Question # 4 of 10 (Start time: 06:47:50 AM, 24 August 2018)

The converse of Lagrange's theorem holds for abelian groups.

Select the correct option

- True
- False

Question # 2 of 10 (Start time: 06:47:12 AM, 24 August 2018)

The group G is a copy of the group H, if the function

$$f : G \to H$$

is ---------

Select the correct option

- homomorphic
- isomorphic
- onto
- bijective

MTH633:Quiz No. 2

Question # 1 of 10 (Start time: 06:46:44 AM, 24 August 2018)

Let φ be a homomorphism function from group $(G, *)$ to group $(G', \cdot)$. Then, $(Ker\,\varphi, *)$ is a normal subgroup of $(G, *)$.

Select the correct option

- ● True
- ○ False

Click to Sav

Question # 9 of 10 (Start time: 06:49:03 AM, 24 August 2018)

Let

$$\phi : G \to H$$

be a homomorphism, then $\phi(a^{-1}) = \phi(a)^{-1}$ for $a \in G$.

Select the correct option

●	True
○	False

Question # 7 of 10 (Start time: 06:48:33 AM, 24 August 2018)

The relation

$a \equiv b$

mod H is an equivalence relation on G.

Select the correct option

●	True
○	False

Question # 3 of 10 (Start time: 06:47:30 AM, 24 August 2018)

If N is a normal subgroup of (G, •), the set of cosets G/N = {Ng|g ∈ G} forms a group (G/N, •), where the operation is defined by (Ng1) • (Ng2) = N(g1 • g2). This group is called the quotient group or factor group of G by N.

Select the correct option

- ● True
- ○ False

Question # 6 of 10 (Start time: 06:48:20 AM, 24 August 2018)

Let $(G, \cdot)$ be a group with subgroup H. For $a, b \in G$, we say $a \equiv b \bmod H$ if and only if $ab^{-1} \in H$.

Select the correct option

- ● True
- ○ False

Click to

Question # 10 of 10 (Start time: 06:49:20 AM, 24 August 2018)

Let H be a subgroup of a group G. Then (a H) (b H) = a b H is not always true when G is non-abelian.

Select the correct option

- False
- True

Question # 8 of 10 (Start time: 06:48:48 AM, 24 August 2018)

The quotient group R/Z is isomorphic to the circle group

$$W = \{ e^{i\theta} \in \mathbb{C} | \, \theta \in \mathbb{R} \}.$$

Select the correct option

- True
- False

Click to Save A

Question # 5 of 10 (Start time: 06:48:03 AM, 24 August 2018)

Let ϕ be a homomorphism of a group G into a group G'. If H is a subgroup of G, then $\phi[H]$ is a subgroup of G'.

Select the correct option

- ● True
- ○ False

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Quiz
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Google

MC170203385: Maffia Bibi

Time Left 71 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:23 PM, 07 June 2018

Question # 7 of 10 (Start time: 12:27:13 PM, 07 June 2018)

Total Marks: 1

Which of the following is the subgroup of {1, -1, i, -i } under multiplication?

Select the correct option

- ○ {1, i}
- ○ {1, -i}
- ● {1, -1}
- ○ {i, -i}

Click to Save Answer & Move to Next Question

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Google

MC170203385: Maffia Bibi

Time Left 48 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:23 PM, 07 June 2018

Question # 5 of 10 (Start time: 12:26:05 PM, 07 June 2018)

Total Marks: 1

How many tests are there to show a subset of a group to be a subgroup?

Select the correct option

- ○ 1
- ○ 2
- ● 3
- ○ 4

Click to Save Answer & Move to Next Question

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MC170203385: Maffia Bibi

Time Left 83 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:23 PM, 07 June 2018

Question # 10 of 10 (Start time: 12:29:50 PM, 07 June 2018) Total Marks: 1

The order of the group $\{1, \omega, \omega^2\}$ is ---------

Select the correct option

Reload Math Equations

- ○ 2
- ● 3
- ○ 4
- ○ 5

Click to Save Answer & Move to Next Question

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Google

MC170203385: Maffia Bibi

Time Left 74 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:23 PM, 07 June 2018

Question # 2 of 10 (Start time: 12:23:51 PM, 07 June 2018)

Total Marks: 1

The group (Z, +) is a finite group, where Z is the set of integers.

Select the correct option

- False
- True

Click to Save Answer & Move to Next Question

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Google

MC170203385: Maffia Bibi

Time Left 44 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:23 PM, 07 June 2018

Question # 3 of 10 (Start time: 12:24:24 PM, 07 June 2018)

Total Marks: 1

A subset H of a group G under addition is a subgroup of G if and only if whenever $a, b \in H$, then $a - b \in H$

Select the correct option

Reload Math Equations

- [x] True
- [ ] False

Click to Save Answer & Move to Next Question

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6/7/2018

47% 3:30 pm

Question # 1 of 10 (Start time: 03:29:56 PM, 07 June 2018) Total Marks: 1

A subset H of a group G under addition is a subgroup of G if and only if whenever $a, b \in H$, then $a - b \in H$

Select the correct option

Reload Math Equations

- True
- False

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Click to Save Answer & Move to Next Question

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MC170203385: Maffia Bibi

Time Left 71 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:23 PM, 07 June 2018

Question # 6 of 10 (Start time: 12:26:51 PM, 07 June 2018)

Total Marks: 1

A subgroup H of a group (G, *) is a subset of G, which is itself a group under * .

Select the correct option

- [x] True
- [ ] False

Click to Save Answer & Move to Next Question

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Question # 6 of 10 (Start time: 03:33:30 PM, 07 June 2018) Total Marks: 1

Show that $H = \left\{ \begin{pmatrix} 1 & n \\ 0 & 1 \end{pmatrix} \mid n \in Z \right\}$ is the subgroup of G = GL (2, R) under multiplication.

Select the correct option

Reload Math Equations

- True
- False

Click to Save Answer & Move to Next Question

Question # 6 of 10 (Start time: 03:33:30 PM, 07 June 2018) Total Marks: 1

Show that $H = \left\{ \begin{pmatrix} 1 & n \\ 0 & 1 \end{pmatrix} \mid n \in Z \right\}$ is the subgroup of G = GL (2, R) under multiplication.

Select the correct option

Reload Math Equations

- True
- False

Click to Save Answer & Move to Next Question

47% 3:34 pm

Question # 9 of 10 (Start time: 03:34:33 PM, 07 June 2018) Total Marks: 1

The group (Z, +) is a finite group, where Z is the set of integers.

Select the correct option

- False
- True

Click to Save Answer & Move to Next Question

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MC170201745: Shakeel Ahmad

Time Left 46 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:39 PM, 07 June 2018

Question # 2 of 10 (Start time: 12:39:13 PM, 07 June 2018) Total Marks: 1

$\langle Z, + \rangle$ is the subgroup of $\langle R, + \rangle$.

Select the correct option

Reload Math Equations

- [x] True
- [ ] False

Click to Save Answer & Move to Next Question

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Google

MC170203385: Maffia Bibi

Time Left 44 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:23 PM, 07 June 2018

Question # 4 of 10 (Start time: 12:25:14 PM, 07 June 2018)

Total Marks: 1

$\langle \{1, -1\}, \cdot \rangle$ is the subgroup of $\langle \{1, -1, i, -i\}, \cdot \rangle$.

Select the correct option

Reload Math Equations

- [x] True
- [ ] False

Click to Save Answer & Move to Next Question

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Question # 7 of 10 (Start time: 08:44:47 PM, 08 June 2018)

$\langle \{1, -1\}, \cdot \rangle$ is the subgroup of $\langle \{1, -1, i, -i\}, \cdot \rangle$.

Select the correct option

- [x] True
- [ ] False

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MC170202458: Aneeta Shaheen

Time Left 62 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:52 PM, 07 June 2018

Question # 4 of 10 (Start time: 12:52:47 PM, 07 June 2018)

Total Marks: 1

$\langle Q, + \rangle$ is the subgroup of $\langle R, + \rangle$.

Select the correct option

Reload Math Equations

- [x] True
- [ ] False

Click to Save Answer & Move to Next Question

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47% 3:35 pm

Question # 10 of 10 (Start time: 03:34:48 PM, 07 June 2018)

Total Marks: 1

A subset H of a group G is a subgroup of G if and only if H is non-empty and ----------

Select the correct option

Reload Math Equations

- whenever $a, b \in H$, then $ab \in H$
- whenever $a, b \in H$, then $b^{-1} \in H$
- whenever $a, b \in H$, then $ab^{-1} \in H$
- whenever $a, b \in H$, then $(ab)^{-1} \in H$

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MC170202458: Aneeta Shaheen

Time Left 65 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:52 PM, 07 June 2018

Question # 9 of 10 (Start time: 12:54:33 PM, 07 June 2018)

Total Marks: 1

The set of even integers is not a subgroup of the set of Integers under the same binary operation of addition.

Select the correct option

- True
- False

Click to Save Answer & Move to Next Question

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MC170201745: Shakeel Ahmad

Time Left 76 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:39 PM, 07 June 2018

Question # 7 of 10 (Start time: 12:40:53 PM, 07 June 2018)

Total Marks: 1

A non empty subset S of a finite group G is called subgroup of G if and only if ab is in S for all a, b in S.

Select the correct option

- ● True
- ○ False

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MC170201745: Shakeel Ahmad

Time Left 78 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:39 PM, 07 June 2018

Question # 8 of 10 (Start time: 12:41:33 PM, 07 June 2018) Total Marks: 1

The order of the group {1, -1, i, -i, j, -j, k, -k} is ----------

Select the correct option

- ○ 6
- ○ 7
- ● 8
- ○ 9

Click to Save Answer & Move to Next Question

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47% 3:33 pm

Question # 4 of 10 (Start time: 03:32:40 PM, 07 June 2018) Total Marks: 1

The group ({1, −1}, .) is subgroup of the group (Z, +).

Select the correct option

- [x] True
- [ ] False

... 47% 3:34 pm

Question # 8 of 10 (Start time: 03:34:23 PM, 07 June 2018) Total Marks: 1

The order of the group $\{1, \omega, \omega^2\}$ is - - - - - - - - - -

Select the correct option

Reload Math Equations

- 2
- 3
- 4
- 5

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MC170201745: Shakeel Ahmad

Time Left 38 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:39 PM, 07 June 2018

Question # 9 of 10 (Start time: 12:41:48 PM, 07 June 2018) Total Marks: 1

The group {1, -1, i, -i } is not a subgroup of itself.

Select the correct option

- False
- True

Click to Save Answer & Move to Next Question

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MC170201745: Shakeel Ahmad

Time Left 82 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:39 PM, 07 June 2018

Question # 4 of 10 (Start time: 12:40:10 PM, 07 June 2018) Total Marks: 1

The order of the group {e} is ----------

Select the correct option

- ○ 0
- ● 1
- ○ 2
- ○ 3

Click to Save Answer & Move to Next Question

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6/7/2018

... 47% 3:33 pm

Question # 5 of 10 (Start time: 03:33:11 PM, 07 June 2018) Total Marks: 1

The group (Q, +) is an infinite group, where Q is the set of rational numbers.

Select the correct option

- False
- True

Click to Save Answer & Move to Next Question

... 47% 3:33 pm

Question # 5 of 10 (Start time: 03:33:11 PM, 07 June 2018) Total Marks: 1

The group (Q, +) is an infinite group, where Q is the set of rational numbers.

Select the correct option

- False
- True

Click to Save Answer & Move to Next Question

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MC170203385: Maffia Bibi

Time Left 81 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:23 PM, 07 June 2018

Question # 1 of 10 (Start time: 12:23:34 PM, 07 June 2018)

Total Marks: 1

In the group {1, -1, i, -i}, the order of -1 is -------

Select the correct option

- 1
- 2
- 3
- 4

Click to Save Answer & Move to Next Question

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Question # 2 of 10 (Start time: 03:32:01 PM, 07 June 2018)

Total Marks: 1

The group $\{1, -1, i, -i\}$ is a finite group.

Select the correct option

- [x] True
- [ ] False

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Google

MC170202458: Aneeta Shaheen

Time Left 75 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:52 PM, 07 June 2018

Question # 6 of 10 (Start time: 12:53:26 PM, 07 June 2018)

Total Marks: 1

In the group {1, -1, i, -i}, the order of i is -------

Select the correct option

- 1
- 2
- 3
- 4

Click to Save Answer & Move to Next Question

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Google

MC170201745: Shakeel Ahmad

Time Left 84 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:39 PM, 07 June 2018

Question # 5 of 10 (Start time: 12:40:25 PM, 07 June 2018)

Total Marks: 1

Klein Four group is not cyclic group.

Select the correct option

- [x] True
- [ ] False

Click to Save Answer & Move to Next Question

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MC170203385: Maffia Bibi

Time Left 54 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:23 PM, 07 June 2018

Question # 9 of 10 (Start time: 12:29:09 PM, 07 June 2018)

Total Marks: 1

Show that $H = \left\{ \begin{pmatrix} 1 & n \\ 0 & 1 \end{pmatrix} \mid n \in Z \right\}$ is the subgroup of G = GL (2, R) under multiplication.

Select the correct option

Reload Math Equations

- (●) True
- ( ) False

Click to Save Answer & Move to Next Question

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MC170202458: Aneeta Shaheen

Time Left 52 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:52 PM, 07 June 2018

Question # 7 of 10 (Start time: 12:53:45 PM, 07 June 2018)

Total Marks: 1

A subset H of a group G is a subgroup of G if and only if (i) whenever $a, b \in H$, then $ab \in H$ (ii) whenever $b \in H$, then $b^{-1} \in H$

Select the correct option

Reload Math Equations

- [x] True
- [ ] False

Click to Save Answer & Move to Next Question

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6/7/2018

Question # 6 of 10 (Start time: 08:44:21 PM, 08 June 2018)

A non empty subset S of a finite group G is called subgroup of G if and only if ab is in S for all a, b in S.

Select the correct option

- True
- False

Question # 3 of 10 (Start time: 08:43:18 PM, 08 June 2018)

$\langle Z, + \rangle$ is the subgroup of $\langle R, \cdot \rangle$.

Select the correct option

- True
- False

Question # 9 of 10 (Start time: 08:45:11 PM, 08 June 2018)

The group ({1, -1}, .) is subgroup of the group (Z, +).

Select the correct option

- True
- False

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Google

MC170203385: Maffia Bibi

Time Left 24 sec(s)

MTH633:Quiz No. 1

Quiz Start Time: 12:23 PM, 07 June 2018

Question # 8 of 10 (Start time: 12:27:53 PM, 07 June 2018)

Total Marks: 1

The group (Q, +) is an infinite group, where Q is the set of rational numbers.

Select the correct option

- False
- True

Click to Save Answer & Move to Next Question

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Question # 10 of 10 (Start time: 08:46:04 PM, 08 June 2018)

The order of the group {e} is --------

Select the correct option

- 0
- 1
- 2
- 3

47% 3:32 pm

Question # 3 of 10 (Start time: 03:32:25 PM, 07 June 2018) Total Marks: 1

The order of the group $\{1, -1\}$ is ----------

Select the correct option

- 1
- 2
- 3
- 4

MTH633:Quiz No. 1

Question # 5 of 10 (Start time: 08:43:47 PM, 08 June 2018)

$\langle Q, + \rangle$ is the subgroup of $\langle R, + \rangle$.

Select the correct option

- True
- False

MTH #633

Group Theory

MC170201745

26/06/2018

① Define Bijective Mapping 2 Marks

② Write identity permutation of D_4 and D_5 2 Marks

③ Write Elements of Dihedral Group D_4 3 Marks

④ Suppose $G = \langle a \rangle$ with $\langle a \rangle = 30$

Find $|a^{21}|$ and $\langle a^{21} \rangle$ 3 Marks

⑤ Show that $(Z, +)$ is group under addition 5 Marks

⑥ Let 'p' be permutation of set 'S'

Then prove following relation is an equivalence relation

$$a \sim b \iff b = p^n(a) \text{ for some } n \in Z$$

MTH 633

① Write 2 groups that are abelian.
2 Marks.

② Write 2 properties of Langrange's Theorem.
2 Marks.

③ If $|a| = 30$ then find $|a^{21}|$ & $\langle a^{21} \rangle$
3 Marks.

④ If $f : \langle R, + \rangle \to \langle R^+, \cdot \rangle$ then prove isomerism.
5 - Marks.

⑤ Prove that $\langle R, + \rangle$ is a group.
5 - Marks.

MTH 633

1) Define Bijective mapping? (2) marks

2) Write identity of $(S_6, \cdot)$. (2) marks

3) Write right cosets of $3Z$ of Z. (3) marks

4) Draw Cayly's table of $\{1, -1, i, -i\}$. (3) marks

(5) Prove that $\{1, -1, i, -i\}$ is an abelian group? 5 marks

(6) Prove abelian group upto isomorphism of order 360? 5 marks.

Question # 8 of 10 (Start time: 08:44:59 PM, 08 June 2018)

The order of the group {1, -1, i, -i} is ------

Select the correct option

○	2
○	3
●	4
○	5

Anila

Mth633 mai cosets topicai se thy

Anila

Aik long qsn tha...
Every subgrp of a cyclic grp is also cyclic prove krnaa tha isyyyy

R mcqs mai ziada tr true false thy r easy he thy

Anila

And one step subgrp and two step subgrp tasks ko just state krna thaa

Us MN whole set ko prove krna tha k ye group nhe h

Infinite set k right coset describe krny thy

Aik prove tha subset say related pta nhe kahan say diya tha

Homomorphism ki example Deni the aik

Aik group btana tha k ye abilian h k nhe