MANGALORE UNIVERSITY

National Education Policy – 2020
[NEP-2020]

Question Bank
FOR

VI SEMESTER BCA

Advanced Java and J2EE

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Question Bank

Unit-1

(2 marks)

1. With the syntax write the purpose of ordinal() method.
2. List two key characteristics of enumeration constants in Java.
3. What is an enumeration? How enumeration can be created?
4. Differentiate values() and valueOf() methods in Java enumerations.
5. Provide an example of how to use the values() method to iterate through all the constants in an enumeration.
6. Give the functionalities of compareTo(), and equals() methods in Java enumerations.
7. Why are type wrappers used in Java?
8. What is the purpose of the doubleValue() method in a numeric wrapper class?(similarly other methods)
9. What is the benefit of autoboxing and auto-unboxing in Java?
10. What is retention policy? How to set retention policy? Give an example
11. List any two retention policies with its purpose.
12. What is the purpose of setting default values to annotation member. Write the general form for setting default values.
13. Define
    a. Marker Annotation
    b. Single Member Annotation.
14. List any two built in annotations with its purpose.
15. Write any two restrictions on annotation.
16. What is the primary purpose of annotations in Java code?
17. How are annotations declared in Java?Give example
18. How can you retrieve all annotations with the RUNTIME retention policy associated with an element in Java reflection? Give its syntax
19. Name any two commonly used built-in annotations and briefly describe their purpose?
20. What are some key characteristics of a Java Bean?
21. List two advantages of Java Beans
22. Why is introspection essential for Java Beans technology?
23. What is the difference between a simple property and an indexed property?
24. What are the two main components used to define a simple property in a Java Bean. Briefly explain their roles
25. What are the key differences between bound properties and constrained properties in Java Beans?
26. What is persistence in JavaBeans?
27. What are customizers?

(4 to 6 marks)

1. With an example explain how enumeration values are used to control a switch statement.
2. Demonstrate the usage of the valueOf() and values() methods with an example
3. What does ordinal(), compareTo() and equals() method do in Enum? Give an example.
4. Java Enumerations Are Class Types. Explain with an example.
5. Explain with example how Enumerations can Inherit Enum?
6. Describe the Wrapper classes available for primitive types.
7. What Is Autoboxing And Unboxing? Explain with an example.
8. With an example explain the steps involved to obtain annotation at run time using reflection.
9. What Are Annotations? What are the three retention policies defined by the RetentionPolicy enumeration in Java?
10. Write an example program to illustrate reflection.
11. Explain any four Built-in annotations.
12. How do you specify a default value for an annotation member? Explain with suitable example
13. Write an example of defining a marker annotation
14. Write an example of defining a single-member annotation
15. How Can You Retrieve all Annotations that have RUNTIME retention by use of reflection? Explain with an example
16. Discuss the key advantages that Java Beans provide to component developers
17. What are the different properties of a Java Bean? Explain with examples
18. Write short note on the following
    i. Bound and Constrained properties
    ii. Persistance
19. Write a note on simple properties in java Beans.
20. Write a note on indexed properties in java Beans
21. What are the steps to be followed in creating a new Bean?
22. Explain the purpose and usage of the following classes in the context of Java Beans:
Introspector
PropertyDescriptor
EventSetDescriptor
MethodDescript
23. Write a note on EventDescriptor and PropertyDescriptor class

Unit-2

(2 marks)

1. What is collection Framework. List any two goals of collection Framework.
2. What are the benefits of using the Collections Framework?
3. List any two collection classes with its purpose.
4. Write the differences between hasNext() and next() method.
5. What is map? List any two Map interface
6. Write the purpose of Array class.
7. Write the purpose of
    a. fill()
    b. copyOf()
8. Write the usage of iterator interface
9. List any four interfaces provided by Collection Framework

10. Write any two uses of Generics.
11. List any four exceptions thrown in the context of collections
12. What is the usage of containsAll() and retainAll() methods?
13. List any four methods of List interface
14. What is the purpose of the NavigableSet interface in the Java Collections Framework.
15. How you can add or remove element to/from the first, last using LinkedList Class.
16. Differentiate headset() and tailset() methods
17. Differentiate poll() and remove() methods of Queue interface
18. List any four methods of deque interface
19. What is the purpose of push() and pop() methods of Deque interface?
20. How does an ArrayList differ from standard arrays?
21. What are the syntax/signatures of the two overloaded toArray() methods in the ArrayList class?
22. What is the difference between the HashSet() and HashSet(int capacity) constructors?
23. What is the purpose of the float fillRatio parameter in the HashSet(int capacity, float fillRatio) constructor?
24. What is the primary advantage of using a TreeSet over other Set implementations like HashSet?
25. What is the main difference between using a foreach loop and an Iterator to traverse the elements of a Collection in Java?
26. What is the purpose of the RandomAccess interface in Java collections?
27. How does a Map differ from a Collection in Java?
28. List any four Map classes
29. What is the purpose of using a Comparator with TreeSet and TreeMap in Java?
30. List any four overloaded forms/signatures of the binarySearch() method with their proper syntax.
31. Differentiate Vector and Arrays
32. What is the relationship between the Dictionary class and the Map interface in Java?
33. What are two advantages of using the MVC architecture in Java applications?
34. What is Model-View-Controller?
35. What are two responsibilities of the View component in MVC?
36. What are the primary roles of the Controller component in the MVC architecture?
37. What are the responsibilities of the Model component in handling data and business logic?

(4 to 6 marks)

1. Explain the benefits of Generics in Collections Framework?
2. List any five methods of Collection interface with its purpose.
3. What are the basic interfaces of Java Collections Framework? Discuss the appropriate use of any four interfaces
4. List any five methods of List interface with its purpose.
5.
6. Explain any four methods defined by y NavigableSet interface
7. List any five methods of Queue interface with its purpose.
8. List any five methods of Deque interface with its purpose.
9. With an example explain the usage of ArrayList
10. Write a Java program that demonstrates how to convert an ArrayList to an array using the toArray() method

11. Write a Java program that demonstrates the usage of the LinkedList class from the Java Collections Framework.
12. Explain four constructors of the HashSet class from the Java Collections Framework, including their parameters
13. What is an iterator? Explain with an example.
14. Explain the usage of the for-each loop in Java when working with collections. Compare and contrast the for-each loop with the traditional approach of using an Iterator.
15. Explain how to store objects of user-defined classes in Java collections like ArrayList
16. Write how Vector is differ from ArrayList.
17. Write the usage of any four methods of Map interface
18. What is a map?
19. Write a Java program that demonstrates the usage of the HashMap class from the Java Collections Framework
20. Write a Java program that demonstrates the usage of a custom Comparator for sorting strings in reverse order.
21. Write the usage of any 4 collection algorithms.
22. Write a program to convert a given array into a collection with the asList() method.
23. Explain any four legacy methods of vector
24. Explain the roles and responsibilities of the Model, View, and Controller components in the MVC architecture.
25. Explain the flow of execution when a user interacts with an MVC-based Java web application. Walk through the steps involved, starting from the user's request, the role of the controller, the interaction with the model and view, and finally, the response sent back to the user.

Unit-3

(2 marks)

1. Write the any two differences between StringBuffer and StringBuilder class.
2. Write the purpose of + operator in string handling with an example.
3. Write two ways to create a String object using the String constructors, and provide an example for each
4. What is the purpose of the toString() method in the context of strings.
5. How to initialize String objects using string literals?
6. What are the different ways to extract individual characters from a string? Give the syntax
7. Provide the syntax and an example for the charAt() method to extract characters from a string.
8. Write the purpose and syntax of the regionMatches() method in string handling
9. Demonstrate the usage of the startsWith() and endsWith() methods in string handling.
10. What's the difference between equals() and == ?
11. Describe the functionalities of the indexOf and lastIndexOf methods used for string manipulation
12. What are the two forms of the substring() method and what do their arguments represent?
13. Describe the two forms of the replace() method and their functionalities.
14. What is the purpose of the valueOf() method in Java and how does it relate to the toString() method?
15. How does StringBuffer differ from String in terms of mutability and growth?
16. What is the purpose of the ensureCapacity() method in StringBuffer? give its general form

17. How does the setLength() method modify the length of a StringBuffer and what happens to existing data when the length is changed?
18. What do the charAt() and setCharAt() methods do in StringBuffer?
19. What does the append() method do in StringBuffer?Which funciton is called for each parameter to obtain its string representation.
20. What does the insert() method do in StringBuffer and how is it different from append()?
21. How does StringBuilder differ from StringBuffer?
22. What are the roles of the Stub and Skeleton objects in RMI?
23. What is RMI?
24. What is Syntactic transparency?
25. What is Semantic transparency?
26. What are the requirements for a class to be serializable?
27. State two advantages of using distributed computing over centralized computing.
28. State any four key characteristics that define a distributed computing system.
29. List the elements used in the working of RPC
30. Why is the RMI Registry important in Remote Method Invocation (RMI) applications?
31. Write any two limitations of distributed computing.
32. When does RMI callback occur?
33. When does RMI callback occur?

(4 to 6 marks)

1. With syntax and example explain the following String class methods
    a. split()
    b. regionMatches()
2. With syntax and example explain the following String class methods
    a. getChars()
    b. replace()
3. With syntax and example explain the following StringBuffer class methods
    a. insert()
    b. deleteCharAt()
4. With syntax and example explain the following StringBuffer class methods
    a. substring()
    b. lastIndexOf()

5. Explain how to concatenate string with other data types?
6. Explain character extraction methods of String class with an example
7. Explain any four string comparison methods with an example
8. Explain the difference between the indexOf() and lastIndexOf() methods in the String class. Give an example for each method to illustrate their functionality.
9. Describe two common approaches for modifying Strings in Java with an example
10. Explain the use of charAt() and setCharAt() methods with suitable example.
11. Explain the purpose of the valueOf() method in the String class with an example
12. What is the use of replace() method? Explain.
13. With an example explain the four methods of StringBuffer class
14. What is the usage of delete() and deleteCharAt() methods? Explain them using their syntax and an example
15. Explain in detail the method that is used by the RMI client to connect to remote RMI servers?

16. Explain the concepts of object persistence and serialization in Java. Provide a brief overview of each concept, highlighting their significance in software development.
17. Explain four key challenges associated with distributed computing systems.
18. Describe the three key components that make up a Distributed Computing System.
19. Explain how a Social Media platform can be considered a Distributed Computing System. Identify the key components involved and their roles.
20. Explain the concept of Remote Procedure Calls (RPC) and its working mechanism with its five key elements

21. What is RMI? Explain its key components
22. Write short note on RMI Registry
23. Outline the key steps involved in developing a basic Remote Method Invocation (RMI) application.
24. Explain the Advantages and Disadvantages distributed computing.

Unit-4

(2 Marks)

1. What are servlets?
2. List the drawbacks of CGI programs.
3. List the advantages of servlet.
4. With syntax write the purpose of getParameter() method.
5. What is the purpose of extending the GenericServlet class in t servlet, and what methods does it provide by default?
6. Explain the role of the ServletRequest and ServletResponse objects in the service() method
7. What is ServletConfig Interface? Mention any 2 methods
8. What is the purpose and significance of the getWriter() method in the context of generating an HTTP response in a servlet?
9. _____ interface declares life cycle methods for a servlet and _____interface allows servlets to get initialization parameters.
10. What is the role of the getServletConfig() and getServletInfo() methods in the Servlet interface
11. Differentiate between the getInitParameter(String param) and getInitParameterNames() methods in the ServletConfig interface
12. What the purpose and usage of the getAttribute(String attr) and setAttribute(String attr, Object val) methods in the ServletContext interface
13. What is the purpose of the getParameterNames() and getParameterValues(String name) methods in the ServletRequest interface.
14. What is the usage of readLine(byte[] buffer, int offset, int size) method in the ServletInputStream class?.
15. What's the specific purpose of ServletOutputStream and ServletInputStream?
16. List classes that are provided in the javax.servlet.http package
17. Write the usage of any two methods described in the HttpServletResponse interface
18. What is Cookie? How it is helpful?
19. Describe the significance of the valueBound and valueUnbound methods in the HttpSessionBindingListener interface

20. What information can be stored in a cookie?
21. What is the significance of the getSession( ) method of HttpServletRequest
22. Write the purpose of next() and getString().
23. List the parts of URL that is used in getConnection() method to establish connection.
24. Write the purpose of setLoginTimeout() and getLoginTimeout()
25. Write the purpose of forName() and createStatement().
26.
27. What is the main purpose of the JDBC to ODBC (Type 1) driver?
28. Differentiate between Type 3 and Type 4 JDBC drivers. Which one is considered to be the fastest way to communicate SQL queries to the DBMS?
29. What is the difference between the executeQuery() and executeUpdate() methods of a Statement object i JDBC?
30. Briefly explain what a ResultSet object represents in JDBC.
31. What is the main advantage of using a PreparedStatement object over a Statement object in JDBC?
32. How do PreparedStatement objects handle dynamic values in SQL queries?
33. What are the different parameters used by CallableStatement object?
34. How to Insert a Row in to the ResultSet
35. Why Savepoints are used in datatabase transaction?
36. How to batch sql statement into transaction statement?
37. What are the methods supported by RowSetListener class?
38. What is JavaServerPages?
39. List any four advanges of using JSP
40. List any four implicit Objects
41. What is the usage of buffer attribute in JSP?
42. What is page Directive?

(4 to 6 marks)

1. Explain the three key methods in the lifecycle of a servlet (init(), service(), destroy())
2. Develop a basic servlet program that displays a welcome message to the user
3. Explain the functionalities of the following methods available in servletConfig Interface
4. Write the usage of any four methods of servletRequest interface
5. Write the usage of any four methods of servletResponse interface
6. Write a Java servlet named FormProcessorServlet that can handle HTTP POST requests containing form data. The servlet should: Read Parameters: Extract the names and values of parameters submitted from the form. Process Data: Access the specific parameter values for fields like "name" and "email" (assuming those are the form field names). Generate Response: Create an HTML response that displays the submitted data back to the user in a user-friendly format.
7. Explain the following methods of HttpServletRequest interface with their syntax
   i. getCookies
   ii. getMethod
   iii. getPathInfo
   iv. getSession
8. With an example, Explain the purpose and behavior of the doGet() method in a servlet class.
9. With an example, Explain the purpose and behavior of the doPost() method in a servlet class.

10. What are the different methods involved in the process of session management in servlets? Explain their purpose
11. How cookies can be handled using servlet
12. Explain why JSP is a compelling choice for web development compared to the Common Gateway Interface (CGI).
13. Explain the key steps involved in how a web server processes a JSP request and generates a web page.
14. Explain the key stages involved in the lifecycle of a Java Server Page (JSP).
15. Write short note on JSP directives and JSP Actions
16. Explain any four buffer attributes with examples
17. Explain the steps in the JDBC process.
18. Write the steps to associate database with JDBC/ODBC bridge.
19. What is JDBC Driver? Explain different types.
20. Explain the steps to connect to the database in java?
21. What are the JDBC statements? Explain
22. Describe the following
    i) Scrollable Resultset ii) Updatable ResultSet
23. Write a note on DatabaseMetaData interface
24. Explain the types of Exceptions occur in JDBC.