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(To be filled in the
OMR Sheet)

प्रश्नपुस्तिका क्रमांक
Question Booklet No.

O.M.R. Serial No.

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प्रश्नपुस्तिका सीरीज
Question Booklet Series

A

BCA (Fourth Semester) Examination, July-2022

BCA-405(N)

Mathematics-III

Time : 1:30 Hours

Maximum Marks-100

जब तक कहा न जाय, इस प्रश्नपुस्तिका को न खोलें

- K-376**
- निर्देश : —
1. परीक्षार्थी अपने अनुक्रमांक, विषय एवं प्रश्नपुस्तिका की सीरीज का विवरण यथास्थान सही- सही भरें, अन्यथा मूल्यांकन में किसी भी प्रकार की विसंगति की दशा में उसकी जिम्मेदारी स्वयं परीक्षार्थी की होगी।
 2. इस प्रश्नपुस्तिका में 100 प्रश्न हैं, जिनमें से केवल 75 प्रश्नों के उत्तर परीक्षार्थियों द्वारा दिये जाने हैं। प्रत्येक प्रश्न के चार वैकल्पिक उत्तर प्रश्न के नीचे दिये गये हैं। इन चारों में से केवल एक ही उत्तर सही है। जिस उत्तर को आप सही या सबसे उचित समझते हैं, अपने उत्तर पत्रक (O.M.R. ANSWER SHEET) में उसके अक्षर वाले वृत्त को काले या नीले बाल प्वाइंट पेन से पूरा भर दें। यदि किसी परीक्षार्थी द्वारा किसी प्रश्न का एक से अधिक उत्तर दिया जाता है, तो उसे गलत उत्तर माना जायेगा।
 3. प्रत्येक प्रश्न के अंक समान हैं। आप के जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
 4. सभी उत्तर केवल ओ०एम०आर० उत्तर पत्रक (O.M.R. ANSWER SHEET) पर ही दिये जाने हैं। उत्तर पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
 5. ओ०एम०आर० उत्तर पत्रक (O.M.R. ANSWER SHEET) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाय।
 6. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी ओ०एम०आर० शीट उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें।
 7. निगेटिव मार्किंग नहीं है।
- महत्वपूर्ण : — प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्ष निरीक्षक को दिखाकर उसी सीरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।

1. Roots of equation $z^2 + 1 = 0$ are :
 - (A) $i, -i$
 - (B) $1, i$
 - (C) $1, -1$
 - (D) $-1, i$
2. Real part of $f(z) = 4 + i$ is :
 - (A) 1
 - (B) 4
 - (C) $4 + i$
 - (D) i
3. $\overline{z_1 + z_2}$ is equal to :
 - (A) $\overline{z_1} - \overline{z_2}$
 - (B) $\overline{z_1} + \overline{z_2}$
 - (C) $z_1 - z_2$
 - (D) NOT
4. Value of $\sqrt{-100}$ is :
 - (A) 10
 - (B) -10
 - (C) $10i$
 - (D) $-10i$
5. In Fourier series of $f(x)$, coefficients a_0, a_n, b_n are called :
 - (A) Laplace coefficients
 - (B) Fourier coefficients
 - (C) Taylor's coefficients
 - (D) Not
6. If $f(x) = \sin x$ is given in $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$, then value of a_n in Fourier series :
 - (A) 0
 - (B) 1
 - (C) 2
 - (D) 3

7. Differential equation $\frac{3dy}{dx} + \frac{2}{x+1}y = \frac{x^3}{y^2}$ is reduced to linear for transformation :
- (A) $y = x^3$
 - (B) $y^2 = t$
 - (C) $y^3 = t$
 - (D) NOT
8. $\int_c^{c+2\pi} \sin nx \, dx$ is :
- (A) π
 - (B) c
 - (C) 0
 - (D) 2π
9. If $f(x) = \cos x$ in $[-l, l]$ then Fourier coefficient b_n is :
- (A) 1
 - (B) l
 - (C) $-l$
 - (D) 0
10. Fourier coefficients a_0, a_n, b_n are obtained by :
- (A) Taylor's Formula
 - (B) Maclaurin's Formula
 - (C) Euler's Formula
 - (D) Laplace Formula
11. $\frac{1}{D^2} \sin 2x$ is equal to :
- (A) $\frac{-1}{2} \sin 2x$
 - (B) $\frac{-1}{16} \sin 2x$
 - (C) $\frac{1}{4} \sin 2x$
 - (D) $\frac{-1}{4} \sin 2x$

12. $\frac{1}{d+1}e^x$ is :
- (A) e^x
 - (B) $\frac{1}{2}e^x$
 - (C) $\frac{1}{4}e^x$
 - (D) $\frac{-1}{4}e^x$
13. If $f(x) = x$ is periodic in $[0, 2\pi]$ then Fourier coefficient a_0 is :
- (A) $a_0 = \pi$
 - (B) $a_0 = 2\pi$
 - (C) $a_0 = \pi/2$
 - (D) NOT
14. Modulus value of $z = x + iy$ is :
- (A) $\sqrt{x^2 + y}$
 - (B) $\sqrt{x^2 + y^2}$
 - (C) $\tan^{-1}\left(\frac{y}{x}\right)$
 - (D) $\sqrt{x^2 - y^2}$
15. Cube roots of unity are :
- (A) $1, w, w^2$
 - (B) $1, -1, 0$
 - (C) $1, 1, 1$
 - (D) Not
16. Argument value of $z = 1 + i$ is :
- (A) $\frac{\pi}{2}$
 - (B) $\frac{\pi}{4}$
 - (C) 0
 - (D) $\frac{-\pi}{4}$

17. If $(x + 5) + i(y + 3) = 0$ then :
- (A) $x = 5, y = 3$
 - (B) $x = -5, y = 3$
 - (C) $x = 5, y = -3$
 - (D) $x = -5, y = -3$
18. Differential equation $(1 + 4xy + 2y^2)dx + (1 + 4xy + 2x^2)dy = 0$ is :
- (A) Linear in x
 - (B) Linear in y
 - (C) Exact ODE
 - (D) Homogeneous ODE
19. Order of ODE $\left(\frac{dy}{dx}\right)^2 + y = 0$ is :
- (A) 1
 - (B) 2
 - (C) Not defined
 - (D) -1
20. Degree of ODE $\sin\left(\frac{dy}{dx}\right) = 1$ is :
- (A) 1
 - (B) 0
 - (C) 2
 - (D) Does not exist
21. Maximum rate of increase of scalar point function $\phi(x, y, z)$ is :
- (A) $\nabla\phi$
 - (B) $-|\nabla\phi|$
 - (C) $|\nabla\phi|$
 - (D) $-\nabla\phi$

22. If $\phi(x, y, z) = x + y$, then directional derivative of $\phi(x, y, z)$ in the direction of $\vec{a} = i$ is :
- (A) 0
(B) 1
(C) -1
(D) i
23. If $\vec{v} = \vec{w} \times \vec{r}$ then $\text{curl } \vec{v}$ is :
- (A) $\vec{w}$
(B) $\vec{w} \times \vec{r}$
(C) $2\vec{w}$
(D) NOT
24. If $\vec{r} = xi + yj + zk$ then $\text{curl } \vec{r}$ is equal to :
- (A) 1
(B) $\vec{r}$
(C) 0
(D) 1
25. If $\phi(x, y, z) = x + y + z$ then gradient of ϕ is :
- (A) $i + j + k$
(B) $i + j$
(C) $x + y + z$
(D) 0
26. Which of the following is true ?
- (A) $|z_1 + z_2| \geq |z_1| + |z_2|$
(B) $|z_1 + z_2| = |z_1| + |z_2|$
(C) $|z_1 + z_2| \leq |z_1| + |z_2|$
(D) NOT

27. If $(2x + 2) + i(y - 5) = 0$ then :
- (A) $x = 1, y = 5$
 - (B) $x = -1, y = -5$
 - (C) $x = 1, y = -5$
 - (D) $x = -1, y = 5$
28. If $f(x) = \sin x \cos 2x$ then $f(x)$ is :
- (A) Even function
 - (B) Odd function
 - (C) Neither even nor odd
 - (D) NOT
29. Infinite series $f(x) = \frac{a_0}{2} + \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{c}\right) + \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{c}\right)$ is :
- (A) Fourier series
 - (B) Laplace series
 - (C) Taylor's series
 - (D) Not
30. If $f(x) = \cos x$ is defined in $[-1, 1]$ then Fourier coefficient b_n is :
- (A) 4
 - (B) -1
 - (C) +1
 - (D) 0
31. Real part of $f(z) = \sin z$ is :
- (A) $\sin x \cos y$
 - (B) $\sin x \cos hy$
 - (C) $\sin hx \cos y$
 - (D) $\sin x \sin hy$
32. Euler's Formula is :
- (A) $e^{i\theta} = \cos \theta + i \sin \theta$
 - (B) $e^{-i\theta} = \cos \theta + i \sin \theta$
 - (C) $e^{i\theta} = 2 \cos \theta + \sin \theta$
 - (D) $e^{-i\theta} = \cos \theta - \sin \theta$

33. A vector which is perpendicular to both vectors $\vec{a}$ and $\vec{b}$ is :

(A) $|\vec{a} \times \vec{b}|$

(B) $\vec{a} \times \vec{b}$

(C) $|2\vec{a} \times \vec{b}|$

(D) $|\vec{b} \times \vec{a}|$

34. $\nabla f(r)$ is :

(A) $f'(r)$

(B) $f'(r)\nabla r$

(C) $f'(r)\vec{r}$

(D) $\frac{f'(r)}{r}$

35. Gradient of $|\vec{r}|$ is :

(A) $\frac{\vec{r}}{r}$

(B) $\vec{r}$

(C) $\frac{\vec{r}}{r^2}$

(D) r

36. For solenoidal field vector $\vec{V}$, divergence of $\vec{V}$ is :

(A) Non zero

(B) Zero

(C) Never zero

(D) NOT

37. $\frac{d}{dt}(\vec{a} \times \vec{b}) =$

(A) $\vec{a} \times \frac{d\vec{b}}{dt} + \frac{d\vec{a}}{dt} \times \vec{b}$

(B) $\vec{a} \times \frac{d\vec{b}}{dt} + \frac{d\vec{a}}{dt} \vec{b}$

(C) $\vec{a} \times \frac{d\vec{b}}{dt} + \vec{b} \times \frac{d\vec{a}}{dt}$

(D) NOT

38. Curl of a vector field is :
- (A) Scalar
 - (B) Vector
 - (C) Never be a vector
 - (D) NOT
39. $\tan^{-1}\left(\frac{4}{7}\right) + \tan^{-1}\left(\frac{3}{11}\right)$ is :
- (A) $\frac{\pi}{4}$
 - (B) $\frac{-\pi}{4}$
 - (C) 1
 - (D) NOT
40. Imaginary part of $\frac{3-2i}{7+4i}$ is :
- (A) $\frac{2}{5}$
 - (B) $\frac{-2}{5}$
 - (C) $\frac{1}{5}$
 - (D) NOT
41. Locus of $|z| < 1$ is :
- (A) $x^2 + y^2 = 1$
 - (B) $x^2 + y^2 > 1$
 - (C) $x^2 + y^2 < 1$
 - (D) $x + y < 1$
42. $\frac{e^{iz} - e^{-iz}}{2i}$ is equal to :
- (A) $\cos z$
 - (B) $\cos hz$
 - (C) $\sin z$
 - (D) $\sin hz$

43. If $f(x)$ is periodic function with period $2c$ then Fourier coefficient a_0 is :

(A) $\frac{1}{4c} \int_a^b f(x) dx$

(B) $\frac{1}{3c} \int_a^b f(x) dx$

(C) $\frac{1}{c} \int_a^b f(x) dx$

(D) NOT

44. ODE $\frac{dy}{dx} = \frac{x^2+y^2}{xy}$ is :

(A) Homogeneous ODE

(B) Non homogeneous ODE

(C) Linear in x

(D) Linear in y

45. Sequence $\langle \frac{1}{n} \rangle$ is :

(A) Bounded above

(B) Bounded below

(C) Neither bounded above nor bounded below

(D) Option (A) and (B) both

46. Sequence $\langle a_n \rangle = \langle n \rangle$ has :

(A) Infinitely many terms

(B) Finitely many terms

(C) n terms

(D) NOT

47. Sequence $\langle \frac{1}{n+1} \rangle$ converges to :
- (A) 1
 - (B) 0
 - (C) ∞
 - (D) -1
48. Sequence $\langle a_n \rangle = \{5, 5, 5, \dots\}$ i.e. $a_n = 5 \ \forall \ n \in N$ is :
- (A) Constant sequence
 - (B) Not bounded above
 - (C) Not bounded below
 - (D) Not bounded
49. Complementary function for ODE $(D^2 - 1)y = 0$, where $D \equiv \frac{d}{dx}$ is :
- (A) $(c_1 + c_2 x)e^x$
 - (B) $c_1 e^x + c_2 e^{-x}$
 - (C) e^x
 - (D) e^{-x}
50. Complementary function for $(D^2 + 1)y = 0$ is :
- (A) $c_1 \cos x$
 - (B) $c_2 \sin x$
 - (C) $c_1 + c_2 \cos x$
 - (D) $c_1 \cos x + c_2 \sin x$

51. In sequence $\langle a_n \rangle$, where $a_n = \frac{1}{n}$ least upper bound is :
- (A) 0
 - (B) 1
 - (C) 2
 - (D) -1
52. Sequence $\langle 1 + \frac{1}{n} \rangle$ is :
- (A) Bounded
 - (B) Not bounded
 - (C) Bounded above only
 - (D) Bounded below only
53. Sequence $\langle 2 + \frac{7}{n+5} \rangle$ converges to :
- (A) 7
 - (B) 0
 - (C) 5
 - (D) 2
54. If sequence, $\langle a_n \rangle$ is bounded above there exist a real number k s.t. :
- (A) $a_n \leq k, \forall n \in N$
 - (B) $a_n \geq k, \forall n \in N$
 - (C) $a_n < -k, \forall n \in N$
 - (D) NOT
55. Series $\sum_{n=1}^{\infty} \frac{1}{n}$ is :
- (A) Convergent
 - (B) Divergent
 - (C) Oscillatory
 - (D) NOT

56. If series $\sum_{n=1}^{\infty} a_n$ is convergent then :

(A) $\lim_{n \rightarrow \infty} a_n = 0$

(B) $\lim_{n \rightarrow \infty} a_n \neq 0$

(C) $\lim_{n \rightarrow \infty} a_n = 1$

(D) $\lim_{n \rightarrow \infty} a_n =$ does not exist

57. Series $\sum_{n=1}^{\infty} \cos \frac{1}{n}$ is :

(A) Convergent

(B) Divergent

(C) Oscillatory

(D) NOT

58. Series $\sum_{n=0}^{\infty} x^n$ is convergent if :

(A) $|x| = 1$

(B) $|x| > 1$

(C) $|x| < 1$

(D) $x = 1$

59. p – series $\sum_{n=1}^{\infty} \frac{1}{n^p}$ is divergent :

(A) $p = 2$

(B) $p = 3$

(C) $p = 4$

(D) $p = 0$

60. $\sum_{n=1}^{\infty} \frac{1}{n^4}$ is :
- (A) Divergent series
 - (B) Oscillatory series
 - (C) Convergent series
 - (D) NOT
61. Field $\vec{F} = 2xy\hat{i} + (x^2 + z^2)\hat{j} + 2zy\hat{k}$ is :
- (A) Solenoidal
 - (B) Rotational
 - (C) Irrotational
 - (D) NOT
62. Curl of a vector field $\vec{f}(x, y, z) = x^2\hat{i} + 2z\hat{j} - y\hat{k}$ is :
- (A) $-3\hat{i}$
 - (B) $-3\hat{j}$
 - (C) $-3\hat{k}$
 - (D) 0
63. If $\text{curl}(\vec{v}) = 0$ then field $\vec{v}$ is :
- (A) Solenoidal
 - (B) Rotational
 - (C) Irrotational
 - (D) NOT
64. Particular integral for $(D^2 + 1)y = e^{2x}$ is :
- (A) $\frac{1}{4}e^{2x}$
 - (B) $\frac{1}{5}e^{2x}$
 - (C) $\frac{1}{2}e^{2x}$
 - (D) $\frac{1}{6}e^{2x}$

65. Particular Integral for $(D^2 + 2D + 1)y = 0$ is :
- (A) $\frac{1}{2}$
 (B) 0
 (C) 2
 (D) NOT
66. Solution of $(D^2 + 5D + 4)y = 0$ is :
- (A) $c_1 e^x + c_2 e^{-4x}$
 (B) $c_1 e^{-x} + c_2 e^{4x}$
 (C) $c_1 e^{-x} + c_2 e^{-4x}$
 (D) NOT
67. $\frac{dy}{dx} = \frac{ax+by+c}{dx+ey+f}$ is transformed into linear ODE by taking $x = X + h$, $y = Y + K$ if :
- (A) $ae - bd = 0$
 (B) $ae - bd \neq 0$
 (C) $ad - be \neq 0$
 (D) $ad - be = 0$
68. Solution of $\frac{dy}{dx} = \frac{x}{y}$ is :
- (A) $y^2 = x^2 + c$
 (B) $y^2 = -x^2 + c$
 (C) $y = x + c$
 (D) $y = x - c$
69. $y - x \frac{dy}{dx} = x + y \frac{dy}{dx}$ is :
- (A) Homogeneous ODE of degree 2
 (B) Homogeneous ODE of degree 0
 (C) Homogeneous ODE of degree 1
 (D) Non homogeneous ODE

70. $\frac{dy}{dx} = \frac{(x+y)+1}{2(x+y)+1}$ reduces to variable separable form if :
- (A) $x - y = v$
 (B) $x + y = v$
 (C) $x^2 + y^2 = v$
 (D) $xy = v$
71. Integrating factor in ODE $\frac{dy}{dx} + ay = e^{mx}$ is :
- (A) e^{mx}
 (B) e^x
 (C) e^a
 (D) e^{ax}
72. Particular integral for $F(D)y = f(x)$ is :
- (A) $\frac{1}{F(D)} f(x)$
 (B) $\frac{1}{F(D)} f(x) + c$ ($c \neq 0$)
 (C) $\frac{1}{F(D)} f(x) + 1$
 (D) NOT
73. Solution of $\frac{d^2y}{dx^2} - y = 0$ is :
- (A) $y = c_1 e^x + c_2 e^{-x}$
 (B) $y = c_1 e^x + c_2 e^x$
 (C) $y = c_1 e^x$
 (D) $(c_1 + c_2 x) e^x$
74. Maximum value of directional derivative of $\phi = 2x^2 + 3y^2 + 5z^2$ at $(1, 1, -1)$ is :
- (A) 10
 (B) -4
 (C) $\sqrt{152}$
 (D) 152

75. Divergence of $\vec{r}$ is :
- (A) 1
 - (B) 0
 - (C) 3
 - (D) 4
76. $\sin^{-1} x + \cos^{-1} x$ is :
- (A) $\frac{\pi}{2}$
 - (B) $\frac{-\pi}{3}$
 - (C) $\frac{\pi}{3}$
 - (D) NOT
77. Solution of $x dx - y dy = 0$ is :
- (A) $x = y + c$
 - (B) $x^2 - y^2 = c$
 - (C) $x - y = c$
 - (D) NOT
78. $\frac{dy}{dx} + 2y = x^2$ is :
- (A) Linear ODE in x
 - (B) Linear in y
 - (C) Linear in both variable x and y
 - (D) NOT
79. Degree of homogeneous ODE $(x^2 - y^2)dx + 3xy dy = 0$ is :
- (A) 1
 - (B) 2
 - (C) 0
 - (D) NOT

80. ODE $y \frac{dy}{dx} = x$ is :
- (A) Linear in y
 - (B) Non Linear in y
 - (C) Order of ODE is 2
 - (D) Degree of ODE is 2
81. Order of ODE $\left(\frac{dy}{dx}\right)^2 + y = 0$ is :
- (A) 1
 - (B) 2
 - (C) Not defined
 - (D) NOT
82. Integrating factor in linear ODE $\frac{dy}{dx} + Py = Q$ is :
- (A) $\int_e P dx$
 - (B) $\int_e P dy$
 - (C) $\int_e P dx + c$
 - (D) $\int_e P dy + c$
83. Degree of ODE $\left(\frac{d^2y}{dx^2}\right)^2 + \frac{d^2y}{dx^2} + y = 0$ is :
- (A) 1
 - (B) 2
 - (C) 4
 - (D) NOT
84. $f(x, y) = x^2 + y^2 + xy$ is homogeneous function of degree :
- (A) 1
 - (B) 0
 - (C) 2
 - (D) NOT

85. $\frac{dy}{dx} + Py = Qy^n$ ($n \neq 0, 1$) is :
- (A) Linear in y
 - (B) Non Linear in x
 - (C) Bernoulli equation
 - (D) NOT
86. ODE $M dx + N dy = 0$ is exact if :
- (A) $\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$
 - (B) $\frac{\partial M}{\partial y} \neq \frac{\partial N}{\partial x}$
 - (C) $\frac{\partial M}{\partial x} = \frac{\partial N}{\partial y}$
 - (D) $\frac{\partial M}{\partial x} \neq \frac{\partial N}{\partial y}$
87. $\frac{dy}{dx} + Py = Qy^n$ is linear ODE if :
- (A) $n = 1$
 - (B) $n = 2$
 - (C) $n = 0$
 - (D) $n = -1$
88. In Fourier series of $f(x)$, $f(x)$ is :
- (A) Periodic
 - (B) Non periodic
 - (C) Discontinuous
 - (D) Non differentiable
89. In Fourier series, a_0, a_n, b_n are obtained by :
- (A) Euler's formula
 - (B) Laplace formula
 - (C) Taylor's formula
 - (D) Maclaurin's formula

90. If $f(x)$ is periodic with period $\omega = 2l$ then Fourier coefficient :

(A) $a_0 = \frac{1}{4l} \int_a^b f(x) dx$

(B) $a_0 = \frac{1}{l} \int_a^b f(x) dx$

(C) $a_0 = \frac{4}{l} \int_a^b f(x) dx$

(D) NOT

91. Argument value of $z = -1 - i$ is :

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

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

(C) $\frac{-3\pi}{4}$

(D) $\frac{3\pi}{4}$

92. Modulus value of $z = a + ib$ is :

(A) $a^2 + b^2$

(B) $\sqrt{a^2 + b^2}$

(C) $\sqrt{a^2 - b^2}$

(D) $a^2 - b^2$

93. Sequence $\{3, 3, 3, 3, \dots\}$ is :

(A) Bounded above only

(B) Bounded below only

(C) Bounded above and bounded below

(D) Unbounded

94. If sequence $\langle a_n \rangle$ is convergent then $\lim_{n \rightarrow \infty} a_n$ is :

(A) unique

(B) Not unique

(C) Always more than one limits

(D) NOT

95. n^{th} partial sum in the series $\sum_{n=1}^{\infty} a_n$ is :
- (A) $a_1 + a_2 + a_3 + \dots + a_{n-1}$
 (B) $a_1 + a_2 + a_3 + \dots + a_n$
 (C) $a_1 + a_2 + a_3 + \dots + a_{n+1}$
 (D) $a_0 + a_1 + a_2 + \dots + a_n$
96. Sequence $\{1, -1, 1, -1, 1, -1, \dots\}$ is
- (A) Convergent
 (B) Divergent
 (C) Oscillatory
 (D) Not convergent
97. Series $\sum_{n=0}^{\infty} x^n$ is oscillatory if :
- (A) $x = 1$
 (B) $x = -1$
 (C) $x = 2$
 (D) $x = 0$
98. Series $\sum_{n=1}^{\infty} (-1)^n$ is :
- (A) Convergent
 (B) Divergent
 (C) Oscillatory
 (D) NOT
99. Series $\sum_{n=1}^{\infty} \left(\frac{1}{n}\right)^{2022}$ is :
- (A) Convergent
 (B) Divergent
 (C) Oscillatory
 (D) Oscillatory finitely
100. If $z = -1 + i$ then modulus amplitude form of z is :
- (A) $z = \sqrt{2} e^{(5\pi/4)i}$
 (B) $z = \sqrt{2} e^{(-5\pi/4)i}$
 (C) $z = \sqrt{2} e^{(\pi/4)i}$
 (D) $z = \sqrt{2} e^{(-\pi/4)i}$

Rough Work / रफ कार्य

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