Assignment 4

The due date for submitting this assignment has passed.
As per our records, you have not submitted this assignment.

1. Let $G$, $G'$ be groups such that cardinality $|G| = 20$ and $|G'| = 21$. Let $H_1, H_2$ be subgroups of $G$ of cardinality $|H_1| = 5$ and $|H_2| = 6$, also let $K_1, K_2$ be subgroups of $G'$ of cardinality $|K_1| = 7$ and $|K_2| = 3$. Which one of following is true?

   a) $H_1, K_1$ are normal subgroups.
   b) $H_1, K_1$ are normal subgroups.
   c) $H_1, K_1$ are normal subgroups.
   d) the answer is incorrect.

   Accepted Answer: 1

2. Let $G$ be group of cardinality 6. How many elements in $G$ have order 7?

   a) 0
   b) 1
   c) 2
   d) 3
   e) 6

   Accepted Answer: 0

3. Let $G$ be group of cardinality 90. How many elements in $G$ have order 11?

   a) 0
   b) 1
   c) 10
   d) 11
   e) 54
   f) 55
   g) 8
   h) 9
   i) 30

   Accepted Answer: 0

4. Let $G = Z_3 	imes Z_3$ where $Z_3$ is add. How many Sylow 3-subgroups in Dihedral group $D_{12} = D_{12}$ have cardinality $3v$?

   a) 0
   b) 1
   c) 2
   d) 3
   e) 4
   f) 5
   g) 10
   h) 11
   i) 12
   j) 13

   Accepted Answer: 0

5. Let $p$ be a prime number. Number of Sylow $p$-subgroups in general linear group $GL_2(F_p)$ is?

   a) 1
   b) 2
   c) $p^2$
   d) $p+1$

   Accepted Answer: 1

6. Let group $G = Z_4 	imes Z_4 	imes Z_4$. Number of Sylow 7-subgroup is:

   a) 0
   b) 1
   c) 7
   d) 49
   e) 56

   Accepted Answer: 0

7. Find the number of Sylow 3-subgroups in symmetric group $S_3$.

   a) 0
   b) 1
   c) 6
   d) 9
   e) 3
   f) 10

   Accepted Answer: 0

8. Find the number of Sylow 3-subgroups in Dihedral group $D_{12}$ of order 12.

   a) 0
   b) 1
   c) 3
   d) 7
   e) 11

   Accepted Answer: 0

9. Whish of the following should be true?

   a) (1). Group of cardinality 135 must be simple.
   b) Group of cardinality 123 must be simple.

   Accepted Answer: (1)

10. Which of the following should be true?

    a) There is a unique group $G$ of cardinality 15 up to isomorphism.
    b) There is a unique group $G$ of cardinality 124 up to isomorphism, such that for every element $g_2$ in $G$, the element $g_2^2$ is identity element of $G$.

    Accepted Answer: (1)