

Roll No.

Total Pages : 2

BT-3/D-21

43136

BUSINESS INTELLIGENCE AND ENTREPRENEURSHIP

Paper-HM-902 A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *five* questions, selecting minimum *one* question from each unit.

UNIT-I

1. Which economic and non-economic factors affect entrepreneurship and its competencies in India?
2. Which important qualities and pre-requisites are required to become a victorious entrepreneur in present competitive and turbulent business environment?

UNIT-II

3. How project planning and scheduling can be done through networking techniques?
4. What are the pertinent features of an appropriate business idea? Why feasibility study is necessary to conduct?

UNIT-III

5. What is the role of small-scale industries in economic development of India?

6. Which MSME schemes are available in India and which challenges are faced by entrepreneurs while availing such schemes?

UNIT-IV

7. What is the role of State financial corporation and venture capital in supporting entrepreneurs/small business in India?
 8. What are the requirements for formation of private/public limited company? How can an engineering graduate start any business entity?
-

Roll No.

Total Pages : 2

BT-3/D-21

43196

OBJECT ORIENTED PROGRAMMING

Paper : PC-CS-AIDS-203A/PC-CS-AIML-205A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

UNIT-I

1. (a) Give an introduction to C++ with an illustrative C++ program.
(b) List some popular application areas of object-oriented programming.

2. (a) What is the purpose of an abstract class and what are its properties? Give an example of an abstract class.
(b) Distinguish between :
 - (i) Classes and objects.
 - (ii) Inheritance and polymorphism.

UNIT-II

3. (a) Why do we need friend functions? What are the characteristics of friend function? Illustrate the use of friend function class using a suitable example.
(b) Define constructors and destructors as used in C++. What are the types of constructors?

4. What are the advantages of Inheritance? Explain different types of Inheritance in C++ with examples.

UNIT-III

5. What is a virtual function and a pure virtual function? How is dynamic binding implemented with virtual functions?
6. What is the advantage of operator overloading in C++? What is its syntax and rules? Describe operator overloading with the help of a suitable example.

UNIT-IV

7. What are the advantages of exception handling over traditional error handling? How is exception handling carried out in C++? List the standard exceptions which can be used in C++ programs.
 8. Answer the following question in brief :
 - (a) What are the types of streams in C++?
 - (b) Distinguish between sequential access and random access of files.
 - (c) What are Templates? How are templates used to define classes and functions?
-

BT-3/D-21

43199

PROGRAMMING LANGUAGES

Paper-PC-CS-AIDS-209 A/PC-CS-AIML-209A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

UNIT-I

1. (a) Discuss the technical role of orthogonality and abstraction in programming languages with the help of suitable examples. 08
- (b) What are the basic purposes for declarations in elementary data types? 07
2. (a) Identify the main role of attribute grammars in formal translation models with the help of suitable examples. 08
- (b) Design and discuss the syntax charts for extended BNF for six simple assignment statements. 07

UNIT-II

3. (a) What is the basic usage of structured data objects? How to implement encapsulation by subprograms? 08

- (b) Discuss the specification and implementation of vector and multidimensional slices. 07
4. (a) How the type definition is used as a template to construct data objects during program execution? 08
- (b) Write short notes on the following :
- (i) Overloaded subprograms.
- (ii) Generic subprograms. 07

UNIT-III

5. (a) What is basic role of referencing environment? Explain the concepts of call by value result and call by name for transmitting parameters. 08
- (b) Discuss the role of short-circuit Boolean expressions in sequencing with the help of suitable examples. 07
6. (a) What are the various problems associated in structured sequence control? Briefly discuss the concept of structure theorem in sequence control. 08
- (b) Briefly discuss the role of mutual exclusion in sequence control. 07

UNIT-IV

7. (a) Define garbage and dangling references in storage management. 08
- (b) Discuss the four basic concepts that are used in the heap storage management for variable size elements. 07

8. (a) Discuss the following concepts in relation to Ada and Smalltalk :
- (i) Sequence control.
 - (ii) Subprograms and storage management.
 - (iii) Abstraction and encapsulation. 08
- (b) Differentiate between functional and logical languages. 07
-

C

Roll No.

Total Pages : 2

BT-3/D-21

43202

DATA STRUCTURES

Paper : PC-CS-CYS-203A/ES-CS-AIML-203A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. Each question carry equal marks.

UNIT-I

1. (a) Explain the notations of Space and time complexity. 7
(b) Write a short note on sparse matrix. 8
2. (a) Describe linear search algorithm to search an element from an array. 7
(b) Explain the selection sort algorithm with the help of suitable example. 8

UNIT-II

3. Describe stack and its operations. 15
4. (a) Explain sequential queues and its limitations. 10
(b) Write a short note on priority queues. 5

43202/000/KD/544

[P.T.O.]

UNIT-III

5. Explain the following terms :
- (a) Need of dynamic data structures.
 - (b) Insertion and deletion in singly linked list. 15
6. Describe circular linked list and its operations.

UNIT-IV

7. (a) Write a short note on minimum spanning tree. 8
- (b) Write a short note on AVL trees. 7
8. Describe Graph traversal algorithms with the help of suitable examples. 15
-

BT-3/ D-21: 43207
BS-CS-AIML-201A: Applied Statistical Analysis for AI

Time: 3 Hours]

[Max. Marks: 75

Note: Attempt five questions in all, selecting at least one questions from each unit. All questions carry equal marks.

Unit-I

- Q. 1 Define Statistics. Discuss its importance and limitations in detail. (15)
- Q. 2 Explain the various methods that are used in the collection of primary data, pointing out their merits and demerits. (15)

Unit-II

- Q. 3(a) The median and mode of the following wage distribution are known to be Rs. 33.5 and Rs. 34 respectively. Find the values of A, B and C:

| | | | | | | |
|--------------------|-------|-------|-------|-------|-------|-------|
| Wage(in Rs.): 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 |
| No. of person: 4 | 16 | A | B | C | 6 | 4 |

Total number of person is 230.

- Q. 3(b) Show that sum of the deviations about mean is zero. (10+5)
- Q. 4(a) Discuss briefly the merits and demerits of the various measures of dispersion. (10+5)
- Q. 4(b) Show that the mean deviation about arbitrary point is least when that point is median.

Unit-III

- Q. 5 Explain clearly the procedure generally followed in testing of a hypothesis. Also point out the difference between type-1 and type-1 errors with the help of example. (15)
- Q. 6(a) A sample of 12 students from a school has the following scores in an I.Q. test.
 89 87 76 78 79 86 74 83 75 71 76 92
 Do this data support that the mean I.Q. mark of the school students is 80? Test at 5% level of significance. ($t_{0.05}=2.26$ for 11 degree of freedom) (7+8)
- Q.6(b) A random sample of 10 student's marks in Mathematics and Statistics are given below. Test whether the correlation exists between the marks of two subjects at 5% level of significance. ($t_{0.05}=2.36$ for 08 degree of freedom)
- Marks in Mathematics: 68 54 78 75 76 85 54 68 87 75
 Marks in Statistics: 59 68 72 67 72 78 64 58 68 74

Unit-IV

- Q.7(a) Show that coefficient of correlation is the geometric mean of coefficients of regression.
- Q. 7(b) The table below lists husbands' hours of housework per week (Y), number of children (X), and husbands' years of education (Z) for a sample of 12 dual-career households:

| | | | | | | | | | | | | |
|-----------------------------|----|----|----|----|----|----|----|----|----|----|----|----|
| Family | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Husband's Housework | 1 | 2 | 3 | 5 | 3 | 1 | 5 | 0 | 6 | 3 | 7 | 4 |
| Number of Children | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 |
| Husband's year of education | 12 | 14 | 16 | 16 | 18 | 16 | 12 | 12 | 10 | 12 | 10 | 16 |

Calculate the partial correlation between husbands' housework and number of children controlling for husbands' years of education. (7+8)

Q.8(a) The equation of two regression lines obtained in a correlation analysis of 60 observations are $5x-6y=24$ and $768x-1000y=3708$. If the variance of y is 2, find the variance of x and correlation coefficient of x and y . (8)

Q. 8(b) Show that the co-efficient of correlation is independent of change of scale and origin of the variables and state the limits between co-efficient of correlation lies. (7)

Roll No.

Total Pages : 2

BT-3/D-21

43210

INTRODUCTION TO AI
Paper : PC-CS-AIML-207A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt any *five* questions, by selecting at least *one* question from each unit.

UNIT-I

1. (i) Differentiate classical, romantic and modern periods of AI. (7)
- (ii) Explain the architecture of Google DialogFlow. (8)

2. (i) Discuss the role of various components involved in AI based vision and speech processing. (7)
- (ii) Differentiate Natural & Artificial Intelligence. Explain different types of problems which require AI techniques to be solved. (8)

UNIT-II

3. (i) Write and explain various steps involved in $\alpha-\beta$ pruning. (8)
- (ii) Justify, "Is there need of AI in healthcare system". (7)

43210/00/KD/578

[P.T.O.]

4. (i) Write short note on Adversarial search. (7)
(ii) Differentiate heuristic and informed search strategies with example. (8)

UNIT-III

5. (i) Discuss the role of various components involved in knowledge based system. (7)
(ii) Explain in detail the exact inference in Bayesian network. (8)
6. (i) Differentiate propositional logic and predicate logic. Explain forward and backward chaining algorithm in detail. (8)
(ii) Discuss different types of ontologies in AI. (7)

UNIT-IV

7. (i) Discuss, How artificial intelligence can help space exploration? (7)
(ii) How AI will revolutionize the way for video games. (8)
8. (i) Justify, "Is AI the future of Finance"? (7)
(ii) Explain the working of AI based Chatbot with example. (8)
-