



'সমানো মন্ত্র: সমিতি: সমানী'

UNIVERSITY OF NORTH BENGAL
BCA Honours 6th Semester Examination, 2022

DSE-P3-BACHELOR OF COMPUTER APPLICATION (63)

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.
All symbols are of usual significance.*

**The question paper contains DSE63:E1 and DSE63:E2 and DSE63:E3.
The candidates are required to answer any *one* from *three* courses.
Candidates should mention it clearly on the Answer Book.**

DSE63:E1

DIGITAL IMAGE PROCESSING

GROUP-A

Answer any *five* of the following

1×5 = 5

1. What is Digital Image?
2. What do you mean by scotopic vision?
3. What is sampling?
4. What are the three types of discontinuity in digital image?
5. Define Quantization.
6. What is dynamic or adaptive threshold?
7. What is arithmetic coding?
8. What is simultaneous contrast?

GROUP-B

Answer any *three* of the following

5×3 = 15

9. Specify the properties of 2D Fourier transformation.
10. Discuss the various image representation approaches.
11. Explain the concept of Region based segmentation in image processing.
12. What is color image Processing? Elaborate conversion of RGB to HSI and vice versa.
13. Why are images compressed? Discuss any two techniques of image compression.

GROUP-C

Answer any two of the following

10×2 = 20

14. Explain how image degradation is estimated using
(i) Observation (ii) Mathematical modelling. 5+5 = 10
15. Explain the order statistics filters used for restoring images in the presence of noise. 10
16. What is Pseudo Color image processing? Explain intensity slicing as applied to pseudo color image processing. 5+5 = 10
17. Explain minimum mean square error filtering method of restoring images. 10

DSE63:E2

INTRODUCTION TO DATA SCIENCES

GROUP-A

Answer any five of the following

1×5 = 5

1. What do you mean by data science?
2. Differentiate training and testing dataset.
3. What do you understand by heat map?
4. What is multiple regression model?
5. What do you mean by Cross Validation?
6. State the five different stages involved in a data science project.
7. What is the need of descriptive statistics in data analysis?
8. What are the techniques available to clean data in an excel sheet?

GROUP-B

Answer any three of the following

5×3 = 15

9. Explain briefly the various models involved in regression analysis.
10. How outliers are identified and handled in variables in a Data Set — Explain.
11. Briefly explain the role of Data Science in various fields.
12. Write about the various methods of Data Collection involved in Data Science.
13. What is Discretization? Explain with an example.

GROUP-C

Answer any two of the following

10×2 = 20

14. Explain how can overfitting and underfitting issues are handled in regression modelling. Explain the procedure of doing prediction analysis using Ridge Regression Model. 5+5 = 10
15. Explain the method of decision making through prediction analysis in data science project. 10

16. Explain the use of Grid search in testing multiple parameters. 10
17. Explain data security issues with example. 10

DSE63: E3

DATA MINING

GROUP-A

Answer any *five* of the following

1×5 = 5

1. Define data cleaning.
2. List out the applications of data mining.
3. Define clustering.
4. What is an association rule?
5. List out data mining processing steps.
6. Define binning.
7. What are the techniques used in data mining?
8. Define data mining in your own terms.

GROUP-B

Answer any *three* of the following

5×3 = 15

9. Explain the requirements of cluster analysis.
10. How to classify data mining systems? Discuss.
11. What motivated data mining? Explain.
12. Write about dimensionality reduction methods.
13. Discuss why do we need to preprocess data.

GROUP-C

Answer any *two* of the following

10×2 = 20

14. What is KDD? Explain about data mining as a step in the process of knowledge discovery. Write in brief about data cleaning techniques. 2+4+4=10
15. Discuss about data mining task primitives with examples. 10
16. Explain the methods of comparing classifiers. Write the characteristics of nearest neighbor classifier. 5+5 = 10
17. Write down short notes: (any *two*) 5×2 = 10
 - (i) Text mining
 - (ii) Web content mining
 - (iii) Spatial database mining.

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