

Roll No.-----

प्रश्नपुस्तिका क्रमांक
Question Booklet No.

725305

O.M.R. Serial No.

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BCA (Fourth Semester) Examination, 2024-25

(NEP)

(BCA4005)

MATHEMATICS-III

K-700

Paper Code							
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(To be filled in the
OMR Sheet)

प्रश्नपुस्तिका सीरीज
Question Booklet Series

A

SE

Time : 1:30 Hours]

[Maximum Marks-75

Instructions to the Examinee :

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.

(Remaining instructions on the last page)

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हो या उसमें किसी अन्य प्रकार की कमी हो, तो उसे तुरन्त बदल लें।

(शेष निर्देश अन्तिम पृष्ठ पर)

1. The value of $(4-3i)+(2i-8)$ is equal to
- (A) $-4-i$
 - (B) $-4+i$
 - (C) $4-i$
 - (D) $4+i$
2. The value of $\frac{2-3i}{4-i}$ is equal to
- (A) $\frac{1}{17}(-11-10i)$
 - (B) $\frac{1}{17}(11-10i)$
 - (C) $\frac{1}{17}(-11+10i)$
 - (D) None
3. The value of $(4+i)(3+2i)(1-i)$ is equal to
- (A) $-21-i$
 - (B) $-21+i$
 - (C) $21-i$
 - (D) $21+i$
4. The value of $|4-3i|$ is equal to
- (A) 5
 - (B) 25
 - (C) 16
 - (D) 9
5. The value of $(4-3i)-(2i-8)$ is equal to
- (A) $12+5i$
 - (B) $-4+i$
 - (C) $12-5i$
 - (D) $4+i$

6. The value of $(i)^{19}$ is equal to

- (A) $-i$
- (B) i
- (C) 1
- (D) -1

7. The real part of $(4-3i)+(2i-8)$ is equal to

- (A) 4
- (B) -4
- (C) 1
- (D) -1

8. The imaginary part of $(4-3i)+(2i-8)$ is equal to

- (A) 4
- (B) -4
- (C) 1
- (D) -1

9. Conjugate of $2i-8$ is

- (A) $2i-8$
- (B) $-2i-8$
- (C) $2i+8$
- (D) None

10. Polar form of complex number $z = x + iy$ is denoted by

- (A) $re^{-i\theta}$
- (B) $re^{i\theta}$
- (C) $e^{i\theta}$
- (D) None

11. Polar form of complex number $2+2\sqrt{3}i$ is
- (A) $e^{\pi i/3}$
 - (B) $4e^{\pi i/3}$
 - (C) $4e^{-\pi i/3}$
 - (D) None
12. If $z_1=1-i$, $z_2=-2+4i$ then the value of $\left| \frac{z_1+z_2+1}{z_1-z_2+i} \right|$ is
- (A) 4
 - (B) -4
 - (C) $3/5$
 - (D) $4/3$
13. If $3x+2iy-ix+5y=7+5i$, then the value of x, y are
- (A) $x=2, y=-1$
 - (B) $x=-1, y=2$
 - (C) $x=2, y=1$
 - (D) None
14. The value of $3\left(\frac{1+i}{1-i}\right)^2 - 2\left(\frac{1-i}{1+i}\right)^3$ is
- (A) $-3-i$
 - (B) $-3-2i$
 - (C) $4-i$
 - (D) $4+i$
15. What is the order of the differential equation $y'' - 3y' + 2y = 0$?
- (A) First order
 - (B) Second order
 - (C) Third order
 - (D) Fourth order

16. What is the auxiliary equation associated with $y'' - 3y' + 2y = 0$?
- (A) $m^2 + 3m + 2 = 0$
 - (B) $m^2 - 3m + 2 = 0$
 - (C) $m^2 - 2m + 3 = 0$
 - (D) $m^2 + 2m - 3 = 0$
17. Solve the auxiliary equation $m^2 - 3m + 2 = 0$. What are its roots?
- (A) $m = 1$ and $m = 2$
 - (B) $m = -1$ and $m = -2$
 - (C) $m = 1$ and $m = -2$
 - (D) $m = -1$ and $m = 2$
18. For an equation with distinct real roots $m_1 = 1$ and $m_2 = 2$, what is the general solution of $y'' - 3y' + 2y = 0$?
- (A) $y = C_1e^x + C_2e^{2x}$
 - (B) $y = C_1e^{-x} + C_2e^{-2x}$
 - (C) $y = C_1\cos x + C_2\sin x$
 - (D) $y = C_1e^{2x} + C_2e^x$
19. If the auxiliary equation of a differential equation has a repeated root $m = 3$, what is the correct form of the general solution?
- (A) $y = C_1e^{3x} + C_2e^{3x}$
 - (B) $y = (C_1 + C_2x)e^{3x}$
 - (C) $y = C_1e^{3x} + C_2e^{-3x}$
 - (D) $y = C_1\cos(3x) + C_2\sin(3x)$
20. For the differential equation $y'' + 4y = 0$, what is its auxiliary equation?
- (A) $m^2 + 4 = 0$
 - (B) $m^2 - 4 = 0$
 - (C) $m^2 + 2m + 4 = 0$
 - (D) $m^2 - 2m + 4 = 0$

21. Solve $m^2 + 4 = 0$. What are the roots?
- (A) $m = \pm 2i$
 - (B) $m = \pm 4$
 - (C) $m = \pm 2$
 - (D) $m = 2$ and -2
22. Given the complex roots $m = \pm 2i$, what is the general solution for $y'' + 4y = 0$?
- (A) $y = C_1 e^{2x} + C_2 e^{-2x}$
 - (B) $y = C_1 \cos(2x) + C_2 \sin(2x)$
 - (C) $y = C_1 \cosh(2x) + C_2 \sinh(2x)$
 - (D) $y = (C_1 + C_2 x) e^{2x}$
23. The differential equation $y'' - 2y' + y = 0$ leads to a repeated root in the auxiliary equation. What is that root?
- (A) $m = 0$
 - (B) $m = 1$
 - (C) $m = -1$
 - (D) $m = 2$
24. Which of the following equations is a second order linear differential equation with constant coefficients?
- (A) $y'' + \sin(x)y' + y = 0$
 - (B) $y'' - 3y' + 2y = 0$
 - (C) $y'' + xy' + y = 0$
 - (D) $y'' + e^x y = 0$
25. For the differential equation $y'' + 5y' + 6y = 0$, what is the auxiliary equation?
- (A) $m^2 + 5m + 6 = 0$
 - (B) $m^2 - 5m + 6 = 0$
 - (C) $m^2 + 6m + 5 = 0$
 - (D) $m^2 - 6m + 5 = 0$

26. Solve the auxiliary equation $m^2 + 5m + 6 = 0$. What are the roots?
- (A) $m = -2$ and $m = -3$
- (B) $m = 2$ and $m = 3$
- (C) $m = -1$ and $m = -6$
- (D) $m = 1$ and $m = 6$
27. Which of the following is a valid second order differential equation with constant coefficients?
- (A) $y'' + 3xy' + 2y = 0$
- (B) $y'' + 3y' + 2xy = 0$
- (C) $y'' + 3y' + 2y = 0$
- (D) $y'' + \sin(x)y' + 2y = 0$
28. For a differential equation whose auxiliary roots are complex, $m = a \pm bi$, what is the form of the general solution?
- (A) $y = C_1e^{ax} + C_2e^{bx}$
- (B) $y = C_1e^{ax} \cos(bx) + C_2e^{ax} \sin(bx)$
- (C) $y = C_1\cos(bx) + C_2\sin(bx)$
- (D) None
29. What is the degree of the differential equation $y'' - 3y' + 2y = 0$?
- (A) Zero order
- (B) First order
- (C) Second order
- (D) Third order
30. If the auxiliary equation of a differential equation has a repeated root $m = 5$, what is the correct form of the general solution?
- (A) $y = C_1e^{5x} + C_2e^{5x}$
- (B) $y = (C_1 + C_2x)e^{5x}$
- (C) $y = C_1e^{5x} + C_2e^{-5x}$
- (D) None

31. What does the symbol D stand for?
- (A) d^2/dx^2
 - (B) $\int dx$
 - (C) d/dx
 - (D) None of these
32. Which of the following equations is not a second order linear differential equation with constant coefficients?
- (A) $y'' - y = 0$
 - (B) $y'' + 3xy' + 2y = 0$
 - (C) $y'' + y' + y = 0$
 - (D) None
33. Which of the following equations is non-homogeneous?
- (A) $y'' + \sin(x)y' + y = 0$
 - (B) $y'' - 3y' + 2y = 0$
 - (C) $y'' + xy' + y = 0$
 - (D) $y'' + e^xy = x$
34. What is the full form of C.F. and P.I.?
- (A) Customary Function and Particular Integral
 - (B) Complementary Function and Periodic Integral
 - (C) Complementary Function and Particular Integral
 - (D) Customary Function and Periodic Integral
35. What is the general solution of $y'' - 7y' + 12y = 0$?
- (A) $y = C_1e^x + C_2e^{2x}$
 - (B) $y = C_1e^{3x} + C_2e^{4x}$
 - (C) $y = C_1\cos x + C_2\sin x$
 - (D) $y = C_1e^{2x} + C_2e^x$

36. What is the general solution of $y'' - 8y' + 16y = 0$?
- (A) $y = C_1 e^{4x} + C_2 e^{4x}$
 (B) $y = C_1 e^{4x} - C_2 e^{4x}$
 (C) $y = (C_1 + xC_2) e^{4x}$
 (D) $y = C_1 \cos 4x + C_2 \sin 4x$
37. What is the general solution of $y'' + 16y = 0$?
- (A) $y = C_1 e^{4x} + C_2 e^{-4x}$
 (B) $y = C_1 e^{4x} - C_2 e^{4x}$
 (C) $y = (C_1 + xC_2) e^{4x}$
 (D) $y = C_1 \cos 4x + C_2 \sin 4x$
38. What is the general solution of $y'' - 3y' + 2y = e^{5x}$?
- (A) $y = C_1 e^x + C_2 e^{2x}$
 (B) $y = C_1 e^x + C_2 e^{2x} + 13/12 e^{5x}$
 (C) $y = C_1 e^x + C_2 e^{2x} + 1/12 e^{5x}$
 (D) $y = C_1 e^x + C_2 e^{2x} - 13/12 e^{5x}$
39. The integrating factor of the differential equation $(1-x^2) \frac{dy}{dx} - xy = 1$ is
- (A) $-x$
 (B) $\frac{x}{1-x^2}$
 (C) $\sqrt{1-x^2}$
 (D) $\frac{1}{2} \log(1-x^2)$
40. The order and degree of the differential equation $\frac{dy}{dx} + x^2 \frac{d^2y}{dx^2} + xy \sin x = 0$ are _____ respectively
- (A) 1, 1
 (B) 2, 1
 (C) 3, 2
 (D) None

41. The solution of $(1+y^2)dx + dy = 0$ is
- (A) $x = \cot y + c$
 - (B) $y = \cot x + c$
 - (C) $x = \cot(x+c)$
 - (D) None
42. The number of arbitrary constants in the particular solution of a differential equation of fourth order is
- (A) 4
 - (B) 2
 - (C) 1
 - (D) 0
43. The solution of $\frac{d^2y}{dx^2} = 2$ is
- (A) $y = x^2 + c_1x + c_2$
 - (B) $y = \frac{x^2}{2} + c_1x + c_2$
 - (C) $y = x^2 + c_1x$
 - (D) $y = 2x + c_2$
44. $f(x, y) = \frac{x^3 - y^3}{x + y}$ is a homogeneous function of degree
- (A) 1
 - (B) 2
 - (C) 3
 - (D) Not defined
45. The general solution of $\frac{dy}{dx} = \frac{y}{x}$ is
- (A) $y = \frac{k}{x}$
 - (B) $y = k \log x$
 - (C) $y = kx$
 - (D) $\log y = kx$

46. The general solution of the differential equation $\frac{dy}{dx} = \frac{3\sec x}{2\cos ec x}$ is
- (A) $3\cos x - 2\cos y = c$
 (B) $3\sin x + 2\sin y = c$
 (C) $3\cos x + 2\tan x = c$
 (D) $3\cos x + 2\sin y = c$
47. Solution of $\frac{dy}{dx} - y = e^{2x}$ is
- (A) $y = e^{3x} + ce^{2x}$
 (B) $y = e^x + cx^2$
 (C) $y = e^x + e^{2x}$
 (D) $y = ce^x + e^{2x}$
48. The order of the differential equation $\sqrt{\frac{d^3y}{dx^3}} = \sqrt{\frac{dy}{dx}}$ is
- (A) 1
 (B) 2
 (C) 3
 (D) Not defined
49. In the differential equation $\frac{dy}{dx} + y \tan x = \cos x$, $y(0) = 0$. The value of $y(\pi)$ is
- (A) π
 (B) 2π
 (C) -2π
 (D) $-\pi$
50. The solution of $\frac{dy}{dx} = e^{x+y}$ is
- (A) $e^x + e^{-y} = c$
 (B) $e^x + e^y = c$
 (C) $e^{-x} + e^y = c$
 (D) $e^{-x} + e^{-y} = c$

51. The degree of $y' + y = \frac{5}{y'}$ is
- (A) 1
 - (B) 2
 - (C) 3
 - (D) Not defined
52. The value of $3(-1+4i) - 2(-i+7)$ is equal to
- (A) $-4-i$
 - (B) $-4+i$
 - (C) None
 - (D) $8+i$
53. The value of $\frac{3-2i}{-1+i}$ is equal to
- (A) $\frac{1}{2}(-5-i)$
 - (B) $\frac{1}{17}(11-10i)$
 - (C) $\frac{1}{17}(-11+10i)$
 - (D) None
54. The value of $(2-i)(-3+2i)(5-4i)$ is equal to
- (A) $-21-i$
 - (B) $-21+i$
 - (C) $8+51i$
 - (D) None
55. The value of $|3-4i|$ is equal to
- (A) 5
 - (B) 25
 - (C) 16
 - (D) 9

56. The value of $(4-3i)-(2i-7)$ is equal to
- (A) $12+5i$
 - (B) $-4+i$
 - (C) $11-5i$
 - (D) None
57. The value of $(i)^{39}$ is equal to
- (A) $-i$
 - (B) i
 - (C) 1
 - (D) None
58. The real part of $(4-3i)+(2i-7)$ is equal to
- (A) 4
 - (B) -3
 - (C) 1
 - (D) None
59. The imaginary part of $(4-3i)+(3i-8)$ is equal to
- (A) 0
 - (B) -4
 - (C) 1
 - (D) None
60. Conjugate of $2i+8$ is
- (A) $2i-8$
 - (B) $-2i-8$
 - (C) $-2i+8$
 - (D) None

61. Polar form of complex number $-5+5i$ is
- (A) $5\sqrt{2}e^{3\pi i/4}$
 (B) $5e^{\pi i/3}$
 (C) $2e^{-\pi i/3}$
 (D) None
62. If $z_1 = 1-i$, $z_2 = -2+4i$ then the value of $|2z_2 - 3z_1|^2$ is
- (A) 169
 (B) 189
 (C) 170
 (D) None
63. If $2x-3iy+4ix-2y-5-10i = (x+y+2)-(y-x+3)i$, then the value of x, y are
- (A) $x=2, y=-1$
 (B) $x=1, y=-2$
 (C) $x=2, y=1$
 (D) None
64. Find a_0 for the function $f(x) = \sqrt{\frac{1-\cos x}{2}}$, $-\pi < x < \pi$
- (A) 0
 (B) 2π
 (C) $\frac{\pi}{2}$
 (D) $\frac{\pi}{4}$
65. Function $f(x) = x - x^2$ in $-\pi < x < \pi$ is
- (A) An even function
 (B) An odd function
 (C) Neither even nor odd function
 (D) Logarithmic function

66. If $f(x)$ is periodic in $[0, 2\pi]$, Which of them is incorrect
- (A) $a_0 = \frac{1}{2\pi} \int_0^{2\pi} f(x) dx$
- (B) $a_0 = \frac{1}{\pi} \int_0^{2\pi} f(x) dx$
- (C) $a_n = \frac{1}{\pi} \int_0^{2\pi} f(x) \cos nx dx$
- (D) $b_n = \frac{1}{\pi} \int_0^{2\pi} f(x) \sin nx dx$
67. If $f(x)$ is periodic with period $T = 2l$ then fourier coefficient $a_0 =$
- (A) $\frac{1}{2l} \int_a^b f(x) dx$
- (B) $\frac{1}{l} \int_a^b f(x) dx$
- (C) $\frac{2}{l} \int_a^b f(x) dx$
- (D) None of them
68. If $f(x) = \cos 2x$, then time period of $f(x)$ is
- (A) 2π
- (B) $\pi/2$
- (C) 4π
- (D) π
69. Fourier series for $f(x) = |\sin x|$ in $(-\pi, \pi)$ contains
- (A) Sine terms
- (B) Cosine terms
- (C) Both of them
- (D) None of them
70. Any waveform can be expressed in Fourier series if it satisfied
- (A) Sampling conditions
- (B) Maxwell conditions
- (C) Leibnitz conditions
- (D) Dirichlet conditions

71. In Fourier series, a_0, a_n, b_n are obtained by
- (A) Euler's Formula
 - (B) Taylor's Formula
 - (C) Maclaurin Formula
 - (D) Laplace Formula
72. If $f(x) = x^2 \cos x$ is defined in $[-1, 1]$, then Fourier coefficient b_n is
- (A) 4
 - (B) -1
 - (C) 0
 - (D) 1
73. Which of the following is not Dirichlet condition for Fourier series expansion
- (A) $f(x)$ is periodic
 - (B) $f(x)$ has infinite number of discontinuities
 - (C) $f(x)$ is single valued
 - (D) $f(x)$ has finite number of discontinuities
74. Find the gradient of the function $\phi = x^2 + \sin y$
- (A) $2xi + 2yj$
 - (B) $2xi$
 - (C) yj
 - (D) $2xi + \cos y j$
75. If vector $\vec{V} = (x + 3y)i + (2y - 2z)j + (x + az)k$ is solenoidal. Then a is
- (A) -2
 - (B) 3
 - (C) 1
 - (D) -3

76. If $\vec{F} = xi + yj + zk$, then $\text{curl } \vec{F}$ is
- (A) 3
(B) 1
(C) 0
(D) $i + j + k$
77. $\text{curl}(\vec{a} \times \vec{r}) =$
- (A) $2\vec{a}$
(B) $\vec{a}$
(C) 0
(D) None of them
78. For any scalar function $\phi(x, y, z)$, $\text{curl}(\text{grad}\phi) =$
- (A) $2\vec{r}$
(B) $\vec{r}$
(C) 0
(D) 3
79. What is the value of $\vec{\nabla} \left(\frac{1}{r} \right)$ is
- (A) $\frac{\vec{r}}{r^3}$
(B) $-\frac{\vec{r}}{r^3}$
(C) $\frac{\vec{r}}{r^2}$
(D) $-\frac{\vec{r}}{r^2}$
80. $\text{div } \hat{r} =$
- (A) $2/r$
(B) $-2/r$
(C) $1/r$
(D) $-1/r$

81. $\vec{\nabla}(\cos^2 r)$
- (A) $\cos 2r \nabla r$
 - (B) $-\sin 2r \nabla r$
 - (C) $-\cos 2r \nabla r$
 - (D) $\sin 2r \nabla r$
82. Gradient of function $f(r)$ is
- (A) $f'(r)$
 - (B) $f''(r)$
 - (C) $f'(r) \frac{\partial r}{\partial x}$
 - (D) $f'(r) \nabla r$
83. If $\vec{F} = 2xy\mathbf{i} + x^4\mathbf{j} + 2yz\mathbf{k}$, then $\text{div } \vec{F}$ is
- (A) $4xy$
 - (B) $4y$
 - (C) $4x$
 - (D) 0
84. Curl of $\vec{r}$ is
- (A) 0
 - (B) $\vec{0}$
 - (C) 3
 - (D) None
85. Divergence of $\vec{r}$ is
- (A) 0
 - (B) $\vec{0}$
 - (C) 3
 - (D) none

86. Divergence of constant vector is
 (A) 0
 (B) $\vec{0}$
 (C) 3
 (D) none
87. The solution of the differential equation $(D^2 - 2D + 5)^2 y = 0$ is
 (A) $y = e^{2x} \{(c_1 + c_2 x) \cos x + (c_3 + c_4 x) \sin x\}$
 (B) $y = e^x \{(c_1 + c_2 x) \cos 2x + (c_3 + c_4 x) \sin 2x\}$
 (C) $y = e^x \{(c_1 + c_2 x) \cos 3x + (c_3 + c_4 x) \sin 2x\}$
 (D) None
88. The particular integral of $(D^2 + a^2)y = \sin ax$ is
 (A) $-\frac{x}{2a} \cos ax$
 (B) $\frac{x}{2a} \cos ax$
 (C) $-\frac{x}{a} \cos ax$
 (D) None
89. $e^{-x}(c_1 \cos \sqrt{3}x + c_2 \sin \sqrt{3}x) + c_3 e^{2x}$ is the general solution of
 (A) $\frac{d^3 y}{dx^3} + 8y = 0$
 (B) $\frac{d^3 y}{dx^3} - 8y = 0$
 (C) $\frac{d^3 y}{dx^3} - y = 0$
 (D) None
90. The solution of the differential equation $\frac{d^2 y}{dx^2} - 3\frac{dy}{dx} + 2y = e^{3x}$ is given by
 (A) $y = c_1 e^x + c_2 e^{2x} + \frac{1}{2} e^{3x}$
 (B) $y = c_1 e^{-x} + c_2 e^{2x} + \frac{1}{2} e^{3x}$
 (C) $y = c_1 e^x + c_2 e^{-2x} + \frac{1}{2} e^{3x}$
 (D) None

91. The P.I. of $(D^3 - D)y = e^x + e^{-x}$ is

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

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

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

(D) None

92. The P.I. of $(D^2 + D)y = x^2 + 2x + 4$ is

(A) $\frac{1}{3}x^2 + 4x$

(B) $\frac{1}{3}x^3 + x$

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

(D) None

93. A particle executing simple harmonic motion of amplitude 5 cms has a speed of 8 cms/sec when at a distance of 3 cms from the centre of the path. The period of the motion of the particle will be

(A) 2π sec

(B) π sec

(C) 4π sec

(D) None

94. The periodic time of the motion described by $\frac{d^2x}{dt^2} + \mu x = 0$ is

(A) $\frac{\pi}{\sqrt{\mu}}$

(B) $\frac{2\pi}{\sqrt{\mu}}$

(C) $\frac{\sqrt{\pi}}{\sqrt{\mu}}$

(D) None

95. The family of straight lines passing through the origin is represented by the differential equation

(A) $ydx + xdy = 0$

(B) $ydy + xdx = 0$

(C) $xdx - ydy = 0$

(D) $ydx - xdy = 0$

96. The differential equation satisfying the relation $y = A \cos(mt - \alpha)$ is
- (A) $\frac{d^2y}{dt^2} = -\alpha^2 y$
- (B) $\frac{dy}{dt} = -m^2 y$
- (C) $\frac{d^2y}{dt^2} = -m^2 y$
- (D) None
97. If c is eliminated from the equation $y = 2cx + c^2$ then the order of differential equation is
- (A) 2
- (B) 1
- (C) 3
- (D) None
98. $y = c_1 e^{3x} + c_2 e^{-3x}$ where c_1 and c_2 are constants is the general solution of the differential equation $\frac{d^2y}{dx^2} + Ky = 0$ where K is equal to
- (A) 9
- (B) -9
- (C) 3
- (D) None
99. $\frac{1}{x^3}$ is given as an integrating factor of $(x^3 - 3xy + 2y^2)dx + x(3x - 2y)dy = 0$. Its general solution is
- (A) $3 \log x + \frac{3y}{x} - \frac{y^2}{x^2} = C$
- (B) $x + \frac{3y}{x} - \frac{y^2}{x^2} = C$
- (C) $x + \frac{3y}{x} + \frac{y^2}{x^2} = C$
- (D) None
100. The equation $\frac{dy}{dx} + x \sin^2 y = x^3 \cos^3 y$ is reduced to a linear form by using the substitution
- (A) $x^2 = 4ay$
- (B) $y^2 = 4ax$
- (C) $y = 4ax^2$
- (D) None

4. Four alternative answers are mentioned for each question as – A, B, C & D in the question booklet. The candidate has to choose the correct answer and mark the same in the OMR Answer-Sheet as per the direction :

Example :

Question :

- Q. 1 (A) (B) (C) (D)
Q. 2 (A) (B) (C) (D)
Q. 3 (A) (B) (C) (D)

Illegible answers with cutting and over-writing or half filled circle will be cancelled.

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.
6. All answers are to be given on OMR Answer Sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.
7. Before writing anything on the OMR Answer Sheet, all the Instructions given in it should be read carefully.
8. After the completion of the examination candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.
9. There will be no negative marking.
10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.
11. To bring and use of log-book, calculator, pager and cellular phone in examination hall is prohibited.
12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

Impt. On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question booklet, then after showing it to the invigilator, get another question booklet of the same series.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर— A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से एक सही उत्तर छाँटना है। उत्तर को OMR आन्तर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

उदाहरण :

प्रश्न :

- प्रश्न 1 (A) (B) (C) (D)
प्रश्न 2 (A) (B) (C) (D)
प्रश्न 3 (A) (B) (C) (D)

अपठनीय उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, या गोले में आधा भरकर दिया गया, उत्तर निरस्त कर दिया जाएगा।

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
7. ओ. एम. आर. उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।
8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।
9. निगेटिव मार्किंग नहीं है।
10. कोई भी रफ कार्य, प्रश्न-पुस्तिका के अन्त में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैलकुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।
12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

महत्वपूर्ण : प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्न-पुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्न-पुस्तिका प्राप्त कर लें।