

Unit 14 - Week 12

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

Introduction to advanced topics

Introduction to Chromatic polynomial

Chromatic polynomial of complete graphs

Chromatic polynomial of cycle on 4 vertices - Part 1

Chromatic polynomial of cycle on 4 vertices - Part 2

Correspondence between partition and generating functions

Correspondence between partition and generating functions: In general

Distinct partitions and odd partitions

Distinct partitions and generating functions

Odd partitions and generating functions

Distinct partitions equals odd partitions: Observation

Distinct partitions equals odd partitions: Proof

Why 'partitions' to 'polynomial'?

Example: Picking 4 letters from the word 'INDIAN'

Motivation for exponential generating function

Recurrence relation: The theorem and its proof

Introduction to Group Theory

Uniqueness of the identity element

Formal definition of a Group

Groups: Examples and non-examples

Groups: Special Examples Part 1

Groups: Special Examples Part 2

Subgroup: Definition and examples

Lagrange's theorem

Summary

Conclusion

Quiz : Assignment 12

Week 12 Feedback

Text Transcripts

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Assignment 12

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

Due on 2020-04-22, 23:59 IST.

1) Let $G = \{0, 1, 2, 3, 4, 5\}$ be a group under addition modulo 6. Then inverse of 5 is

1 point

- 4
 1
 2
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
7

2) In how many ways can 4 of the letters in E, N, G, I, N, E be arranged?

1 point

- 78
 96
 102
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
102

3) $1 + \frac{x^2}{2!} + \frac{x^4}{4!} + \frac{x^6}{6!} + \dots$ is equal to

1 point

- $e^x + e^{-x}$

 $\frac{1}{2}(e^x + e^{-x})$

 $e^x - e^{-x}$

 $\frac{1}{2}(e^x - e^{-x})$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\frac{1}{2}(e^x + e^{-x})$

4) If G is disconnected, simple graph with n vertices and has n components, then the chromatic polynomial of G, given λ colors is:

1 point

- λ^{n-1}
 λ
 λ^n
 Cannot be found

No, the answer is incorrect.
Score: 0

Accepted Answers:
 λ^n

5) Which of the following is a group ?

1 point

- Natural numbers under addition
 Integers under subtraction
 Real numbers under multiplication
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
None of the above

6) The generating function for $p_d(n)$, the number of distinct partitions of a positive integer n is :

1 point

- $\prod_{i=1}^{\infty} (1 + x^i)$

 $\sum_{i=1}^{\infty} (1 + x^i)$

 $\prod_{i=1}^{\infty} (1 - x^i)$

 $\prod_{i=1}^{\infty} (1 + x)^i$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\prod_{i=1}^{\infty} (1 + x^i)$

7) Identity element of group of integers under addition is

1 point

- 4
 1
 0
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
0

8) Given $k(k > 1)$ colors, chromatic polynomial of a path on n vertices P_n is

1 point

- $(k-1)k^n$
 $(k-1)k^{n-1}$
 $k(k-1)^n$
 $k(k-1)^{n-1}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $k(k-1)^{n-1}$

9) $G = \{1, 2, 3, 4, 5, 6\}$ is a group under multiplication modulo 7. Which of the following is subgroup of G?

1 point

- $\{1, 3, 4\}$
 $\{2, 5\}$
 $\{1, 6\}$
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\{1, 6\}$

10) Let group G has 5 elements. Then G can not have a subgroup of order

1 point

- 1
 3
 5
 None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
3