X

**NPTEL**                                                        reviewer4@nptel.iitm.ac.in ▾

**Courses » Surrogates and Approximations in Engineering Design**

Announcements    **Course**    Ask a Question    Progress    Mentor    FAQ

# Unit 5 - Week 3

## Course outline

How to access the portal

Pre-requisite Assignment

Week 1

Week 2

Week 3

○ Quiz : Assignment 3

○ Introduction to surrogate modeling

● Types of surrogate - Polynomial models

○ Radial basis function - 1

● Radial basis function - 2

○ Kriging - 1

● Kriging - 2

○ WEEK 3 - FEEDBACK - Surrogates and Approximations in Engineering Design

## Assignment 3

**The due date for submitting this assignment has passed.**
**As per our records you have not submitted this** **Due on 2018-09-12, 23:59 IST.**
**assignment.**

1) Surrogates can be evaluated by the following error metric                **1 point**

  ○ a)   Max absolute error

  ○ b)   RMSE

  ○ c)   Cross validation

  ○ d)   All of the above

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
*d)   All of the above*

2) The value of $R^2$ error metric is always:                **1 point**

  ○ a)  $R^2 > 1$

  ○ b)  $R^2 < 0$

  ○ c)  $0 < R^2 < 1$

  ○ d)  None of the above

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
*c)  $0 < R^2 < 1$*

3) In a two variable problem, to build a second order polynomial regression model how many   **1 point**
coefficients / unknown parameters need to be calculated?

  ○ a)   3

**Accepted Answers:**
*b)    6*

4) The following error metric is used to evaluate surrogates without using a new set of testing   ***1 point***
points

- a)  $R^2$
- b)  RMSE
- c)  Cross validation
- d)  All of the above

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
*c)  Cross validation*

5) If the model is nonlinear in terms of independent variable and linear in unknown coefficients ***1 point***
then the regression model is

- a)    Nonlinear regression
- b)    Linear regression
- c)    Need additional information
- d)    a and b

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
*b)    Linear regression*

6) Which of the following assumptions are used in linear regression analysis          ***1 point***

- a)    Observed data points are statistically independent
- b)    Error at each observed data points is independent
- c)    Errors are described by normal distribution with mean of zero and constant standard
deviation
- d)    All of the above

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
*d)    All of the above*

7) In polynomial regression model, the unknown parameters can be determined by the          ***1 point***
following method

- a)    Likelihood estimate
- b)    Cross validation
- c)    Least square method
- d)    a and c

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
*d)    a and c*

8) In Radial basis function, which of the following is true          ***1 point***

    a)   Form of the basis function will not vary with respect to each data points

    b)   Weights at each data points are constant

    c)   Form of the basis function and weights, both will vary with respect to each data points

    d)   b and c

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
*a)*   *Form of the basis function will not vary with respect to each data points*

9) Property of radial basis function is:           *1 point*

    a)   Nonlinear in terms of basis function

    b)   Monotonic variation from the basis centre

    c)   Linear in terms of basis function

    d)   b and c

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
*d)*   *b and c*

10) As number of data points increase, $R^2$ metric           *1 point*

    a)   Increases

    b)   Decreases

    c)   Same

    d)   Cannot say

**No, the answer is incorrect.**
**Score: 0**

**Accepted Answers:**
*a)*   *Increases*

Previous Page           End