2x$ (b) $(c_1 + c_2 x) e^{-x}$ (c) $(c_1 + c_2 x) e^x$ (d) None of these.
32. Complementary function of the differential equation $\frac{d^2y}{dx^2} - 4\frac{dy}{dx} + 4y = x$ is
- (a) $c_1 \cos 2x + c_2 \sin 2x$ (b) $(c_1 + c_2 x) e^{2x}$ (c) $(c_1 + c_2 x) e^{-2x}$ (d) None of these.
33. Complementary function of the differential equation $\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + y = x$ is
- (a) $c_1 \cos 2x + c_2 \sin 2x$ (b) $(c_1 + c_2 x) e^{-x}$ (c) $(c_1 + c_2 x) e^x$ (d) None of these.
34. Complementary function of the differential equation $\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 4y = x$ is
- (a) $c_1 \cos 2x + c_2 \sin 2x$ (b) $(c_1 + c_2 x) e^{2x}$ (c) $(c_1 + c_2 x) e^{-3x}$ (d) None of these.
35. Particular integral of the differential equation $\frac{d^2y}{dx^2} - y = e^{2x}$ is
- (a) $c_1 \cos x + c_2 \sin x$ (b) $\frac{1}{3}e^{-2x}$ (c) $\frac{1}{3}e^{2x}$ (d) None of these.
36. Particular integral of the differential equation $\frac{d^2y}{dx^2} - y = e^{-2x}$ is
- (a) $c_1 \cos x + c_2 \sin x$ (b) $\frac{1}{3}e^{-2x}$ (c) $\frac{1}{3}e^{2x}$ (d) None of these.
37. Particular integral of the differential equation $\frac{d^2y}{dx^2} - 4y = e^{2x}$ is
- (a) $c_1 \cos x + c_2 \sin x$ (b) $\frac{x}{4}e^{2x}$ (c) $\frac{x}{2}e^{2x}$ (d) None of these.
38. Particular integral of the differential equation $\frac{d^2y}{dx^2} - y = \sin(2x)$ is
- (a) $c_1 \cos x + c_2 \sin x$ (b) $-\frac{1}{5}\sin(2x)$ (c) $-\frac{1}{5}\sin(2x)$ (d) None of these.
39. Particular integral of the differential equation $\frac{d^2y}{dx^2} + 10y = \cos(3x)$ is
- (a) $\cos 3x$ (b) $-\frac{1}{3}\cos(3x)$ (c) $-\frac{1}{3}\sin(3x)$ (d) None of these.
40. Particular integral of the differential equation $\frac{d^2y}{dx^2} + 4y = \cos(2x)$ is
- (a) $c_1 \cos 2x + c_2 \sin 2x$ (b) $-\frac{x}{3}\sin(2x)$ (c) $\frac{x}{4}\sin(2x)$ (d) None of these.