X

NPTEL

Unit 3 - Week 2

Week 2-Assignment 2-MCQ

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment. **Due on 2018-08-15, 23:59 IST.**

1) The number of proper subgroups of the cyclic group of order 8 is (excluding the trivial subgroup) ***1 point***

- 3
- 2
- 4
- 8

No, the answer is incorrect.
Score: 0

Accepted Answers:
2

2) Consider the two elements of S_6, $g_1 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 6 & 4 & 5 & 3 & 2 & 1 \end{pmatrix}$, $g_2 = \begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 \\ 3 & 1 & 2 & 6 & 5 & 4 \end{pmatrix}$. In cycle form these elements can be written as, ***1 point***

- $g_1 = (16)(2435), g_2 = (132)(46)(5)$
- $g_1 = (15)(2436), g_2 = (13)(246)(5)$
- $g_1 = (16)(24)(35), g_2 = (132)(456)$
- None of the above

No, the answer is incorrect.
Score: 0

ce De

- (1 2)(4 5)(6 3)
- (1 6 2 5)(3 4)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(1 6 2 5)(3 4)

4) Consider a cyclic group of order p, where p is a prime number. The inference can be drawn from here - ***1 point***

- There will be at least one other group of order p and such a cyclic group has no proper subgroups
- There are no other groups of order p and such a cyclic group has no proper subgroups
- There are no other groups of order p but such a cyclic group has proper subgroups
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
There are no other groups of order p and such a cyclic group has no proper subgroups

5) Express the following element of S_8 as a product of transpositions $\begin{pmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \\ 3 & 5 & 2 & 7 & 1 & 8 & 6 & 4 \end{pmatrix}$ ***1 point***

- (1 3 6 8)(4 7 2 5)
- (1 3 2 5)(4 7)(6 8)
- (1 3 2 5)(4 7 6 8)
- (4 3 5 7)(1 2 6 8)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(1 3 2 5)(4 7 6 8)

6) Let S be a subset of group S. Show that G is a subgroup of G if and only if given any $a, b \in S$, they satisfy, ***1 point***

- $ab \in S$
- a^2 as well as $b^2 \in S$
- $ab^{-1} \in S$
- $a^{-1}b^{-1} \in S$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$ab^{-1} \in S$

7) The multiplication table of a finite group G is as follows : ***1 point***

	E	A	B	C	D	F	I	J	K	L	M	N
E	E	A	B	C	D	F	I	J	K	L	M	N
A	A	E	F	I	J	B	C	D	M	N	K	L
B	B	F	A	K	L	E	M	N	I	J	C	D
C	C	I	L	A	K	N	E	M	J	F	D	B
D	D	J	K	L	A	M	N	E	F	I	B	C
F	F	B	E	M	N	A	K	L	C	D	I	J
I	I	C	N	E	M	L	A	K	D	B	J	F
J	J	D	M	N	E	K	L	A	B	C	F	I
K	K	M	J	F	I	D	B	C	N	E	L	A
L	L	N	I	J	F	C	D	B	E	M	A	K
M	M	K	D	B	C	J	F	I	L	A	N	E
N	N	L	C	D	B	I	J	F	A	K	E	M

The inverse of the elements C, D, J, L, N will be,

- I, J, K, M, D
- I, J, D, M, K
- I, J, M, D, K
- I, J, D, K, M

No, the answer is incorrect.
Score: 0

Accepted Answers:
I, J, D, K, M

8) It is given that the set $A \equiv \{E, P, P^2, Q, PQ, P^2Q, R, PR, P^2R, QR, PQR, P^2QR\}$ forms a group, and they also satisfy $P^3 = Q^2 = R^2 = E; QP = PR; RQ = QR; RP = PQR; R = P^2QP$. Identify the conjugacy classes of this group. ***1 point***

- $\{E\}, \{Q, R, QR\}, \{P, PQ, PR, PQR\}, \{P^2, P^2Q, P^2R, P^2QR\}$
- $\{E\}, \{Q, R, PQ, PR\}, \{P, QR, PQR\}, \{P^2, P^2Q, P^2R, P^2QR\}$
- $\{E\}, \{Q, P, QR\}, \{P, PQ, PR, PQR\}, \{P^2, P^2Q, P^2R, P^2QR\}$
- $\{E\}, \{P, R, QR\}, \{Q, PQ, PR, PQR\}, \{P^2, P^2Q, P^2R, P^2QR\}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\{E\}, \{Q, R, QR\}, \{P, PQ, PR, PQR\}, \{P^2, P^2Q, P^2R, P^2QR\}$

9) Identify the total number of possible cycle structures the symmetric group S_6 can have ***1 point***

- 11
- 10
- 12

6

No, the answer is incorrect.
Score: 0

Accepted Answers:
11

10) What is the number of left cosets of C_8 in S_8 ? ***1 point***

$8!$

$7!$

$6!$

5020

No, the answer is incorrect.
Score: 0

Accepted Answers:
$7!$

Previous Page End