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Arts Science and Commerce College, Mokhada
SUBJECT MATHEMATICS

Sample Question Paper for Online Examination, September/October 2020

Total Marks 50

1. If (x_n) is sequence of points (X, d) which converges to point x in X. If $f: X \to X$ is a

continuous function at point x the then sequence $f(x_n)$ is……

(a) constant sequence

(b) convergent sequence

(c) divergent sequence

(d) connected

2. $T: V \to V'$ is said to be isomorphism if T is …..

a) onto

b) T(x+y)=T(x)+T(y), T(∝x)=∝T(x) and T is bijection

c) ono-one

d) bijection

3. B = {(1,0), (0,1)} is basis of …….

a) R

b) R^2

c) R^3

d) R^4

4. If V is real inner product space then linear transformation $T: V \to V'$ is said to be orthogonal if <Tx,Ty> = ……

a) < x, y >

b) < xy >

c) < 0, 0 >

d) < 1, 1 >

5. Isometry is ……

a) Distance preserving function

b) not Distance preserving function

c) linear transformation

d) set of matrices

6. Which of the following function is discontinuous at pont $x = 0$?

(a) $f(x) = \frac{2}{x}$

(b) $f(x) = \frac{x+1}{3}$

(c) $f(x) = sinx$

(d) $f(x) = cosx$

7. Continuous image of compact set is……

(a) continuous

(b) discontinuous

(c) compact

(d) connected

8. If (x_n) is sequence of points (X, d) which converges to point x in X.

If $f: X \to X$ is a continuous function at point x the then sequence $f(x_n)$ converges to ……

(a) point x

(b) point x^2

(c) point $f(x)$

(d) 0

9. Metric space R is…….

(a) disconnected

(b) seperated

(c) complete

(d) compact

10. In complete metric space, every Cauchy sequence is……..

(a) divergent sequence

(b) constant sequence

(c) convergent sequence

(d) connected

11. For two polynomials $f(x)\ and\ g(x)$……

(a) $\deg\,(f(x).g(x)) = \deg\, f(x) + \deg\, g(x)$

(b) $\deg\,(f(x).g(x)) > \deg\, f(x) + \deg\, g(x)$

(c) $\deg\,(f(x).g(x)) < \deg\, f(x) + \deg\, g(x)$

(d) $\deg\,(f(x).g(x)) \leq \deg\, f(x) + \deg\, g(x)$

12. If a and b are associates then …….

(a) $a|b$

(b) $a = b$

(c) $a \neq b$

(d) $a > b$

13. Linear transformation T on real inner product space V is orthogonal if and only if ‖Tx‖= ……

a) ‖x‖

b) ‖0‖

c) ‖x+y‖

d) ‖x-y‖

14. For quotient group $G|H$, H must be ……..subgroup of group G .

(a) trivial

(b) quotient

(c) normal

(d) cyclic

15. In integral domain, every prime element is…..

(a) prime ideal

(b) proper ideal

(c) reducible

(d) irreducible

16. Roots of the polynomial $f(x) = x^2 - 9$ in $\mathbb{Z}$[x] is….

(a) 2

(b) $1 + \sqrt{5}$

(c) 3

(d) -1

17. If for two groups G and G', $f: G \to G'$ is onto homomorphism, then …….

(a) $G \cong G'$

(b) $G|kerf \cong G'$

(c) $kerf \cong G'$

(d) f is constant

18. The quotient group $\mathbb{R}/\mathbb{Z}$ is isomorphic with…….

(a) $\mathbb{Z}$

(b) $\mathbb{Q}$

(c) $\mathbb{R}$

(d) $\mathbb{C}$

19. Which of the following polynomial is irreducible over $\mathbb{Q}$?

(a) $x^2 - 1$

(b) $x^2 - 4$

(c) $x^2 - 9$

(d) $x^2 - 2$

20. Alternating group of order 4 is denoted by……

(a) A

(b) A^4

(c) A_4

(d) $\mathbb{C}$

21. Every cubic polynomial is……..over $\mathbb{R}$

(a) prime ideal

(b) proper ideal

(c) reducible

(d) irreducible

22. Every abelian group of order 6 is isomorphic with……..

(a) D_4

(b) $\mathbb{Z}_4$

(c) A_6

(d) $\mathbb{Z}_6$

23. $\mathbb{Z} \times \mathbb{Z}$ is …….group

(a) not cyclic

(b) quotient

(c) normal

(d) cyclic

24. $f: R \to R \; and \; g: R \to R$ are continuous functions at point $x = 12$ then the composite

function gof is….

a) continuous at point $x = 11$

(b) continuous at point $x = 12$

(c) continuous on whole R

(d) continuous at point $x = 0$

25. $\mathbb{Z}[i]$ is

(a) field

(b) ring

(c) Integral domain

(d) subfield