(2019 & 2020 batch)

G 601.5

Reg. No. | | | | | | |

St Aloysius College (Autonomous)

Mangaluru

B.C.A. Semester V – Degree Examination

February - 2022

JAVA 2 ENTERPRISE EDITION

Time: 3 hrs. **Max Marks: 100**

PART – A

Answer any TEN of the following. **(10x2=20)**

1. a) List the various kinds of HTTP requests.
   b) What are the functionalities of servlet container?
   c) What is the difference between cookie and HttpSession?
   d) Why are servlets better than CGI?
   e) What is the use of DriverManager?
   f) What are JDBC Statements?
   g) What are the advantages of using Java beans?
   h) What are J2EE container services?
   i) Describe the structure of JSP.
   j) Explain the use of deployment descriptor.
   k) Name the three logical layers of enterprise architecture.
   l) What is the use of HttpSession?

PART – B

Answer any FOUR of the following. **(4x5=20)**

2. Describe the features of JDBC.
3. Explain the architecture of J2EE.
4. Explain the advantages of Prepared Statement.
5. Explain how to process get and post methods in servlets.
6. What is the significance of cookies? Explain with example how do you create cookies in servlets?
7. Briefly describe the use of action tag in JSP with an example.

PART – C

Answer any ONE FULL question from each unit. **(15x4=60)**

UNIT – I

8. a) Explain J2EE containers. **(5)**
   b) Explain the need for enterprise computing and the advantages of using J2EE. **(5)**
   c) Explain J2EE service technologies. **(5)**

9. a) Explain J2EE communication technologies. **(5)**
   b) Explain the three tier architecture in J2EE. **(5)**

Contd...2

c) Explain how reusability and modularity is supported in J2EE. (5)

UNIT – II

10. a) List and explain JDBC components. (5)
    b) Briefly describe Type1 and Type2 drivers in JDBC. (5)
    c) With a suitable example, explain the method to query a database and display the results. (5)

11. a) Describe with code example the essential steps of JDBC. (5)
    b) Explain the major classes and interfaces of JDBC. (5)
    c) Explain the types of Statement objects in JDBC. (5)

UNIT – III

12. a) With example, explain the structure of a servlet program. (5)
    b) List and explain any five methods of HttpServletRequest interface. (5)
    c) Briefly explain how session tracking is achieved. (5)

13. a) Explain the Java Servlets. Explain servlet lifecycle methods with example. (5)
    b) Write a servlet program that demonstrates getParameter() method. (5)
    c) Explain HttpRequest headers. (5)

UNIT – IV

14. a) Explain the attributes of JSP page directive tag. (5)
    b) Compare and contrast between JSP and servlet. (5)
    c) Demonstrate the use of <jsp:useBean> action tag with example. (5)

15. a) Explain any five implicit objects in JSP. (5)
    b) Explain the JSP scripting elements with example. (5)
    c) What are Java Beans? Explain their benefits. (5)

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B.C.A. Semester V – Degree Examination

February -2022

COMPUTER GRAPHICS & MULTIMEDIA

Time: 3 hrs. **Max Marks: 100**

PART – A

Answer any TEN of the following. **(10x2=20)**

1. a) Define Raster Graphics.
   b) Define resolution.
   c) Write 8-way symmetry of circles.
   d) Write 4-connected pixels.
   e) Write a nested for loop for filling rectangle.
   f) Write the matrices for reflection about the x- axis and reflection about coordinate origin.
   g) Define translation and scaling.
   h) What is shear transformation?
   i) Write 2D transformation matrix for
      i. Reflection along X-axis
      ii. Reflection along Y-axis
   j) What is bitmap?
   k) What is computer animation?
   l) What do you mean by morphing and cropping with respect to images?

PART – B

Answer any FOUR of the following. **(4x5=20)**

2. Explain architecture of Vector display system with a neat diagram.
3. Write a note on pattern filling.
4. Explain polygon clipping process with suitable diagrams.
5. Explain two different projections in 3D viewing.
6. Prove that successive scalings are multiplicative. Also explain fixed point scaling with a suitable diagram.
7. Explain the differences between perspective and parallel projections.

PART – C

Answer any ONE FULL question from each unit. **(15x4=60)**

UNIT – I

8. a) List and explain different applications of computer graphics. **(5)**
   b) Differentiate vector and raster scan display systems. **(5)**
   c) Explain DDA line drawing algorithm. **(5)**

Contd...2

9. a) Explain conceptual framework for interactive graphics. (5)
   b) Explain mid-point circle drawing algorithm. (6)
   c) List the advantages and the drawbacks of raster and vector display systems. (4)

UNIT – II

10. a) Explain Cohen-Sutherland Line Clipping algorithm. (9)
    b) Which are the different ways of generating Characters? Explain. (6)

11. a) Explain boundary fill and flood fill algorithms. (6)
    b) Write a note on Thick primitives. (5)
    c) What are the different basic fill styles for polygon areas? Explain. (4)

UNIT – III

12. a) What is the purpose of homogeneous coordinates? Explain composition of 2D transformations. (5)
    b) Explain window to viewport transformation. Derive the matrix for the same. (6)
    c) Given a polygon with coordinates A(2,5), B(7,10), and C(10,2).
       i. Translate by 50 units along X-axis and 40 units along the Y-axis.
       ii. Scale 2 units along X-axis ad 3 units along the Y-axis. (4)

13. a) Write a program to rotate a line with respect to an arbitrary point (6)
    b) Write translation, scaling and rotation matrices in 3D homogeneous coordinate system. (6)
    c) Explain shear transformation with suitable example. (3)

UNIT – IV

14. a) What is medium? List and explain different types of media. (5)
    b) Explain digital image representation. (5)
    c) Write steps involved to bring an audio recording into multimedia project. (5)

15. a) Which are the different ways of representing sound data? Explain. (5)
    b) Explain traditional data stream characteristics of multimedia. (5)
    c) Write a note on 3D modeling and rendering. (5)

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G 603.5 (2019 & 2020 batch)

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St Aloysius College (Autonomous)
Mangaluru
B.C.A. Semester V – Degree Examination
February -2022
OBJECT ORIENTED ANALYSIS AND DESIGN

Time: 3 hrs. **Max Marks: 100**

PART – A

Answer any TEN of the following. **(10x2=20)**

1. a) Define Class Diagram.
   b) What is a scenario?
   c) What are Activity Diagrams?
   d) What is use case?
   e) What is multiplicity?
   f) Define Aggregation and Composition.
   g) Define Pseudocode.
   h) Interpret the meaning of event, state and Transition.
   i) Define Branches in activity diagram.
   j) What is meant by Messages?
   k) Define polymorphism. Give an example.
   l) Define refactoring.

PART – B

Answer any FOUR of the following. **(4x5=20)**

2. Explain three types of models.
3. Explain the concept "Adding redundant associations" in class design with the help of diagram.
4. Explain the different kinds of Global resources.
5. Explain the benefits of OOAD.
6. Explain the naming convention for a class with examples.
7. Write short note on procedure driven control.

PART – C

Answer any ONE FULL question from each unit. **(15x4=60)**

UNIT – I

8. a) Explain in detail about links and associations. **(8)**
   b) Explain the stages of object oriented methodology. **(7)**

9. a) Explain the following terms: i) association class ii) qualified association iii) Generalization iv) aggregation **(10)**
   b) Explain the different object oriented themes. **(5)**

Contd...2

UNIT – II

10. a) Write the scenario of library system and draw sequence diagram for the library system for your college. **(10)**

    b) Write a note on multiplicity. **(5)**

11. a) Explain with example and diagram the usecase relationships. **(10)**

    b) Explain completion transition **(5)**

UNIT – III

12. a) What is library? What are the good qualities of a class library? Explain the problem that limit the ability to reuse code from class library. **(10)**

    b) How you will estimate the software performance? **(5)**

13. a) Explain in detail concurrent driven control and event driven control. **(10)**

    b) Explain interactive interface in the system design. **(5)**

UNIT – IV

14. a) What is inheritance? Explain adjustment of inheritance with example. **(8)**

    b) Explain in detail recursing downward. **(7)**

15. a) Explain the different steps in designing algorithms. **(10)**

    b) Write a note on bridging the gap. **(5)**

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(2019 & 2020 batch)

G 604.5 Reg. No.

St Aloysius College (Autonomous)

Mangaluru

B.C.A. Semester V – Degree Examination

February - 2022

SOFTWARE ENGINEERING

Time: 3 hrs. **Max Marks: 100**

PART – A

Answer any TEN of the following. **(10x2=20)**

1. a) Give IEEE definition for a software.
   b) What do you mean by software engineering?
   c) What is data dictionary?
   d) What is information hiding?
   e) What do you mean by software quality assurance?
   f) What is the primary goal of coding phase?
   g) Define PDL. Why it is needed?
   h) What do you mean by coupling and cohesion?
   i) Define testing.
   j) Define the terms error, fault and failure.
   k) What do you mean by test oracles?
   l) Define software maintenance.

PART – B

Answer any FOUR of the following. **(4x5=20)**

2. List and explain various problems faced in software engineering.
3. Explain waterfall model with the help of a neat diagram.
4. Write a note on structured chart.
5. What is control based testing? Explain.
6. Explain COCOMO model.
7. Explain the need for software maintenance.

PART – C

Answer any ONE FULL question from each unit. **(15x4=60)**

UNIT – I

8. a) Explain various characteristics of a software. **(6)**
   b) Explain iterative enhancement model. **(5)**
   c) Write a note on ER diagram. **(4)**

9. a) Discuss various characteristics of a good software requirement specification (SRS) document. **(6)**
   b) Explain prototyping model with neat diagram. **(5)**
   c) List some of the advantages and disadvantages of spiral model. **(4)**

Contd...2

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UNIT – II

10. a) Explain capability maturity model. (6)
    b) Write a note on software design principles. (5)
    c) What is Data Flow Diagram? Explain with example. (4)

11. a) What do you mean by cohesion? Explain different types of cohesion. (6)
    b) Write a note on software quality attributes. (5)
    c) What are pseudo-codes? Explain. (4)

UNIT – III

12. a) List and explain different levels of testing. (6)
    b) Explain various debugging techniques. (5)
    c) Write a note on testing principles. (4)

13. a) Compare black box and white box testing in detail. (8)
    b) Explain: 1)System testing 2)Integration testing (7)

UNIT – IV

14. a) Write a note on software configuration management activities. (8)
    b) Explain Belady and Lehman model for calculation of maintenance effort. (7)

15. a) Explain different categories of software maintenance. (8)
    b) Explain software project estimation. (7)

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St Aloysius College (Autonomous)
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B.C.A. Semester V – Degree Examination
February - 2022
PYTHON PROGRAMMING

Time: 3 hrs. **Max Marks: 100**

PART – A

Answer any TEN of the following. **(10x2=20)**

1. a) What is the difference between list and dictionary?
   b) Write a program to find the largest divisor of an integer.
   c) How to determine the data type of a variable?
   d) List the naming conventions in python.
   e) What is an abstract class?
   f) What is the difference between instance and a instance variable of a class?
   g) How to add scrollbar to a window in python?
   h) How to create an empty list, tuple and dictionary?
   i) What is the difference between break and continue statements in python?
   j) How to sort the elements of a dictionary?
   k) Differentiate Local scope and Global scope.
   l) What is the difference between spinbox and listbox?

PART – B

Answer any FOUR of the following. **(4x5=20)**

2. Explain the range() with example.
3. Write a note on Keyword and Default arguments.
4. How the constructors and destructors are created and used in Python? Explain with example.
5. Write a program to Check if the items in the list are sorted in ascending or descending order and print suitable messages accordingly. Otherwise, print "Items in list are not sorted".
6. How built-in exceptions are handled in Python? Explain with example.
7. What is the use of numpy? Explain.

PART – C

Answer any ONE FULL question from each unit. **(15x4=60)**

UNIT – I

8. a) Compare C and Python. **(7)**
   b) Write a note on multi-dimensional arrays in python. **(4)**
   c) Explain the importance of indentation in Python. **(4)**

9. a) Discuss the int(), float(), str() and type() functions with examples. **(4)**

Contd...2

b) How to make functions to return multiple values in Python? Explain. (4)

c) Write a note on following

i. Python Virtual machine

ii. Memory Management. (7)

UNIT – II

10. a) Write a program to remove all characters in second string which are present in the first string. (4)

b) How to access the elements of a nested list? Explain with example. (4)

c) How functions and anonymous functions are defined and called? Explain with example. (7)

11. a) Write python script to reverse the words of a given string. (4)

b) Explain any four dictionary methods. (4)

c) Explain the following list methods with an example.

a. append() b. extend() c. insert() d. index() (7)

UNIT – III

12. a) How polymorphism can be achieved in python? Explain. (7)

b) List and describe the methods provided by the *Thread* class. (4)

c) How inner classes are defined and used? Explain. (4)

13. a) How to raise the exception in python? Explain. (4)

b) List the benefits using super() function. (4)

c) Explain the different types of inheritance in python. (7)

UNIT – IV

14. a) Write a python program to create and use Menus in Python. (8)

b) Explain the different types of databases used with Python. (7)

15. a) Write a Python database program to perform the different DML operations on database. (8)

b) How entry widget and Radiobuttons are created and used in Python? Explain with example. (7)

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B.C.A. Semester V – Degree Examination

February - 2022

DESIGN AND ANALYSIS OF ALGORITHMS

Time: 3 hrs. **Max Marks: 100**

PART – A

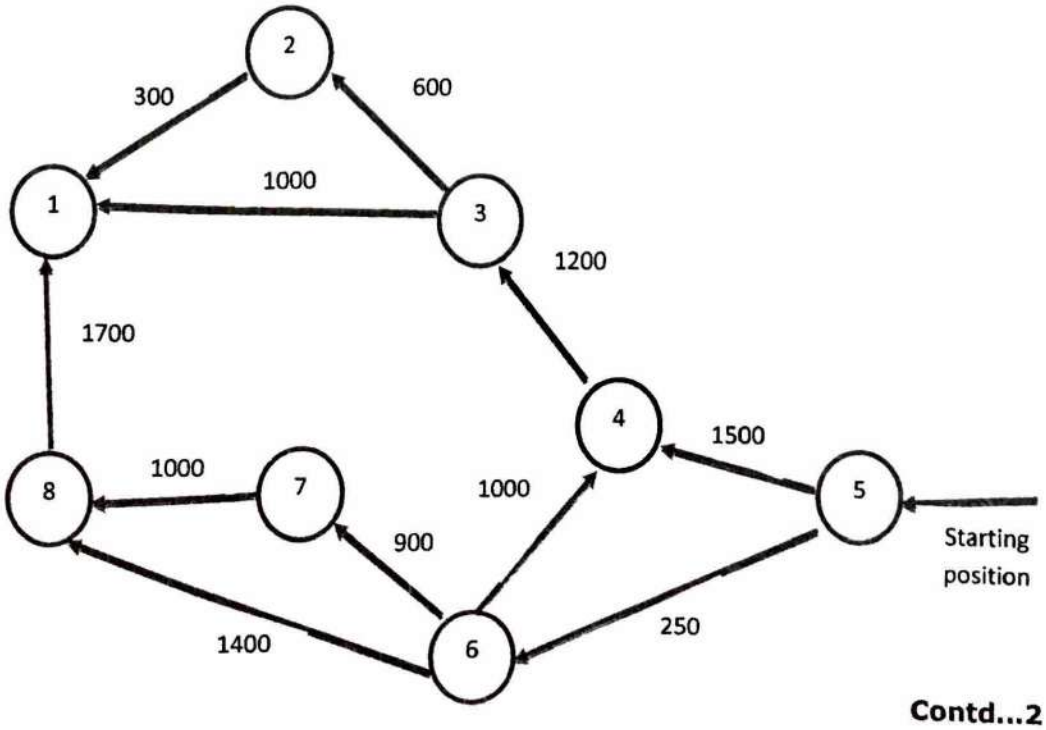
Answer any TEN of the following. **(10x2=20)**

1. a) Define the divide and conquer method.
   b) Give computing time for quick sort.
   c) Define feasible and optimal solution.
   d) Mention any two algorithms used for constructing minimum cost spanning tree.
   e) What is algorithm?
   f) What are the drawbacks of dynamic programming?
   g) Define Time Complexity.
   h) Mention any two searching techniques that are commonly used in Branch and Bound method.
   i) What do you mean by asymptotic notations?
   j) Mention any two examples of greedy method that we are using in real life.
   k) Define complete graph and connected graph.
   l) Define Big-Omega notation.

PART – B

Answer any FOUR of the following. **(4x5=20)**

2. Explain selection sort algorithm.
3. What are the steps for dynamic programming? Explain principle of optimality.
4. Demonstrate binary search method to search key=56 from the below, 5,10,13,25,35,43,56,60.
5. Explain Dijkstra's algorithm to find the shortest path for the following.



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