Avinashilingam Institute for Home Science and Higher Education for Women
Coimbatore-641043.

Master's Degree Examination – NOV 2017
Semester I

Class : I PG **Time: 3 hours**
Major : M.sc Information Technology **Max. Marks: 60**

17MITC01 MATHEMATICAL FOUNDATION FOR INFORMATION TECHNOLOGY

Part A **10 x 1/2 = 5**

Choose the correct answer

1. The union of the sets {1, 2, 5} and {1, 2, 6} is the set _____
   a) {1, 2, 6, 1} b) {1, 2, 5, 6} c) {1, 2, 1, 2} d) {1, 5, 6, 3}

2. The value of ⌊1/2.⌊5/2⌋ ⌋ is _____
   a) 1 b) 2 c) 3 d) 0.5

3. To describe the complement of a language, it is very important to describe the _____ of that language over which the language is defined.

   a) alphabet b)Regular Expression c)String d)Word

4. "CFG" stands for _____

   a)Context Free Graph b)Context Free Grammar

   c)Context Finite Graph d)Context Finite Grammar

5. A language is regular if and only if
   a) accepted by DFA b) accepted by PDA
   c) accepted by LBA d) accepted by Turing machine

6. Subset Construction method refers to_____.

   a) Conversion of NFA to DFA b) DFA minimization
   c) Eliminating Null references d) ε-NFA to NFA

7. CPM is_____.

   a)Critical Project Management b)Critical Path Management

   c)Critical Path Method d)Crash Project Method

8. PERT technique of network analysis is mainly useful for _____.

   a)Small Projects b) Large Projects

   c) Research and Development Project d) Deterministic activities

9. In a regression, the _____ that the standard error of the regression is the greater the accuracy of the prediction will be.

   a) smaller b) larger

   c) we do not know unless we know whether the slope of the regression is positive or negative.

   d) None of the above

10. We measure heights and weights of 100 twenty-year old male college students. Which will have the higher correlation?

a) corr(height, weight) will be much greater than corr(weight, height)

b) corr(weight, height) will be much greater than corr(height, weight)

c) Both will have the same correlation.

d) Both will be about the same, but corr(weight, height) will be a little higher

Part B **5 x 4 = 20**

Answer ALL questions

Each answer should not exceed 200 words or one page

11. a) Explain about Set operations.

(OR)

b) Discuss about relations.

12. a) Explain about the languages.

(OR)

b) Write short notes on Context sensitive grammar.

13. a) Write short notes on finite state automata.

(OR)

b) Explain about equivalence of DFA and NFA.

14. a) Write short notes on Critical path analysis.

(OR)

b) Explain about the advantages of network techniques.

15. a) Discuss about Correlation.

(OR)

b) Explain about Regression.

Part C **5 x 7 = 35**

Answer ALL questions

Each answer should not exceed 600 words or three pages

16. a) Explain about the laws of set theory.

(OR)

b) Write in detail about the types of functions.

17. a) Discuss in detail about the types of phrase structure grammar.

(OR)

b) Write in detail about Context free languages.

18. a) Explain briefly about DFA.

(OR)

b) Explain about NFA in detail.

19. a) Differentiate PERT and CPM.

(OR)

b) Write in detail about the applications of network techniques.

20. a) Discuss in detail about Karl Pearson's coefficient of correlation.

(OR)

b) Differentiate Correlation and Regression.

****