DSSSB TGT PART(B)

MATHS

MISCELLANEOUS TOP 20
(FINAL SHOT)

LIVE 29/10/2024 08:00 AM

1. Let (X, d) be a metric space. Also let $a \in X$ and $r > 0$ be any real number, then the set $\{x \in X : d(x, a) < r\}$ is

मान लीजिए (X, d) एक मैट्रिक स्पेस है। साथ ही मान लीजिए $a \in X$ और $r > 0$ कोई भी वास्तविक संख्या है, तो सेट $\{x \in X : d(x, a) < r\}$ है

a) open disc

b) closed disc

c) open ball

d) closed sphere

open ball.

$(x \geq 0)$

2. Let (X, d) be a metric space, then the property $d(x, y) \leq d(x, z) + d(z, y)$ for all $x, y, z \in X$ represents

मान लें (X, d) एक मैट्रिक स्पेस है, तो सभी $x, y, z \in X$ के लिए गुण $d(x, y) \leq d(x, z) + d(z, y)$ दर्शाता है

a) the triangle inequality

b) two points can coincide

c) distance function is always non-negative.

d) the distance function does not depend on the order

$d(x,y) \leq d(x,z) + d(z,y)$.

triangle inequality.

3. Let $X = R$ and $d(x, y) = |x - y|$ for all $x, y \in X$, then (R, d) is

मान लें कि $X = R$ और $d(x, y) = |x - y|$ सभी $x, y \in X$ के लिए, तो (R, d) है

a) bounded

b) discrete metric space

c) both (a) and (b)

d) unbounded and usual metric space

4. If d be the usual metric $d(x,y) = |x-y|$ for $x, y \in [-1,1]$, then $S_{\frac{2}{3}}(0)$ is given by

यदि $x, y \in [-1,1]$ के लिए d सामान्य मीट्रिक $d(x,y) = |x-y|$ है, तो $S_{\frac{2}{3}}(0)$ द्वारा दिया जाता है

a) $\left[0, \frac{2}{3}\right]$

b) $\left(0, \frac{2}{3}\right]$

c) $\left(-\frac{2}{3}, \frac{2}{3}\right)$

d) $\left(-\frac{2}{3}, 1\right)$

$S_{\frac{2}{3}}(0) = \{x : d(x,0) < \frac{2}{3}\}$

$d(x,0) < \frac{2}{3}$

$|x-y| < \frac{2}{3}$

$|x-0| < \frac{2}{3}$

$|x| < \frac{2}{3}$

$\left(-\frac{2}{3}, \frac{2}{3}\right)$ //

5. Let (X, d) be a metric space, then the property $d(x, y) = 0 \Leftrightarrow x = y$ for all $x, y \in X$ represents

मान लें (X, d) एक मैट्रिक स्पेस है, तो गुण $d(x, y) = 0 \Leftrightarrow x = y$ सभी $x, y \in X$ के लिए दर्शाता है

a) the triangle inequality

b) two points can coincide

c) distance function is always non-negative.

d) the distance between two points is always zero

$d(x,y) = 0 , x=y \in X$

6. Let (R,d) be a usual metric space, then which one of the following set is a nbd of 0

मान लें कि (R,d) एक सामान्य मैट्रिक स्पेस है, तो निम्नलिखित में से कौन सा सेट 0 का nbd है

nbd → $a \in R$.

- **a)** $(0,2)$
- **b)** $[0,1]$
- **c)** R
- **d)** $(1,3)$

7. If A and B are subsets of a metric space (X, d), then which one is correct?

यदि A और B मीट्रिक स्पेस (X,d) के उपसमुच्चय हैं, तो कौन सा सही है?

a) $(A \cap B)^\circ \neq A^\circ \cap B^\circ$ **always**

b) If $A \subseteq B$**, then** $A^\circ = B^\circ$ **only**

c) $A^\circ \cup B^\circ = (A \cup B)^\circ$

d) $A^\circ \subset A$

A, B subset of (X, d).

8. Let (R, d) be the usual metric space, then the derived set of $A = \left\{1 - \frac{1}{n}; n \in N\right\}$ is

मान लें (R, d) सामान्य मैट्रिक स्पेस है, तो $A = \left\{1 - \frac{1}{n}; n \in N\right\}$ का व्युत्पन्न सेट है

a) $\{0,1\}$

b) $\{1\}$

c) $\{0\}$

d) $\emptyset$

$1 - \frac{1}{n}$, $n \in N$.

$\hookrightarrow (1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5} - - -)$

$n = 2$

X , $\frac{1}{2}X$

9. Which one of the following is not correct?

निम्नलिखित में से कौन सा सही नहीं है?

a) In a metric space (X, d), the empty X is open set.

b) In a metric space (X, d), the X is closed set.

c) The set of natural numbers, N has no limit point.

d) In a metric space (X, d), the $\emptyset$ neither open nor closed set.

10. Let for a point $a \in A$ in a metric space (X, d), there exists a real number $r > 0$ such that $S_r(a) \subseteq A$, then which one of the following is true

मान लीजिए कि मीट्रिक स्पेस (X, d) में एक बिंदु $a \in A$ के लिए, एक वास्तविक संख्या $r > 0$ मौजूद है जैसे कि $S_r(a) \subseteq A$, तो निम्नलिखित में से कौन सा सत्य है

a) A is a nbd of a

b) a is an interior point of A.

c) Both (a) and (b)

d) None of these

11. A sequence $< a_n >$ in a metric space (X, d) is said to converge to a point $a \in X$, if for $\varepsilon > 0$, there exists a positive integer n_0 such that

मीट्रिक स्पेस (X, d) में एक अनुक्रम $< a_n >$ को एक बिंदु $a \in X$ पर अभिसरित कहा जाता है, यदि $\varepsilon \geq 0$ के लिए, एक सकारात्मक पूर्णांक n_0 मौजूद है जैसे कि

a) $d(a_n, a) > \varepsilon$ for all $n \geq n_0$

b) $a_n \in S_\varepsilon(a)$ for all $n \geq n_0$

c) Both (a) and (b)

d) None of these

12. If $< 1,2,3,4,5,6 \ldots . >$ is a sequence in metric space, then which one of the following is not a subsequence of the above sequence

यदि $<1,2,3,4,5,6 \ldots .>$ मैट्रिक स्पेस में एक अनुक्रम है, तो निम्नलिखित में से कौन सा उपरोक्त अनुक्रम का उपअनुक्रम नहीं है

a) $< 2,4,6,8, \ldots \ldots >$

b) $< 1,3,5,7, \ldots \ldots >$

c) $\langle 1,4,7,9, \ldots \ldots >$

d) $< 1,5,3,7, \ldots \ldots >$

13. A metric Space (X, d) is said to be complete if

एक मीट्रिक स्पेस (X,d) को पूर्ण कहा जाता है यदि

a) It has a Cauchy sequence only

b) It has a convergent sequence only

c) every Cauchy sequence of points in X converges to a point in X

d) none of these

14. For the given statements

दिए गए कथनों के लिए

A : The usual metric space (R, d) is a complete metric space

B : The usual metric space (R, d) is not compact metric space

a) A is true B is false

b) Both A and B are true

c) Neither A nor B is true

d) B is true and A is false

$|x-y|$

15. For the given statements

दिए गए कथनों के लिए

A : Every convergent sequence in a metric space has a unique limit

B : A Cauchy sequence in a metric space is convergent

a) A is true B is false

b) Both A and B are true

c) Neither A nor B is true

d) B is true and A is false

16. Let (X, d) and (Y, d^*) be two metric spaces and let $f: X \to Y$ be a function, then f is said to be uniform continuous on X, if given $\varepsilon > 0$, there exists $\delta > 0$ such that

मान लें कि (X,d) और (Y, d^*) दो मैट्रिक स्पेस हैं और f:X→Y एक फ़ंक्शन है, तो f को X पर एकसमान सतत कहा जाता है, यदि $\varepsilon>0$ दिया गया है, तो $\delta>0$ मौजूद है जैसे कि

a) $d(x_1, x_2) < \delta \Rightarrow d^*(f(x_1), f(x_2)) < \varepsilon$

b) $d(x_1, x_2) < 0 \Rightarrow d^*(f(x_1), f(x_2)) < 0$

c) $d^*(x_1, x_2) < \delta \Rightarrow d(f(x_1), f(x_2)) < \varepsilon$

d) None of these

17. Let A be a subset of a metric space (X, d). Then a collection $\{G_\lambda : \lambda \in A\}$ of a subsets of X is said to be cover of A if

मान लीजिए A एक मीट्रिक स्पेस (X,d) का उपसमुच्चय है। तब X के उपसमुच्चयों का संग्रह $\{G_\lambda : \lambda \in \Lambda\}A$ का आवरण कहलाता है यदि

a) $A = \cup_{\lambda \in \Lambda} G_\lambda$ only and each G_λ 's must be open

b) $A \supseteq \cup_{\lambda \in \Lambda} G_\lambda$ and each G_λ 's must be open

c) $A \subseteq \cup_{\lambda \in \Lambda} G_\lambda$

d) None of these

18. A subset A of a metric space (X, d) is compact if

मीट्रिक स्पेस (X,d) का उपसमुच्चय A कॉम्पैक्ट होता है यदि

a) It has a open cover

b) every open cover of A has finite subcover

c) It has a finite subcover only

d) none of these

19. Which one of the following is incorrect?

निम्नलिखित में से कौन सा गलत है?

a) Every metric space is always a pseudo-metric space

b) $S_r(a) = \{x \in X : d(x, a) < r\}$ is an open ball

c) $R^\circ = R$

d) $d(Q) = Q$

20. Which one of the following is true?

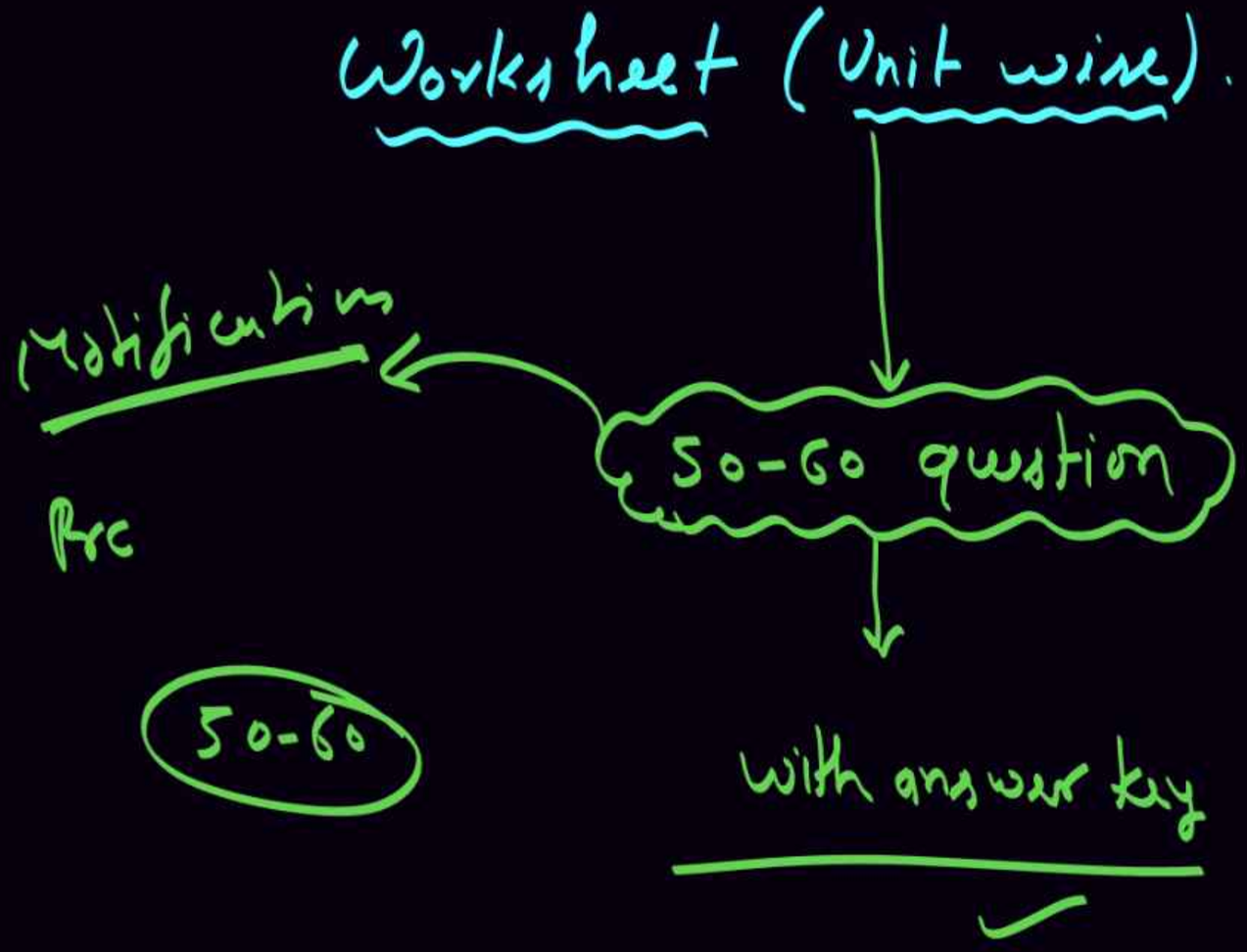
निम्नलिखित में से कौन सा सत्य है?

a) The usual metric space (R, d) is compact.

b) An isometry never be uniformly continuous function.

c) Compact metric space is both complete and totally bounded.

d) None of these


Worksheet (Unit wise).
Multiple choice
Pre
50-60 question
50-60
with answer key