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MTH633 Group Theory

Question No : 10 of 33

If P is a Sylow p-subgroup, every conjugate gPg^{-1} of P is also _____.

Answer (Please select your correct option)

- sylow p - subgroup
- cyclic subgroups
- improper subgroups
- trivial subgroups

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 1 of 33

The commutator subgroup C of S_3 contains A_3.

Answer (Please select your correct option)

- True
- False

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No :

Each orbit in G under conjugation by G is a _____ in G.

Answer (Please select your correct option)

- conjugate class
- subgroup
- trivial group
- none of these

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No :

A _____ contained in no larger p-subgroup.

Answer (Please select your correct option)

- p - subgroup
- cyclic subgroups
- improper subgroups
- trivial subgroups

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 7 of 33 **Marks: 1 (B**

Let G be a group containing normal subgroups H and K such that $H \cap K = \{e\}$ and $HVK = G$. Then G is isomorphic to ____

Answer (Please select your correct option)

- $H \cap K$
- $H \cup K$
- $H \times K$
- H / K

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Question Summary : (Attempted Question)

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ATH633 Group Theory

Question No : 3 of 33

Let G is abelian, and $\sigma : x \mapsto x^{-1}$ is an automorphism. Then, σ is not an identity automorphism

Answer (Please select your correct option)

True

False

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Question Summary : (Attempted Question)

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Question No : 3 of 21

Let G be a group acting on a set X, and let $x \in X$. Then the set $Gx = (ax \mid a \in G)$

Answer (Please select your correct option)

- True
- False

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Question Summary : (Attempted Question)

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Let G be a group. Define $a * x = axa^{-1}$, $a \in G$, $x \in G$.

The orbit of $x \in G$ is $Gx = (axa^{-1} | a \in G)$, called the conjugate class of x.

Answer (Please select your correct option)

True

False

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 4 of 33

Sometimes a set X is used to study G via a group action of G on X

Answer (Please select your correct option)

- True
- False

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 2 of 33

There cannot be more than six automorphisms of S_3.

Answer (Please select your correct option)

- True
- False

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 11 of 33 Marks:

The _____ for finitely generated abelian groups gives us complete information about all finite abelian groups

Answer (Please select your correct option)

- Sylow theorems
- Lagrange theorem
- fundamental theorem
- none of these

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 12 of 33

If H and K are two normal subgroups of G and $K \leq H$, then _____ is a normal subgroup of G/K

Answer (Please select your correct option)

- K/G
- K/H
- H/K
- G/H

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ATH633 Group Theory

Question No : 15 of 33 Marks: 1 (Budgeted Ti

Let $h: G \to G'$ be a homomorphism of groups. The subgroup $h^{-1}[(e')] = (x \in G \mid h(x) = e')$ is the kernel of h, denoted by $Ker(h)$

Answer (Please select your correct option)

- False
- True

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Question Summary : 1 Attempted Question 1

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MTH633 Group Theory

Question No : 11 of 33

The relation $a \equiv b \bmod H$ is the _____ relation on G.

Answer (Please select your correct option)

- equivalence
- only reflexive
- only symmetric
- only transitive

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 13 of 33

$(Z_n, +)$ is a cyclic group with _____ as a generator.

Answer (Please select your correct option)

- 0
- 1
- 2
- 4

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 17 of 33

We can make a factor group from _____.

Answer (Please select your correct option)

- inverses of groups
- identity of groups
- homomorphism of groups
- None of these

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 17 of 33

We can make a factor group from _____.

Answer (Please select your correct option)

- inverses of groups
- identity of groups
- homomorphism of groups
- None of these

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 21 of 33

If G is a finite group and G/N has just two elements, then we must have _____

Answer (Please select your correct option)

- $|G| = |N|$
- $|G| = 2\,|N|$
- $|G| = 3\,|N|$
- $|G| = 4\,|N|$

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 20 of 33

Let N be a normal subgroup of G. In the factor group G/N, the subgroup N acts as _____ element

Answer (Please select your correct option)

- identity
- non-identity
- universe
- none of these

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 19 of 33

The automorphism $i_g : G \to G$, where $i_g(x) = gxg^{-1}$ for all $x \in G$, is the _____ of G by g

Answer (Please select your correct option)

- automorphism
- endomorphism
- epimorphism
- inner automorphism

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 18 of 33 **Marks: 1 (Budgeted Time Min)**

The equation (aH)(bH)=(ab)H is meaningless unless it gives _____, independent of the representative elements a and b chosen from the cosets

Answer (Please select your correct option)

- a well-defined operation
- unique identity
- inverses
- commutative property

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Question Summary : (Attempted Question)

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MTH033 Group Theory

Question No : 22 of 33

$Z_4 \times Z_6$ has _____ elements.

Answer (Please select your correct option)

- 12
- 36
- 40
- 24

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 25 of 33

The inverse of $a^2b^4a^{-3}b^2a^5$ is _____.

Answer (Please select your correct option)

C $a^{-5}b^{-2}b^{-4}a^3a^{-2}$

C $a^{-5}b^{-2}a^3a^{-2}b^{-4}$

C $a^{-5}b^{-2}a^3b^{-4}a^{-2}$

C $b^{-2}a^{-5}a^3b^{-4}a^{-2}$

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 23 of 33

A group is _____ if it is nontrivial and has no proper nontrivial normal subgroups.

Answer (Please select your correct option)

- abelian
- simple
- cyclic
- non-abelian

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 26 of 33

Define kernel of homomorphism.

Answer (Please click here to Add Answer)

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 28 of 33

State the First theorem of Isomorphism.

Answer (Please click here to Add Answer)

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Question Summary : (Attempted Question)

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TH633 Group Theory

Question No : 29 of 33

Write down Two normal subgroups of (1, -1, i, -i, j, -j, k, -k)

Answer (Please click here to Add Answer)

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 30 of 33 *Marks: 3 (Budgeted Time*

Let G be a group. The set of all commutators $aba^{-1}b^{-1}$ for $a, b \in G$ generates a subgroup C of G

Answer (Please click here to Add Answer)

100%

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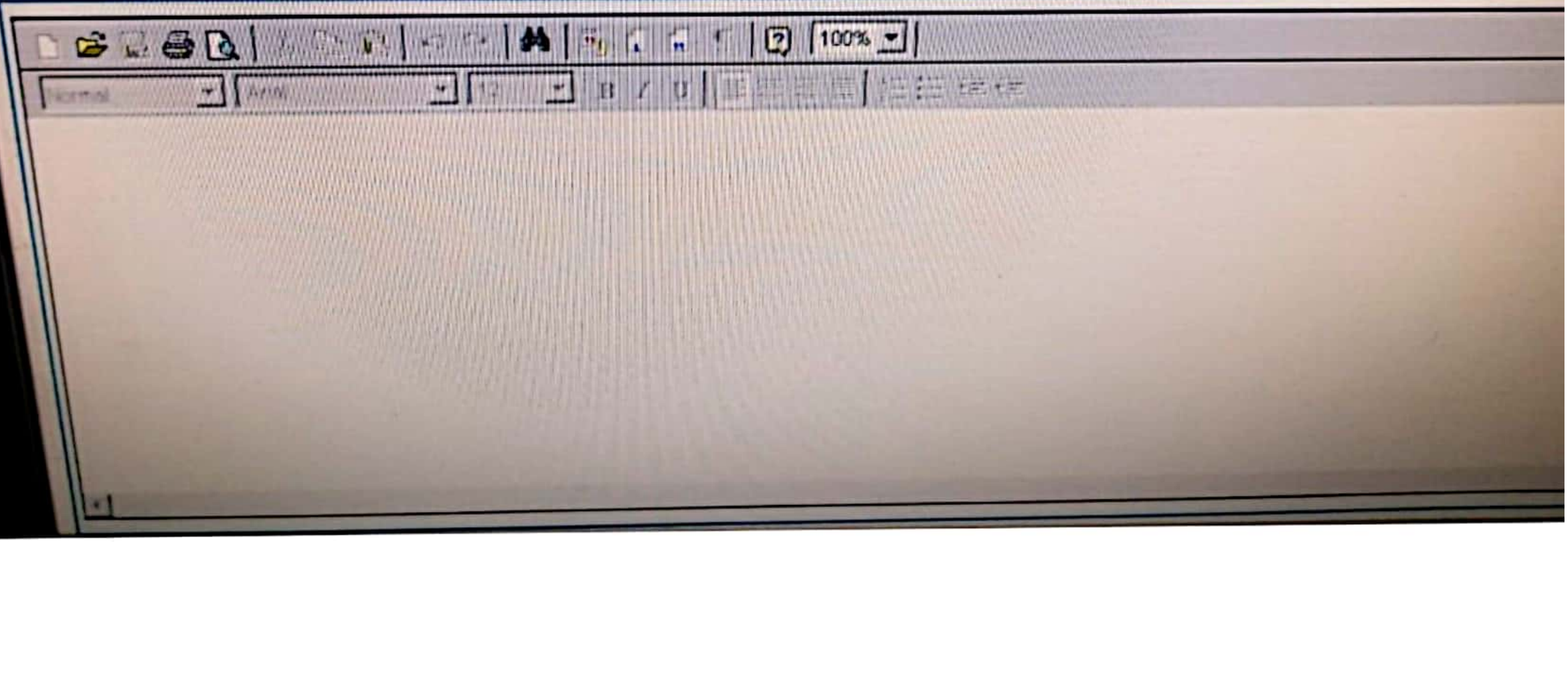
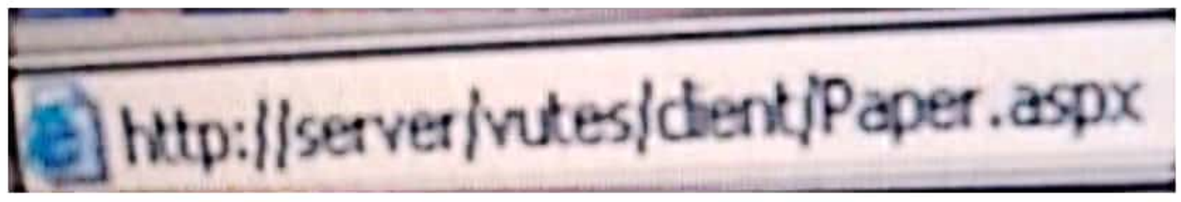
Question No : 27 of 33 Marks: 2 (Budg

Show that every subgroup H containing just half the elements of a finite group G must be a normal subgroup

Answer (Please click here to Add Answer)



ess 

MIH633 Group Theory

Question No : 31 of 33

Give an example of group action on a set.

Answer (Please click here to Add Answer)

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 33 of 33

Let H and K be normal subgroups of a group G with $K \leq H$

Then show that $G/H \simeq (G/K)/(H/K)$

Answer (Please click here to Add Answer)

100%

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Question Summary : (Attempted Question)

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MTH633 Group Theory

Question No : 32 of 33

Show that the homomorphism h : G → G' is injective if and only if Ker h=(e).

Answer (Please click here to Add Answer)

100%

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Question Summary : (Attempted Question)

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