B.Sc. II Code - B-326 (Analysis)

Objective Questions (Real no system and Sequences)

Q.1. A subset of Real numbers is said to be bounded if it is

(a) Bounded above (b) Bounded below

(c) Bounded below and bounded above (d) None of these

Q.2. If the supremum and infimum for a set are same then the set is

(a) Empty (b) can't be possible

(c) Singleton (d) None of these

Q.3. The open interval $]a, b[$ is a nbd of

(a) a (b) b (c) both a and b

(d) each of its points

Q.4. The set of isolated points is called

(a) open set (b) derived set

(c) discrete set (d) None of these

Q.5 If $\bar{A} = A$ then A is

(a) open set (b) perfect set

(c) closed set (d) discrete set

Q.6. The set of all irrational numbers is

(a) finite (b) uncountable

(c) countable (d) None of these

Q.7. If $x, y, z \in R$, the set of real numbers then which one of the following relation does not hold good.

(a) $x, y > 0 \Rightarrow x - y > 0$ (b) $x, y > 0 \Rightarrow x + y > 0$

(c) $x, y > 0 \Rightarrow x \cdot y > 0$ (d) None of these

Q.8. If S is subset of Real numbers which is bounded below the inf(S) is

(a) prime number (b) a point closure to S

(c) not a point closure to S (d) None of these

Q.9. The empty set ϕ is

(a) open set (b) closed set

(c) both open and closed set (d) None of these

Q.10 The intersection of all sets of the form $\left(-\frac{1}{n}, \frac{1}{n}\right)_{n \in N}$ is

(a) an open set (b) not an open set

(c) Singleton (d) none of these

Q.11. Let $A =]a, b]$ then

(a) $\sup(A) \in A$ (b) $\inf(A) \in A$

(c) both $\sup(A)$ & $\inf(A) \notin A$ (d) $\sup(A) \notin A$

Q.12 Let $S = \{1 + \frac{(-1)^n}{n} \mid n \in \mathbb{N}\}$ Then sup & inf of S are

(a) $(0, 1)$ (b) $(1, 3/2)$ (c) $(0, 3/2)$ (d) $(-1, 0)$

Q.13. The domain of the sequence is always

(a) Real numbers (b) Natural numbers

(c) Integers (d) none of these

Q.14. A sequence is said to be bounded if for any $k > 0$

(a) $|s_n| \leq k \ \forall n \in \mathbb{N}$ (b) $s_n \geq k \ \forall n \in \mathbb{N}$

(c) $-k \leq s_n < k \ \forall n \in \mathbb{N}$ (d) none of these

Q.15. If $\langle s_n \rangle$ diverges to ∞ and $\langle t_n \rangle$ is bounded then $\langle s_n + t_n \rangle$

(a) Converges (b) diverges to ∞

(c) is bounded (d) none of these

Q.16. Every bounded sequence has at least

(a) one limit point (b) two limit points

(c) no limit point (d) none of these

Q.17 If $\lim s_n = l_1$ and $\lim t_n = l_2$ then

$\lim \frac{s_1 t_n + s_2 t_{n-1} + \cdots + s_n t_1}{n}$ is equal to

(a) l_1 (b) l_2 (c) $l_1 l_2$ (d) None of these

Q.18. Every Cauchy sequence is

(a) convergent (b) bounded

(c) both (a) & (b) (d) None of these

Q.19. which is not True

(a) every convergent sequence is bounded

(b) Every bounded sequence is convergent

(c) the sequence $\langle (-1)^n \rangle$ is not convergent

(d) the sequence $\langle 1/n \rangle$ converges to zero

Q.20 which of the following is a bounded sequence

(a) $\langle (-1)^n \cdot \frac{n}{n+1} \rangle$ (b) $\langle 2, 3, 5, 7, 11, \ldots \rangle$

(c) $\langle (-1)^n \cdot n \rangle$ (d) none of these