

Indian Institute of Information Technology Dharwad

End Semester Examination

Course: Data and Business Analytics

Code: DS201

Max Points: 74

Duration: 90 Min (1.5 hrs)

- **Answer IN-ORDER only**
- **Keep page break between answers to questions**
- **Submit the handwritten answer scripts in google classroom. Mark Roll No. on all pages**
- **Late submission leads to negative marking**

1. Give a real-world example (not discussed in class) of a business data set and illustrate how it has components of trend, seasonality and noise. Show a step-by-step approach for carrying out a time-series analysis on this data set (preferably in terms of R commands). (06 Points)
2. What are the main components of business intelligence systems? Explain how each of them help to make business decisions (06 Points)
3. What are the management issues in establishing BA team? How to resolve these issues? (06 Points)
4. Suppose a given data set is expected to have a long-term trend as well as a short-term trend within a fortnight along with monthly and yearly cyclical patterns. How many levels of auto regression and how many levels of moving averages are appropriate for analysing the data set? Explain why. (06 Points)
5. Answer following, each carrying 2 points (08 points)
 - a. Give an example of mathematical model for the abstract representation of real-world system
 - b. What is the difference between a scorecard and dashboard?
 - c. What are the benefits of business intelligence system?
 - d. Explain the difference between *data*, *information* and *knowledge*
6. What is logistic regression? What is the logit function? Show an example to illustrate the difference between probability and odds ratio. Show an example of a business situation where logistic regression is more appropriate than linear regression. (08 Points)
7. State what each of the following are with a brief example: (08 Points)
 - a. Term frequency vector
 - b. Inverse document frequency
 - c. Vector space ranking
 - d. Named entity recognition
8. What are Alpha and Beta in financial data analytics? Show how they are used in terms of various ratios for comparing investment products. How is Jensen's Alpha different from Alpha? (08 Points)
9. a). What is the main drawback in applying the Holt Winters method in practice? How does the ARIMA method overcome this?

b). **Attached file** gives the consolidated statements of operation of a corporation. Study the statement, draw an influence diagram and formulate the prediction. (08 points)

10. State what each of the following R methods does and show what main parameters they expect:

- a. stl
- b. Box.Test
- c. acf
- d. pacf
- e. tsdiag

(10 points)