Vivekanand College Kolhapur (Empowered Autonomous) Department of Mathematics B.Sc. III (Sem V) Real Analysis Surprise Test 2024-25

Time & date: 7/10/2024 Total Marks: 30

Sr. No.	Roll No.	Name of student	Sign.	Marks
1	8249	ARDALKAR ADITYA ASHOK	AArdin	18
2	8250	BHOGAM SUJATA KRISHNAT	Bhogan	16
3	8251	BHOSALE AASHA SADIK	Bresale	20
4	8252	CHOUGULE PRATEEK ANIL	AЬ	00
5	8253	CHOUGULE VISHAKHA MAHADEV	VM chayalo	12
6	8254	GANBAVALE TEJAS SANTOSH	Ab	0
7	8255	JADHAV SHRIDHAR SUHAS	Jadhowt	14
8	8256	KALAKE ABHIJEET LAXMAN	Adriject	14
9	8257	KALAMKAR SANIKA JAYVANT	Ab	0
10	8258	KAMBLE AVISHKAR SUDESH	Askomble	16
11	8259	MORE PRANALI ASHOK	Mosepra	18
12	8260	PATIL ARPITA JINESHWAR	A.	20
13	8261	SAJNIKAR DIVYA NETAJI	Sagnika	22
14	8262	VADICHARLA SANDHYA KRUSHNAMURTI	Sykenstyne	12

DEPARTMENT OF MATHEMATICS
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)



Vivekanand College Kolhapur (Empowered Autonomous) **Department of Mathematics**

B.Sc. III (Sem V) Real Analysis Surprise Test 2024-25

Time & date: 7/10/2024

Total Marks: 30

Name of the student: Divya N. Sajnikar

Roll no.: 8261

- 1. If a sequence is bounded above and below, then it is called
 - a) Divergent
- b) Bounded
 - c) Cauchy
 - d) Monotonic
- 2. The least upper bound of a set is also called its
 - a) Limit inferior
 - b) Greatest lower bound
- (Supremum
 - d) Limit superior
- 3. The greatest lower bound of a set is called its
 - a) Supremum
- b) Infimum
 - c) Limit inferior
 - d) Convergent limit
- 4. If a sequence has a limit, then it is necessarily
 - a) Divergent
 - b) Monotone
- Convergent
 - d) Cauchy only
- 5. A sequence is called Cauchy if
 - a) It is bounded
 - b) The difference between its successive terms tends to zero
 - c) For every $\varepsilon > 0$, $\exists N \in \mathbb{N}$ such that $|xm xn| < \varepsilon$ for m, $n > \mathbb{N}$
 - d) It is monotonic
- 6. Which of the following sequences is bounded but not convergent?
 - a) $(-1)^n$
 - **√**b) 1/n
 - c) n
 - d) 0
- 7. Limit superior of a sequence is defined as
- a) $\lim \sup(xn) = \lim (\sup\{xk: k \ge n\})$

 - b) $\limsup_{n\to\infty} \sup\{xn\} = \lim_{n\to\infty} \{xk\}$ c) $\limsup_{n\to\infty} \{xn\} = \lim_{n\to\infty} (\inf\{xk: k \ge n\})$

		d) None of these
	8.	A monotonic increasing sequence which is bounded above is always a) Divergent
		b) Decreasing
/	1	e) Convergent
		d) Oscillatory
	9.	A series ∑ an is convergent if
	t	a) an $\rightarrow \infty$
		b) an $\rightarrow 0$
		c) an is bounded
\propto	1	an is increasing
	10.	The series $\sum (-1)^n / n$ is
		a) Absolutely convergent
		b) Conditionally convergent
		c) Divergent
		d) Oscillatory
	11.	A series \sum an is called absolutely convergent if
		a) $\sum an $ diverges
	سا	-b) ∑ an converges
/		c) an $\rightarrow 0$
		d) an ≥ 0
	12.	The series $\sum 1/n^2$ is
		a) Divergent
,		b) Conditionally convergent
\langle		c) Absolutely convergent
/	1	d) Not defined
	13.	The harmonic series $\sum 1/n$ is
		a) Convergent
		b) Divergent
_		c) Absolutely convergent
		d) Conditionally convergent
	14.	The alternating series test (Leibniz test) requires
		a) an decreasing and lim an = 0
	4	b) an bounded and lim an ≠ 0
		c) an increasing and lim an = 0
		d) an unbounded
	15.	If a series converges absolutely, then it is also
		a) Divergent
		b) Conditionally convergent
		C) Convergent
		d) Monotonic

Vivekanand College Kolhapur (Empowered Autonomous) **Department of Mathematics**

B.Sc. III (Sem V) Real Analysis Surprise Test 2024-25

Time & date: 07/10/2024

Total Marks: 30

Name of the student: Abhijeet L. Kalake

Roll no.: 825も

- 1. If a sequence is bounded above and below, then it is called
 - a) Divergent
 - b) Bounded
 - c) Cauchy
 - d) Monotonic
- 2. The least upper bound of a set is also called its
 - a) Limit inferior
 - b) Greatest lower bound
- e Supremum
 - d) Limit superior
- 3. The greatest lower bound of a set is called its
 - a) Supremum
- (b) Infimum
 - c) Limit inferior
 - d) Convergent limit
- 4. If a sequence has a limit, then it is necessarily
 - a) Divergent
 - b) Monotone
- e) Convergent
 - d) Cauchy only
- 5. A sequence is called Cauchy if
 - a) It is bounded
 - b) The difference between its successive terms tends to zero
 - c) For every $\varepsilon > 0$, $\exists N \in \mathbb{N}$ such that $|xm xn| < \varepsilon$ for m, n > N
 - d) It is monotonic
- 6. Which of the following sequences is bounded but not convergent?
 - a) $(-1)^n$
 - b) 1/n
 - c) n

4)0

- 7. Limit superior of a sequence is defined as
 - a) $\limsup (xn) = \lim_{n \to \infty} (\sup \{xk : k \ge n\})$

 - b) $\lim \sup(xn) = \lim_{n \to \infty} \{xk\}$ c) $\lim \sup(xn) = \lim_{n \to \infty} (\inf\{xk : k \ge n\})$

		d) None of these
	8.	A monotonic increasing sequence which is bounded above is always a) Divergent b) Decreasing
1/	1	Convergent
		d) Oscillatory
	9.	A series ∑ an is convergent if
		a) an $\rightarrow \infty$
		b) an $\rightarrow 0$
,		c) an is bounded
\propto		न्त्र) an is increasing
	10	The course $\nabla (\cdot) = (\cdot)$
	10.	The series $\sum (-1)^n / n$ is
		a) Absolutely convergent
		b) Conditionally convergent
^/		c) Divergent
LY (d) Oscillatory
	11.	A series \sum an is called absolutely convergent if
		a) ∑ an diverges
		b) ∑ an converges
		c) an $\rightarrow 0$
\propto		d) an ≥ 0
	12.	The series $\sum 1/n^2$ is
		a) Divergent
		b) Conditionally convergent
α		c) Absolutely convergent
V 1	ب	d) Not defined
	12	The Land State of Stat
	13.	The harmonic series $\sum 1/n$ is
		a) Convergent
		b) Divergent
\sim	_	c) Absolutely convergent
		d) Conditionally convergent
	14	The alternating series test (Leibniz test) requires
	17.	a) an decreasing and lim an = 0
	_	b) an bounded and lim an $\neq 0$
		c) an increasing and lim an = 0
		<u> </u>
		d) an unbounded
	15.	If a series converges absolutely, then it is also
		a) Divergent
_	_	b) Conditionally convergent
	Ł_	c) Convergent
		d) Monotonic



Vivekanand College Kolhapur (Empowered Autonomous) **Department of Mathematics**

B.Sc. III (Sem V) Real Analysis Surprise Test 2024-25

Time & date: 7/10/2024

Total Marks: 30

Name of the student: Vishakha m. Chougule

Roll no.: 8253

- ${\mathcal U}$ If a sequence is bounded above and below, then it is called
 - a) Divergent
 - b) Bounded
- c) Cauchy
 - d) Monotonic
- 2. The least upper bound of a set is also called its
 - a) Limit inferior
 - b) Greatest lower bound
- c) Supremum
 - d) Limit superior
- 3. The greatest lower bound of a set is called its
 - a) Supremum
 - b) Infimum
 - c) Limit inferior
 - d) Convergent limit
- 4. If a sequence has a limit, then it is necessarily
 - a) Divergent
 - b) Monotone
 - e) Convergent
 - d) Cauchy only
- 5. A sequence is called Cauchy if
 - a) It is bounded
 - b) The difference between its successive terms tends to zero
- For every $\varepsilon > 0$, $\exists N \in \mathbb{N}$ such that $|xm xn| < \varepsilon$ for m, n > N
 - d) It is monotonic
 - 6. Which of the following sequences is bounded but not convergent?
 - a) $(-1)^n$
 - b) 1/n
 - c) n
 - d) 0
 - 7. Limit superior of a sequence is defined as
 - $\lim \sup(xn) = \lim_{n \to \infty} (\sup\{xk : k \ge n\})$
 - b) $\limsup_{n\to\infty} \{xk\}$ c) $\limsup_{n\to\infty} \{xn\} = \lim_{n\to\infty} \{xk\}$ c) $\lim_{n\to\infty} \sup_{n\to\infty} (\inf\{xk: k \ge n\})$

	c	i) None of these
	а	A monotonic increasing sequence which is bounded above is always a) Divergent
\angle	t	o) Decreasing
, (Convergent
	d	l) Oscillatory
	9. <i>A</i>	A series ∑ an is convergent if
,		(a) an $\rightarrow \infty$
K	0	o) an → 0 Tan is bounded
		an is bounded an is increasing
	u	y an is increasing
		The series $\sum (-1)^n / n$ is
) Absolutely convergent
\propto	b	Conditionally convergent Divergent
) Oscillatory
	u) Oscillatory
	11. A	a series ∑ an is called absolutely convergent if
^	a) ∑ an diverges →∑ an converges) an → 0
X	L	↑∑ an converges
	C,	$0 \text{ an} \rightarrow 0$
	d _.) an ≥ 0
	12. T	he series $\sum 1/n^2$ is
	a)) Divergent
) Conditionally convergent
/		Absolutely convergent
	d)	Not defined
	13. T	he harmonic series $\sum 1/n$ is
,	-	Convergent
\propto		Divergent
,	_	Absolutely convergent
	d)	Conditionally convergent
		ne alternating series test (Leibniz test) requires
	•	an decreasing and $\lim an = 0$
	,	an bounded and $\lim an \neq 0$
`	,	an increasing and lim an = 0
	d)	an unbounded
	15. If	a series converges absolutely, then it is also
		Divergent
1		Conditionally convergent
		Convergent
	d)	Monotonic

Vivekanand College Kolhapur (Empowered Autonomous)

Department of Mathematics

B.Sc. III (Sem V) Real Analysis Surprise Test 2024-25

Time & date: 7/10/2024

Total Marks: 30

Name of the student: Aditya Ashok Ardalkar

Roll no .: 8249

- 1. If a sequence is bounded above and below, then it is called
 - a) Divergent
- b) Bounded
 - c) Cauchy
 - d) Monotonic
- 2. The least upper bound of a set is also called its
 - a) Limit inferior
 - b) Greatest lower bound
- C) Supremum
 - d) Limit superior
- 3. The greatest lower bound of a set is called its
 - a) Supremum
- b) Infimum
 - c) Limit inferior
 - d) Convergent limit
- 4. If a sequence has a limit, then it is necessarily
 - a) Divergent
 - b) Monotone
 - c) Convergent
 - d) Cauchy only
- 5. A sequence is called Cauchy if
 - a) It is bounded
 - b) The difference between its successive terms tends to zero
 - c) For every $\varepsilon > 0$, $\exists N \in \mathbb{N}$ such that $|xm xn| < \varepsilon$ for m, $n > \mathbb{N}$
 - d) It is monotonic
- 6. Which of the following sequences is bounded but not convergent?
- $(-1)^n$
 - b) 1/n
 - c) n
 - d) 0
- 7. Limit superior of a sequence is defined as
- a) $\lim \sup(xn) = \lim_{n \to \infty} (\sup\{xk : k \ge n\})$ b) $\lim \sup(xn) = \lim_{n \to \infty} \{xk\}$

 - c) $\lim \sup(xn) = \lim_{n \to \infty} (\inf\{xk : k \ge n\})$

(d) None of these			
~ °	A monotonic incre) Divergent) Decreasing) Convergent) Oscillatory	asii g sequence w	hich is bounde	d above is always
() ()	series \sum an is con 0 an $\rightarrow \infty$ 0 an $\rightarrow 0$ an is bounded an is increasing	vergent if	wiki di	
b) c)	he series $\sum (-1)^n / 2$ Absolutely convertionally conditionally condivergent Oscillatory			
c) a	peries \sum an is calle $\sum an $ diverges $\sum an $ converges $\sum an $ converges $\sum an $ on $\sum 0$	d absolutely conv	ergent if	
a) D b) C c) A	series \(\sum \) 1/n² is Pivergent Conditionally converge bsolutely converge ot defined	ergent ent		
b) Di	harmonic series ∑ onvergent vergent osolutely convergent onditionally conver	nt		
b) an l	Iternating series te decreasing and lim bounded and lim a ncreasing and lim unbounded	an = 0	equires	
b) Con	ditionally converg		lso	