

# Quiz on Section 3

Due Jun 26 at 11:59pm    Points 12    Questions 12    Time Limit None    Allowed Attempts 3

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## Attempt History

	Attempt	Time	Score
LATEST	<a href="#">Attempt 1</a>	3,233 minutes	10.67 out of 12

⚠ Correct answers are hidden.

Score for this attempt: **10.67** out of 12

Submitted Jun 20 at 12:55am

This attempt took 3,233 minutes.

### Question 1

1 / 1 pts

How do you create a simulated annealing sampler in D-Wave assuming we have the following statement?

```
from neal import SimulatedAnnealingSampler
```

- ☐ sampler = SimulatedAnnealler
- ☒ sampler = SimulatedAnnealingSampler()
- ☐ sampler = SimulatedAnnealingSampler
- ☐ sampler = Simulated

## Question 2

1 / 1 pts

Which one is not a valid parameter for the `sample` function ?

☐ binary quadratic model

☐ beta schedule

☐ number of reads

☒ ising model

## Question 3

1 / 1 pts

Suppose we created a simulated annealing sampler named `sampler`. By using which function can you sample directly from an Ising model without creating a bqm?

☐ sample

☐ ising\_sampler

☒ sample\_ising

☐ ising\_sample

## Question 4

0.67 / 1 pts

```
p = []  
for t in range(N):  
    for i in range(N):  
        if sample[f"x_{i}_{t}"] == 1:  
            p.append(i)
```

Given that  $x_{i,t}=1$  if node  $i$  is visited at time  $t$  and 0 otherwise and a sample obtained as a result of solving a TSP instance with  $N$  cities using simulated annealing, suppose we execute the above piece of code. Which one of the following(s) is(are) true about  $p$ ?

- ☐  $p$  may contain less than  $N$  integers
- ☒ If the sample is feasible,  $p$  contains the list of visited cities.
- ☒  $p$  may contain more than  $N$  integers
- ☐  $p$  is always a permutation of integers between  $0, \dots, N-1$

## Question 5

1 / 1 pts

Suppose that we have a binary quadratic model named `bqm`.

Which function do you use to add a quadratic objective function?

- ☐ `bqm.add_quadratic_objective`
- ☐ `bqm.add`

☒ `bqm.add_quadratic`

☐ `bqm.add_objective`

### Question 6

1 / 1 pts

Suppose that we have a binary quadratic model named `bqm`.

Which function do you use to add a linear inequality constraint?

☐ `bqm.add_constraint`

☐ `bqm.add_inequality_constraint`

☒ `bqm.add_linear_inequality_constraint`

☐ `bqm.add_linear_inequality_constraint`

Incorrect

### Question 7

0 / 1 pts

Which one of the following parameters is not optional when you add a linear inequality constraint using the function

`add_linear_inequality_constraint` ?

☐ `lb`

☐ `label`

☒ `lagrange_multiplier`

☐ ub

### Question 8

1 / 1 pts

Consider the following time-dependent Hamiltonian  $H(t)$

$$H(t) = \left(1 - \frac{t}{\tau}\right)H_0 + \frac{t}{\tau}H_p$$

Which one of the following(s) is(are) true?

☒ At  $t=0$ , only  $H_0$  acts on the system

☐ If the system is initialized with the ground state of  $H_p$ , it always remains in the ground state throughout the evolution

☐ The goal is to find the ground state of  $H_0$

☒ The goal is to find the ground state of  $H_p$

### Question 9

1 / 1 pts

Problem Hamiltonian in D-Wave involves Pauli-X terms.

☐ True

☒ False

### Question 10

1 / 1 pts

How do you create a sampler to sample from D-Wave default QPU?

- ☒ `sampler = DWaveSampler()`
- ☐ `sampler = DWaveQPU()`
- ☐ `sampler = DWave()`
- ☐ `sampler = DWaveSampler("default")`

### Question 11

1 / 1 pts

How do you set the annealing time to 100 microseconds when calling the sample function?

- ☐ `sampler.sample(bqm, num_reads=100)`
- ☐ `sampler.sample(bqm, num_reads=1000, time=100)`
- ☒ `sampler.sample(bqm, num_reads=1000, annealing_time=100)`
- ☐ `sampler.sample(bqm, num_reads=1000, anneal_time=100)`

### Question 12

1 / 1 pts

How do you create a sampler to sample from D-Wave QPU with built-in minor embedding?

- ☐ `sampler = MinorEmbedding()`

☒ `sampler = EmbeddingComposite(DWaveSampler())`

☐ `sampler = EmbeddingComposite()`

☐ `sampler = MinorEmbedding(DWaveSampler())`

Quiz Score: **10.67** out of 12