

PROVISIONAL ANSWER KEY

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Question1:-In which year Rabindranth Tagore visited Sivagiri and met Sree Narayana Guru ?

- A:-1925
- B:-1922
- C:-1924
- D:-1920

Correct Answer:- Option-B

Question2:-Founder of 'Atmavidyasangam' was;

- A:-Ayyankali
- B:-Pandit Karuppan
- C:-Vagbhatananda
- D:-Kumara Gurudevan

Correct Answer:- Option-C

Question3:-The social reformer who founded 'Nizhalthankals' was;

- A:-Sahodaran Ayyappan
- B:-Thycaud Ayya Guru
- C:-Vaikunda Swamikal
- D:-Chattampi Swamikal

Correct Answer:- Option-C

Question4:-Venue of 2024 Olympic games;

- A:-Australia
- B:-Paris
- C:-Tokyo
- D:-Quatar

Correct Answer:- Option-B

Question5:-Volunter captian of Guruvayur Satyagraha Committe was;

- A:-K. Kelappan
- B:-T.K. Madhavan
- C:-K. Madhavan
- D:-A.K. Gopalan

Correct Answer:- Option-D

Question6:-The state from which Alphons Kannanthanam elected as a member of Rajya Sabha;

- A:-Madhya Pradesh
- B:-Gujarat
- C:-Maharashtra
- D:-Rajastan

Correct Answer:- Option-D

Question7:-Who was the President of the 'Aikya Kerala Conference' held at Thrissur in 1948 ?

- A:-T.K. Madhavan
- B:-K. Kelappan
- C:-Pattam Thanu Pillai
- D:-C. Abdul Rahman

Correct Answer:- Option-B

Question8:-The winner of 2017 'Jananpith Award';

- A:-M.T. Vasudevan Nair
- B:-Ashapura Devi
- C:-Urvashi Bhutalia
- D:-Krishna Sobti

Correct Answer:- Option-D

Question9:-The 'political lab' of Mahatma Gandhi was;

- A:-South Africa
- B:-Kheda
- C:-Sabarmathi Ashram
- D:-Champaran

Correct Answer:- Option-A

Question10:-The 2017 FIFA Confederation Cup was won by;

- A:-Brazil
- B:-Arjenteena
- C:-Russia
- D:-Germany

Correct Answer:- Option-D

Question11:-Which of the following does not supplement classroom teaching ?

- A:-Handbook
- B:-Logbook
- C:-Reference book
- D:-Source book

Correct Answer:- Option-B

Question12:-In a class best on Physics, most of the students failed in the problem session of the test. In such cases, the teacher should construct and administer

- A:-Achievement test
- B:-Attitude scale
- C:-Diagnostic test
- D:-Inventory

Correct Answer:- Option-C

Question13:-Which is the main purpose of research in education ?

- A:-To help in the personal growth of an individual
- B:-To increase social status of an individual
- C:-To help the individual to become an eminent educationalist
- D:-To increase job prospects of an individual

Correct Answer:- Option-C

Question14:-Identify the method which combines the best of individual laboratory work and the lecture demonstration method

- A:-Scientific method
- B:-Heuristic method
- C:-Dalton plan
- D:-Assignment method

Correct Answer:- Option-D

Question15:-Jigsaw is a method of

- A:-Collaborative learning
- B:-Co-operative learning
- C:-Graphic organiser strategy
- D:-Problem based learning

Correct Answer:- Option-B

Question16:-The data of research is

- A:-Qualitative only
- B:-Quantitative only
- C:-Both (A) and (B)
- D:-Neither (A) nor (B)

Correct Answer:- Option-C

Question17:-Which of the following research types aims at immediate application ?

- A:-Conceptual
- B:-Empirical
- C:-Action
- D:-Fundamental

Correct Answer:- Option-C

Question18:-Which of the following educational objective is measured when a teacher asks students to write the summary of a given story ?

- A:-Knowledge
- B:-Synthesis
- C:-Application

D:-Comprehension

Correct Answer:- Option-D

Question19:-Adopting innovative strategies in classroom ensures

A:-Active learning

B:-Direct learning

C:-Group learning

D:-Technical learning

Correct Answer:- Option-A

Question20:-Giving hints or clues lead the students to correct response is

A:-Probing

B:-Prompting

C:-Redirecting

D:-Refocusing

Correct Answer:- Option-B

Question21:-How many members retire from Rajya Sabha on the expiration of every second year ?

A:-1/6

B:-1/2

C:-1/3

D:-2/3

Correct Answer:- Option-C

Question22:-_____ is a subject included in the Concurrent List.

A:-Criminal Law and Procedure

B:-Public Health and Sanitation

C:-Currency and Coinage

D:-Inter-State trade and commerce

Correct Answer:- Option-A

Question23:-Article 19 (1) (e) of the Indian Constitution is related to

A:-Right to assemble peaceably and without arms

B:-Right to freedom of speech and expression

C:-Right to reside and settle in any part of the territory of India

D:-Right to form associations or unions

Correct Answer:- Option-C

Question24:-A 'proclamation of emergency' issued under Article 352 must be approved by resolutions of both houses of Parliament within

A:-Six months

B:-one month

C:-Three months

D:-Two months

Correct Answer:- Option-B

Question25:-Which of the following Constitution Amendment Act raised the age of retirement of the members of State Public Service Commission from 60 to 62 ?

A:-The Constitution `42^(nd)` Amendment Act

B:-The Constitution `41^(st)` Amendment Act

C:-The Constitution `40^(th)` Amendment Act

D:-The Constitution `44^(th)` Amendment Act

Correct Answer:- Option-B

Question26:-Section 10 of the Right to Information Act, 2005 is related with

A:-Third Party information

B:-Constitution of Central Information Commission

C:-Exemption from the disclosure of information

D:-Severability

Correct Answer:- Option-D

Question27:-Whoever contravenes the provisions of Mahatma Gandhi National Rural Employment Guarantee Act shall on conviction be liable to

A:-A fine which may extend to three thousand rupees

B:-A fine which may extend to five hundred rupees

C:-A fine which may extend to one thousand rupees

D:-A fine which may extend to two thousand rupees

Correct Answer:- Option-C

Question28:-Chairperson and every member of the National Commission for Protection of Child Rights shall hold office for a term of

- A:-Five years
- B:-Six years
- C:-Four years
- D:-Three years

Correct Answer:- Option-D

Question29:-Central Government launched Saansad Adarsh Gram Yojana (SAGY) on

- A:- 18th October 2014
- B:- 11th October 2014
- C:- 7th October 2014
- D:- 24th October 2014

Correct Answer:- Option-B

Question30:-Which of the following authority is entrusted with the power to make rules for carrying out the purposes of the Environment (Protection) Act, 1986 ?

- A:-State Legislative Assembly
- B:-Rajya Sabha
- C:-Central Government
- D:-State Government

Correct Answer:- Option-C

Question31:-The volume of the solid generated by revolving the region bounded by $y = \sqrt{x}$ and the lines $y = 1$, $x = 4$ about the line $y = 1$ is

- A:- $\frac{5\pi}{6}$
- B:- $\frac{7\pi}{6}$
- C:- $\frac{3\pi}{6}$
- D:-None of these

Correct Answer:- Option-B

Question32:-The area of the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is

- A:- πab
- B:- $\pi \left(\frac{a+b}{4}\right)^2$
- C:- $\pi \left(\frac{a+b}{2}\right)^2$
- D:- $\pi(a+b)$

Correct Answer:- Option-A

Question33:-The number of tangents that can be drawn from (0, 0) to the circle $x^2 + y^2 - 2x - 4y - 4 = 0$ is

- A:-0
- B:-1
- C:-2
- D:-None of these

Correct Answer:- Option-A

Question34:-The total number of terminating zeros in 100! is

- A:-20
- B:-21
- C:-24
- D:-None of these

Correct Answer:- Option-C

Question35:-If 1st January 2018 is Monday, what will be 2036 January 1st ?

- A:-Monday
- B:-Tuesday
- C:-Wednesday
- D:-None of these

Correct Answer:- Option-B

Question36:-For a Boolean Algebra $\langle X, +, \cdot \rangle$ where $X = \{0, 1, x, y\}$; the value of $x + y$ is

- A:-0
- B:-x
- C:-y
- D:-1

Correct Answer:- Option-D

Question37:-Let X be a Boolean Algebra. Then the number of elements in X cannot be

- A:-2
- B:-4

C:-6

D:-8

Correct Answer:- Option-C

Question38:-Which of the following graph is not Eulerian ?

A:- K_7

B:- $K_{9,9}$

C:- K_9

D:-None of these

Correct Answer:- Option-B

Question39:-Which of the following is a planar graph ?

A:- K_5

B:- $K_{3,3}$

C:-Peterson graph

D:-None of these

Correct Answer:- Option-D

Question40:-Which of the following graph is not bipartite ?

A:-A tree with 10 edges

B:- K_6

C:- $K_{3,3}$

D:-None of these

Correct Answer:- Option-B

Question41:-If F is a field, then the number of elements in F cannot be

A:-3

B:-5

C:-15

D:-125

Correct Answer:- Option-C

Question42:-Which of the following is false about a field F of 81 elements ?

A:- F has a subfield of 27 elements

B:- F has a subfield of 9 elements

C:- F has a subfield of 3 elements

D:- F has exactly 3 subfields including F

Correct Answer:- Option-A

Question43:-Let $\langle F, +, \cdot \rangle$ be a field of 16 elements. Then $\langle F, + \rangle$ is isomorphic to

A:- \mathbb{Z}_{16}

B:- $\mathbb{Z}_2 \times \mathbb{Z}_2 \times \mathbb{Z}_4$

C:- $\mathbb{Z}_2 \times \mathbb{Z}_8$

D:- $\mathbb{Z}_2 \times \mathbb{Z}_2 \times \mathbb{Z}_2 \times \mathbb{Z}_2$

Correct Answer:- Option-D

Question44:-Let G be a non-abelian group. Then order of G can be

A:-25

B:-35

C:-55

D:-255

Correct Answer:- Option-C

Question45:-Let $G = \text{SL}_4(\mathbb{Z}_3)$, the group of all 4×4 matrices over \mathbb{Z}_3 with determinant 1. Then the order of any of its Sylow 3-subgroup is

A:- 3^5

B:- 3^6

C:- 3^7

D:-None of these

Correct Answer:- Option-B

Question46:-Which of the following is not constructible ?

A:-20-gon

B:-30-gon

C:-50-gon

D:-60-gon

Correct Answer:- Option-C

Question47:-Which of the following is false ?

- A:-There exists a vector space of 81 elements
 - B:-There exists a vector space of 81 elements over a field of 3 elements
 - C:-There exists a vector space of 81 elements over a field of 9 elements
 - D:-There exists a vector space of 81 elements over a field of 27 elements
- Correct Answer:- Option-D

Question48:-Which of the following linear transformation is invertible ?

- A:- $T(x, y) = (2x + y, x + \frac{1}{2}y)$
- B:- $T(x, y) = (2x + y, \frac{1}{2}x + y)$
- C:- $T(x, y) = (x + \frac{1}{2}y, 2x + y)$
- D:- $T(x, y) = (x + y, x + y)$

Correct Answer:- Option-B

Question49:-If the characteristic polynomial of the linear transformation $T : \mathbb{R}^9 \rightarrow \mathbb{R}^9$ is $x^9 + 4x + 1$, then $\det(T - I)$ is

- A:-6
- B:-9
- C:-1
- D:-1

Correct Answer:- Option-A

$$A = \begin{pmatrix} 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \end{pmatrix}$$

Question50:-If $A = \begin{pmatrix} 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \end{pmatrix}$, then which is true ?

- A:- $A^3 = I$
- B:- $A^4 = I$
- C:- $A^5 = I$
- D:- $A^6 = I$

Correct Answer:- Option-D

Question51:-Which of the following normed linear space is strictly convex ?

- A:- \mathbb{R}^2 with $\| \cdot \|_1$
- B:- \mathbb{R}^2 with $\| \cdot \|_2$
- C:- \mathbb{R}^2 with $\| \cdot \|_\infty$
- D:-None of these

Correct Answer:- Option-B

Question52:-Which of the following is false ?

- A:- $A - B$ is self adjoint if A and B are so
- B:-Every unitary operator is normal
- C:-Every normal operator is self adjoint
- D:- $A + B$ is self adjoint if A and B are so

Correct Answer:- Option-C

Question53:-Which of the following is a Hilbert space ?

- A:- l^1
- B:- l^2
- C:- l^∞
- D:-None of these

Correct Answer:- Option-B

Question54:-Let $f(x, y) = \begin{cases} \frac{x^3}{x^3+y^2} & \text{if } (x, y) \neq (0, 0) \\ 0 & \text{if } (x, y) = (0, 0) \end{cases}$. Then which is not true ?

- A:- f is continuous at $(0, 0)$
- B:-Partial derivatives exist at $(0, 0)$
- C:-Directional derivatives exist at $(0, 0)$
- D:-Partial derivatives are not bounded functions on \mathbb{R}^2

Correct Answer:- Option-D

Question55:-If the vectors $i + 2j + 3k$, $4i + 5j + 6k$ and $5i + mj + 9k$ are coplanar, then the value of m is

- A:-7
- B:-6
- C:-5

D:-None of these

Correct Answer:- Option-A

Question56:-Let $\lim_{x \rightarrow 0} f(x)/x = l$, where $0 < l < \infty$. Then $\lim_{x \rightarrow 0} f(x)$

A:-Is always 0

B:-Need not exist

C:-Exists, but not always zero

D:-Exists and depends on l

Correct Answer:- Option-A

Question57:-Which of the following function is not differentiable on $(0, \pi/2)$?

A:- $\sin x$

B:- $|\sin x|$

C:- $\max\{\sin x, \cos x\}$

D:-None of these

Correct Answer:- Option-C

Question58:-Let A be a 5×4 matrix and B be a 4×5 matrix. Then 1 is necessarily an eigen value of

A:-AB

B:-AB + I

C:-BA

D:-BA + I

Correct Answer:- Option-B

Question59:-The equation $x^2 + y^2 + 2xy - 1 = 0$ represents

A:-Parabola

B:-Ellipse

C:-Hyperbola

D:-Pair of straight lines

Correct Answer:- Option-D

Question60:-Which of the following is not a Banach space ?

A:- $C_0(\mathbb{R})$

B:- $l^1(\mathbb{R})$

C:- $l^2(\mathbb{R})$

D:-None of these

Correct Answer:- Option-A

Question61:-Which is false about \mathbb{N} ?

A:- \mathbb{N} cannot be written as a denumerable union of denumerable disjoint sets

B:- \mathbb{N} is well ordered

C:- \mathbb{N} is a closed subset of \mathbb{R}

D:-None of these

Correct Answer:- Option-A

Question62:- $E = \{p \in \mathbb{Q} : 2 < p^2 < 3\}$. Then which is false ?

A:-E is open in \mathbb{Q}

B:-E is closed in \mathbb{Q}

C:-E is a bounded subset of \mathbb{Q}

D:-E is a compact subset of \mathbb{Q}

Correct Answer:- Option-D

$$g_n(x) = \begin{cases} (n-1)x^n & \text{if } x \text{ is rational} \\ 1 - (n-1)x^n & \text{if } x \text{ is irrational} \end{cases}$$

Question63:-Let

Then which of the following function is discontinuous everywhere on $[0, 1]$?

A:- g_1

B:- g_2

C:- g_3

D:-All of these

Correct Answer:- Option-A

$$f(x) = \begin{cases} x + x^2 \sin \frac{1}{x} & \text{if } x \neq 0 \\ 0 & \text{if } x = 0 \end{cases}$$

Question64:-Let

Then $f'(0)$ is

A:-0

- B:-1
- C:-2
- D:-Does not exist

Correct Answer:- Option-B

Question65:-Which of the following is not uniformly continuous on \mathbb{R} ?

- A:-x
- B:-sin x
- C:-x sin x
- D:- $\frac{1}{(1+x^2)}$

Correct Answer:- Option-C

Question66:-Let $s_n = \frac{1}{1^2} + \frac{1}{2^2} + \dots + \frac{1}{n^2}$. Then which is false ?

- A:- $\{s_n\}$ is a sequence in \mathbb{Q}
- B:- $\{s_n\}$ is a Cauchy sequence in \mathbb{Q}
- C:- $\{s_n\}$ is convergent in \mathbb{Q}
- D:-None of these

Correct Answer:- Option-C

$$f_n(x) = \begin{cases} 0 & \text{if } x \in (-\infty, n) \\ n & \text{if } x \in [n, \infty) \end{cases}$$

Question67:-Let $f_n : \mathbb{R} \rightarrow \mathbb{R}$ defined by
Then choose the most correct answer

- A:- $\{f_n\}$ does not converge on \mathbb{R}
- B:- $\{f_n\}$ converges to zero function on \mathbb{R}
- C:- $\{f_n\}$ converges to zero function on \mathbb{R} uniformly
- D:-None of these

Correct Answer:- Option-B

Question68:-Which is false ?

- A:-There exists a function $f : \mathbb{R} \rightarrow \mathbb{R}$ which is continuous exactly at one point
- B:-There exists a function $f : \mathbb{R} \rightarrow \mathbb{R}$ which is differentiable exactly at one point
- C:-There exists a function $f : \mathbb{R} \rightarrow \mathbb{R}$ which is discontinuous everywhere
- D:-None of these

Correct Answer:- Option-D

Question69:-Which of the following subset of \mathbb{R}^3 has positive Lebesgue measure ?

- A:- $\{(x, y, z) \in \mathbb{R}^3 : x^2 + y^2 + z^2 = 1\}$
- B:- $\{(x, y, z) \in \mathbb{R}^3 : x + y + z = 1\}$
- C:- $W_1 + W_2 + W_3$ where $W_1 = \{(x, x, -x) : x \in \mathbb{R}\}$, $W_2 = \{(x, -x, x) : x \in \mathbb{R}\}$, $W_3 = \{(-x, x, x) : x \in \mathbb{R}\}$
- D:-None of these

Correct Answer:- Option-C

Question70:-If $\int_1^{\infty} f(x) dx = L$ where $0 < L < \infty$; then $\lim_{x \rightarrow \infty} f(x)$ is

- A:-0
- B:- ∞
- C:-always exists
- D:-need not exist

Correct Answer:- Option-D

Question71:-Which is false ?

- A:- $\cos z = 5$ has a solution in \mathbb{C}
- B:-sin z is a polynomial in \mathbb{C}
- C:- $\sin^2(z) + \cos^2(z) = 1$ for all $z \in \mathbb{C}$
- D:-Every non constant polynomial in $\mathbb{C}[x]$ has a zero in \mathbb{C}

Correct Answer:- Option-B

Question72:-The image of the line $y = 1$ under the mapping $w = \sin z$ is

- A:-Parabola
- B:-Ellipse
- C:-Rectangular Hyperbola
- D:-None of these

Correct Answer:- Option-B

Question73:-The value of $\int_C \frac{1}{z^3(z+1)} dz$ where C is $|z| = 3$; is

- A:- $2\pi i$
- B:- $-4\pi i$
- C:- $4\pi i$

D:-0

Correct Answer:- Option-D

Question74:-Consider the metric space (\mathbb{N}, d) where d is given by $d(m, n) = |1/m - 1/n|$. Then which is false ?

A:- d is a bounded metric on \mathbb{N}

B:- d induces the discrete topology on \mathbb{N}

C:- $\{1/n\}$ converges to 0

D:-This space is Hausdorff

Correct Answer:- Option-C

Question75:-Which is not a productive property ?

A:-Connectedness

B:-Compactness

C:-Locally connectedness

D:-Path connectedness

Correct Answer:- Option-C

Question76:-Let $X = (0, 1)$ and $Y = \mathbb{R}$. Then which is true ?

A:- X and Y are the same as metric spaces

B:- X and Y are the same as topological spaces

C:-both (a) and (b)

D:-Neither (a) nor (b)

Correct Answer:- Option-B

Question77:-Which of the following topological property is not preserved under a continuous function ?

A:-Connectedness

B:-Compactness

C:-First countability

D:-None of these

Correct Answer:- Option-C

Question78:-Which is true ?

A:-On \mathbb{R} co-finite topology is weaker than usual topology

B:-On \mathbb{R} usual topology is weaker than co-finite topology

C:-On \mathbb{R} co-finite topology and usual topology are not comparable

D:-On \mathbb{R} co-finite topology and usual topology are the same

Correct Answer:- Option-A

Question79:-If every closed interval $[a, b]$ with $a < b$ is open with respect to some topology on \mathbb{R} ; then with respect to this topology, closure of $[27, 37]$ is

A:- $[27, 37]$

B:- $(-\infty, 37]$

C:- $[27, \infty)$

D:- \mathbb{R}

Correct Answer:- Option-A

Question80:-For the space \mathbb{R} with co-countable topology, which is false ?

A:-Uniqueness of limits exists in this space for the convergence of sequences

B:-This space is not Hausdorff

C:- $\{1/n\}$ is divergent in this space

D:-None of these

Correct Answer:- Option-D

Question81:-If $f : \mathbb{R} \rightarrow \mathbb{R}$ is a twice differentiable function with $\lim_{x \rightarrow \infty} (2f(x) + 3f'(x) + f''(x)) = 0$ with $\lim_{x \rightarrow \infty} f(x) = \lim_{x \rightarrow \infty} f'(x) = 1$; then $\lim_{x \rightarrow \infty} f''(x)$ is

A:-0

B:-1

C:-10

D:-11

Correct Answer:- Option-D

Question82:-The third approximation $y_{(3)}(x)$ for the I.V.P., $y' = 2x(1 + y)$; $y(0) = 0$ by Picard's method is

A:- $x + x^2/2 + x^3/6$

B:- $x^2 + x^4/2 + x^6/6$

C:- $x + x^2/2 + x^8/6$

D:-None of these

Correct Answer:- Option-B

Question83:-Consider the vector space $V = \{f : \mathbb{R} \rightarrow \mathbb{R} \text{ such that } f'' - 2f' + f = 0 \text{ over } \mathbb{R}\}$. Then which of the following is a basis for V ?

- A: $\{e^t\}$
- B: $\{e^t, te^t\}$
- C: $\{e^{-t}\}$
- D: None of these

Correct Answer: Option-B

Question84: If $F(a, b, c, x)$ is the hyper geometric series, then $\lim_{b \rightarrow \infty} F(a, b, a, x/b)$ is

- A: $(1+x)^a$
- B: $-\log(1+x)$
- C: e^x
- D: $\sin x$

Correct Answer: Option-C

Question85: If $P_n(x)$ is the Legendre Polynomial, then $P_n(-1)$ is

- A: -1
- B: -1
- C: $(-1)^n$
- D: 0

Correct Answer: Option-C

Question86: The equation $U_{xxxx} + x^2 U_{yy} = 0$ is

- A: elliptic
- B: parabolic
- C: hyperbolic
- D: none of these

Correct Answer: Option-A

Question87: If a, b, c are three constants such that $U_x = a$, $U_y = b$ and $U_z = c$ with $u(x, y, z) = 0$ at $(0, 0, 0)$; then $U(1, 0, 0)$ is

- A: a
- B: b
- C: c
- D: none of these

Correct Answer: Option-A

Question88: If $0 < s < 1$, then $\int_0^\infty x^{s-1}/(1+x) dx$ is

- A: $\beta(1, s)$
- B: $\beta(1-s, 1)$
- C: $\beta(1-s, s)$
- D: divergent

Correct Answer: Option-C

Question89: The Laplace transform $L\{\sin \omega t/t\}$ is

- A: $\cot^{-1}(s/\omega)$
- B: $\omega/(s^2 + \omega^2)$
- C: $s/(s^2 + \omega^2)$
- D: none of these

Correct Answer: Option-A

Question90: Which of the following is a periodic function on \mathbb{R} ?

- A: $x - [x]$
- B: x
- C: $[x]$
- D: none of these

Correct Answer: Option-A

Question91: A velocity field is given by $\vec{q} = xi + (y + t)j$. Then the stream line for this field at $t = 2$ is

- A: circle
- B: ellipse
- C: hyperbola
- D: rectangular hyperbola

Correct Answer: Option-D

Question92: Consider the fuzzy sets A and B on $X = [0, \pi/2]$ where $A(x) = \sin x$ and $B(x) = \cos x$. Then 0.8 - cut of $A \cap B$ is

- A: Φ
- B: X

C:-An uncountable subset of X

D:-A denumerable subset of X

Correct Answer:- Option-A

Question93:-Which is false about the Cantor set ?

A:-Cantor set is perfect

B:-Cantor set is compact

C:-Cantor set is a fractal

D:-Cantor set is an uncountable set with positive Lebesgue measure

Correct Answer:- Option-D

Question94:-The Voltra integral equation corresponding to the differential equation $y'' + xy = 1, y(0) = y'(0) = 0$ is

A:- $y(x) = \frac{x^2}{2} - \int_0^x ty(t) dt$

B:- $y(x) = \frac{x^2}{2} - \int_0^x (x-t) y(t) dt$

C:- $y(x) = \frac{x^2}{2} - \int_0^x (x-t) ty(t) dt$

D:- $y(x) = \frac{x}{2} - \int_0^x (x-t) ty(t) dt$

Correct Answer:- Option-C

Question95:-The derivative of the Weierstrass \wp function is

A:-elliptic

B:-even

C:-pole of order 2

D:-all of the above

Correct Answer:- Option-A

Question96:-The function $\zeta'(z)$ is

A:- $\wp(z)$

B:- $\wp'(z)$

C:- $-\wp'(z)$

D:- $\wp(z)$

Correct Answer:- Option-D

Question97:-For the Euler's gamma function $\Gamma(z)\Gamma(1-z)$ is

A:- $\frac{\pi}{\cos(\pi z)}$

B:- $\frac{\pi}{\sin(\pi z)}$

C:- $\frac{\pi}{\cot(\pi z)}$

D:-none of these

Correct Answer:- Option-B

Question98:-Which of the following is not a maximal geodesic for the cylinder $x_1^2 + x_2^2 = 1$ in \mathbb{R}^3 ?

A:-Vertical line

B:-Horizontal circle

C:-Helix

D:-None of these

Correct Answer:- Option-D

Question99:-Which of the following linear transformation is a possible Weingarten map for the unit n-sphere

$x_1^2 + x_2^2 + x_3^2 = 1$ in \mathbb{R}^3 oriented by its inward unit normal ?

A:- $T(\bar{x}) = 0$

B:- $T(\bar{x}) = \bar{x}$

C:- $T(\bar{x}) = 2\bar{x}$

D:- $T(\bar{x}) = 3\bar{x}$

Correct Answer:- Option-B

Question100:-Which of the following is reducible over \mathbb{R} ?

A:- $x^2 + 1$

B:- $x^2 + 2$

C:- $x^5 + x^3 + x^2 + x + 1$

D:-none of these

Correct Answer:- Option-C