

# Unit 8 - Week 7: Set Theory & Number Theory

## Course outline

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## Assignment 7

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

**Due on 2019-09-18, 23:59 IST.**

1) Consider a poset  $(P, \leq)$ , where  $P = \{a, b, c, d, e, f, g\}$  and  $\leq$  is  $\{(e, a), (a, d), (d, g), (a, b), (b, c), (d, f), (f, c)\}$ . Which of the following statements is true for  $Q = \{b, d, g\}$ ? **1 point**

- a is a LUB of Q, and Q has no GLB
- g is a GLB of Q, and Q has no LUB
- a is a GLB of Q, and Q has no LUB
- e is a GLB of Q, and g is a LUB of Q

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
a is a GLB of Q, and Q has no LUB

2) Consider the following posets. **1 point**  
(P) the set of all subsets of  $\{1, 2, 3, 4\}$  with the  $\subseteq$  relation  
(Q) the set of all divisors of 36 with the | (divides) relation  
(R) the set of all divisors of 36 with the  $\leq$  relation  
Which of them is/are bounded lattice(s)?

- all of P, Q and R
- none of P, Q and R
- only P and Q
- only P and R

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
all of P, Q and R

3) How many steps does Euclid's algorithm go through when 1729 and 729 are given as inputs to it? It halts when one of the arguments is zero. **1 point**

- 4
- 6
- 9
- 10

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
9

4) GCD of a and 140 is 14. LCM of a and 140 is 420. Then a is **1 point**

- 28
- 42
- 84
- 168

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
42

5) The exponent of 3 in the prime factorization of 6048 is **1 point**

- 2
- 3
- 4
- 9

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
3

6) The exponent of 3 in the prime factorizations of a and b are 7, and 3 respectively. The exponent of 3 in the prime factorization of the LCM of a and b is **1 point**

- 7
- 3
- 4
- 10

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
7

7) Which of the following is a complete residue system modulo 5? **1 point**

- {25, 22, 17, 21, 24}
- {0, 1, 2, 3, 4, 5}
- {20, 22, 18, 21, 23}
- {31, 38, 15, 102, 4}

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
{31, 38, 15, 102, 4}

8) What is the value of  $\phi(20)$ , where  $\phi$  is Euler's  $\phi$ -function? **1 point**

- 5
- 6
- 8
- 7

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
8