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

Time & date: 16/09/2024 **Total Marks: 30**

Sr. No.	Roll No.	Name of student	Sign.	Marks
1	8249	ARDALKAR ADITYA ASHOK		20
2	8250	BHOGAM SUJATA KRISHNAT		10
3	8251	BHOSALE AASHA SADIK		14
4	8252	CHOUGULE PRATEEK ANIL	Ab	-
5	8253	CHOUGULE VISHAKHA MAHADEV	Ab	-
6	8254	GANBAVALE TEJAS SANTOSH	T.S.G	16
7	8255	JADHAV SHRIDHAR SUHAS		18
8	8256	KALAKE ABHIJEET LAXMAN		30
9	8257	KALAMKAR SANIKA JAYVANT		20
10	8258	KAMBLE AVISHKAR SUDESH		20
11	8259	MORE PRANALI ASHOK		12
12	8260	PATIL ARPITA JINESHWAR		20
13	8261	SAJNIKAR DIVYA NETAJI		18
14	8262	VADICHARLA SANDHYA KRUSHNAMURTI		18

HEAD
DEPARTMENT OF MATHEMATICS
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)

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

30/30

Time & date: **Total Marks: 30**

Name of the student: Abhijeet Laxman Kalake
Roll no.: 8256

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1. A group is called Abelian if
   a) It is finite
   b) It is commutative
   c) It has an identity
   d) It has an inverse

2. The set of integers under addition is
   a) Finite group
   b) Infinite Abelian group
   c) Non-Abelian group
   d) Not a group

3. In a group G, the identity element is
   a) Unique
   b) May not exist
   c) Can be more than one
   d) None of these

4. Which of the following is a cyclic group?
   a) $(\mathbb{Z}, +)$
   b) $(\mathbb{Q}, +)$
   c) $(\mathbb{R}, +)$
   d) $(M_2(\mathbb{R}), +)$

5. The order of a subgroup always
   a) Divides the order of the group
   b) Equals the order of the group
   c) Is greater than the order of the group
   d) May not relate to group order

6. The centre of a group Z(G) is defined as
   a) Set of all inverses
   b) Set of all commutative elements $\{x \in G: xg = gx \ \forall g \in G\}$
   c) Set of all subgroups
   d) None of these

7. The alternating group A_n consists of
   a) All permutations of *n* elements
   b) All odd permutations
   c) All even permutations

d) All disjoint permutations

8. Euler's theorem states: If (a,n)=1 then
   a) $a^n \equiv 1 \pmod n$
   b) $a^{\phi(n)} \equiv 1 \pmod n$
   c) $a^{n-1} \equiv 1 \pmod n$
   d) None

9. A subgroup H of G is normal if
   a) $aH = Ha \quad \forall \ a \in G$
   b) $H = \{e\}$
   c) Order of H divides order of G
   d) H is Abelian

10. The kernel of a homomorphism is always
   a) A subgroup
   b) A normal subgroup
   c) A cyclic group
   d) The identity only

11. If $\phi: G \to H$ is a group homomorphism, then
   a) $\phi(eG) = eH$
   b) $\phi(eG) \neq eH$
   c) $\phi(eG) = 0$
   d) None of these

12. The First Isomorphism Theorem states:
   a) $G/H \cong \phi(G)$ where $H = \ker \phi$
   b) $G \cong H$ always
   c) $G/H \cong G$
   d) None of these

13. Every coset of a normal subgroup forms
   a) A subgroup
   b) A group under induced operation
   c) A field
   d) None of these

14. If a group homomorphism is bijective, then it is called
   a) Endomorphism
   b) Automorphism
   c) Isomorphism
   d) Homomorphism only

15. The quotient group G/H exists if and only if
   a) H is cyclic
   b) H is normal
   c) H is finite
   d) H is Abelian

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21/30

Time & date: **Total Marks: 30**

Name of the student: Avishkar Sudesh kamble
Roll no.: 8258

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1. A group is called Abelian if
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   b) It is commutative
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2. The set of integers under addition is
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10/30

Time & date: **Total Marks: 30**

Name of the student: Sujata krishnat Bhogam
Roll no.: 8250

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20/30

Time & date: **Total Marks: 30**

Name of the student: Aditya Ashok Aedalkar
Roll no.: 8249

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