

Unit 6 - Week 4

Course outline

How does an NPTEL online course work?

Week 1

Week 2

Week 3

Week 4

● Nonlinear Systems

● Horseshoe Attractor

● Dynamics of the Horseshoe Attractor

○ Quiz : Assignment 4

○ Week 4 Feedback Form

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Week 12

Text Transcripts

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Assignment Solution

Assignment 4

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

Due on 2020-02-26, 23:59 IST.

1) The formulation of Horse-shoe attractor was done by;

1 point

- John Littlewood
- Stephen Smale
- Mary Cartwright
- Norman Levinson

No, the answer is incorrect.
Score: 0

Accepted Answers:
Stephen Smale

2) For a Dynamical system, which of the following is/are true for an attractor;

1 point

- Attractor is a closed subset of the system
- Attractor is an open subset of the system
- Attractor is a completely invariant subset of the system
- Any bounded subset is an attractor

No, the answer is incorrect.
Score: 0

Accepted Answers:
Attractor is a completely invariant subset of the system

3) In the Smale Horse-shoe (\wedge, f) ;

1 point

- The set of periodic points is dense
- Every point is a periodic point
- There is a periodic point of every order
- There are finitely many periodic points

No, the answer is incorrect.
Score: 0

Accepted Answers:
The set of periodic points is dense
There is a periodic point of every order

4) In the symbolic system (Σ, σ) i.e; $(\{0,1\}^{\mathbb{Z}}, \sigma)$ discussed in the lecture;

1 point

- There is no fixed point
- There are infinitely many fixed points
- There are exactly two fixed points
- There are odd number of fixed points

No, the answer is incorrect.
Score: 0

Accepted Answers:
There are exactly two fixed points

5) Which of the following is/are true for the Smale Horse-shoe (\wedge, f) ;

1 point

- The system contains no minimal subset
- The system itself is a minimal system
- The map f is a homeomorphism
- This system contains a dense orbit

No, the answer is incorrect.
Score: 0

Accepted Answers:
The system contains no minimal subset
The map f is a homeomorphism
This system contains a dense orbit

6) Which of the following is/are true in (Σ, σ) ;

1 point

- All sequences which have even number of zeros between any two ones are periodic points under σ .
- $W^s(\bar{0}) = \bigcup_{m \in \mathbb{Z}} \{x_n\}_{n \in \mathbb{Z}} : x_n = 0 \text{ or } 1 \text{ and } x_n = 0, n > m\}$, where $\bar{0} = \dots 00 \dots 0.0 \dots 00 \dots$
- (Σ, σ) is a countable space
- For every natural number n , there are only finitely many periodic points of period n

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $W^s(\bar{0}) = \bigcup_{m \in \mathbb{Z}} \{x_n\}_{n \in \mathbb{Z}} : x_n = 0 \text{ or } 1 \text{ and } x_n = 0, n > m\}$, where $\bar{0} = \dots 00 \dots 0.0 \dots 00 \dots$
For every natural number n , there are only finitely many periodic points of period n

7) The Smale Horse-Shoe (\wedge, f) is;

1 point

- Compact
- Not compact
- Connected space
- Disconnected Space

No, the answer is incorrect.
Score: 0

Accepted Answers:
Compact
Disconnected Space