**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, November 2022**

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|  | **4BT7155** | Roll No. | Total Printed Pages: 2 |
| **4BT7155** |  |
| B. Tech. IV Year VII- Semester (Main/Back) End Semester Examination, November 2022  **(DS)** | |
| **BDS07104 : Model Validation Techniques** | | | |

# Time: **3** Hours. Total Marks: **60**

Min. Passing Marks: **21**

Attempt **five** questions selecting one question from each Unit. There is internal choice from Unit I to Unit V. Marks of each question or its parts are indicated against each question / parts. Draw neat sketches wherever necessary to illustrate the answer. Assume missing data suitably (if any) and clearly indicate the same in the answer.

Use of following supporting material is permitted during examination for this subject.

# **1.--------------------------Nil--------------------** **2.------------------Nil-----------------------**

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|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** | **(a)** | Elaborate in detail with appropriate sketch and example the term “internal and external validation” | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Define the statistical model validation; also illustrate in detail its relation with model validation. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.2** | **(a)** | What is apparent validation; illustrate in detail with related sketch and example its relation with internal validation techniques and model validation? | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | List out in points and Illustrate in detail the reasons for poor validation. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  |  | **UNIT-II (CO2)** |  |  |
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| **Q.3** | **(a)** | Illustrate in detail with related sketch and example the term “Analysis of Model Coefficients and Predicted Values” | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Elaborate in detail with appropriate sketch and example the term “double cross validation”. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
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| **Q.4** |  | Lout in points and illustrate in detail the term “forward selection and backward eliminations in stepwise regression” and its relation with general linear model validation and model fit using R square and adjusted R Square. | **(12)** | **Applying** |
|  |  |  |  |  |
|  |  | **UNIT-III (CO3)** |  |  |
|  |  |  |  |  |
| **Q.5** | **(a)** | Describe assumptions of Linear Regression. Differentiate generalized linear model and simple linear model with proper example. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | How to overcome these assumptions if data scientist wants to do logistic regression for prediction. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
| **Q.6** | **(a)** | What is use of likely hood test? What is its importance in machine learning models? Suggest example. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | What are NULL and Residual deviance? How these are useful in machine learning. Suggest proper example. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  |  | **UNIT-IV (CO4)** |  |  |
|  |  |  |  |  |
| **Q.7** | **(a)** | What is bootstrap aggregation? Describe its advantageous and disadvantageous. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Describe K fold cross validation? How to measure its accuracy. | **(6)** | **Applying** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
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| **Q.8** | **(a)** | Describe sensitivity and specificity? What is its role to machine learning? Suggest with example. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Write Short notes on:-  i. ROC Curve ii. Confusion Matrix | **(6)** | **Applying** |
|  |  |  |  |  |
|  |  | **UNIT V (CO5)** |  |  |
|  |  |  |  |  |
| **Q.9** | **(a)** | Illustrate in detail with related sketches and examples the term “K-Fold cross validated paired t test”? | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Mention and explain in detail the concept of ANOVA for comparing more than two classification algorithms. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.10** | **(a)** | Implement and elaborate in detail the term McNemar’s Test also its relation with Model Validation – Comparisons. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Illustrate in detail with appropriate sketches and examples the K-Fold cross validated paired t test. | **(6)** | **Remembering** |