B.L.D.E.A's V.P. Dr. P.G. Halakatti College Of Enginering and Technology Vijyapur-586103

Department of Information Science

Question Papers Dec.2024/Jan.2025

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BIS402

Fourth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Advance Java

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	**a.**	What is collection framework? Explain the methods define by the collection interface.	7	L2	CO1
	b.	Implement a java program to demonstrate creating an ArrayList, adding elements, removing elements, sorting elements of ArrayList.	8	L4	CO1
	c.	Demonstrate with an example how accessing a collection Via an Iterator can be done.	5	L2	CO1
		OR			
Q.2	**a.**	Explain the following map classes : (i) HashMap (ii) TreeMap.	8	L2	CO1
	b.	Explain ArrayList class and explain the following methods : (i) binarysearch (ii) Copy (iii) equals (iv) fill	8	L2	CO1
	c.	Explain legacy classes.	4	L2	CO1
		Module – 2			
Q.3	**a.**	What is string in Java? Implement a Java program to illustrate the use of any four constructors of string class.	8	L3	CO2
	b.	Explain the following stringBuffer methods with an example : (i) insert (ii) append (iii) replace (iv) substring.	8	L2	CO2
	c.	Differentiate between equals ( ) and = = with respect to string comparison.	4	L2	CO2
		OR			
Q.4	**a.**	Explain the following string buffer class with examples : (i) Capacity (ii) Reverse (iii) CharAt ( ) (iv) deleteCharAt ( ).	8	L2	CO2
	b.	Implement a java program to remove duplicate characters from a given string and display the resultant string.	8	L3	CO2
	c.	How CompareTo ( ) method differs from CompareToIgnoreCase ( ) method?	4	L2	CO2
		Module – 3			
Q.5	**a.**	What are differences between swing and AWT? Why Swing components are called light weight component?	8	L2	CO3
	b.	Explain the following with suitable code : JButton, JLable, JTextField, JCombobox.	12	L2	CO3
		OR			
Q.6	**a.**	Explain the paint package in swings.	6	L2	CO3

	b.	Create a swing application having two buttons named alpha and beta. When either of buttons pressed, it should display "alpha pressed" and "beta pressed" respectively.	10	L4	CO3
	c.	Write short note on MVC connection.	4	L2	CO3
Module – 4					
Q.7	**a.**	Explain the life cycle of Servlet.	4	L2	CO4
	b.	Describe the core interfaces that are provided in Javax, Servlet, http package.	8	L2	CO4
	c.	Implement a Servlet program to display the name, USN and total marks by accepting student detail.	8	L3	CO4
OR					
Q.8	**a.**	What is JSP? Explain the various types of JSPtags with examples.	10	L2	CO4
	b.	What are cookies? How cookies are handled in JSP? Write a JSP program to create and read cookie.	10	L3	CO4
Module – 5					
Q.9	**a.**	What are database drives? Explain the different JDBC driver types.	6	L2	CO5
	b.	Describe the various steps of JDBC with code snippets.	10	L2	CO5
	c.	Write any two syntax of established a connection to a database.	4	L2	CO5
OR					
Q.10	**a.**	Describe the following concepts : (i) Scrollable Resultset (ii) Callable statement. (iii) Transaction processing (iv) Updatable Resultset.	10	L2	CO5
	b.	What is connection pooling? Explain connection pooling with code snippets.	6	L2	CO5
	c.	Explain different kinds of exceptions in Database.	4	L2	CO5

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Sixth Semester B.E. Degree Examination, Dec.2024/Jan.2025
File Structures

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain the functions OPEN, READ, WRITE, SEEK with parameters. **(08 Marks)**
  b. Explain the sector based data organization in magnetic disk with a neat diagram. **(08 Marks)**
  c. Explain the concept of inheritance using the IP buffer class hierarchy. **(04 Marks)**

OR

2 a. Define field and record. Explain the different methods for organizing fields and records of a file, with examples. **(12 Marks)**
  b. Define: i) RRN   ii) Physical file   iii) Logical file   iv) File access and file organization. **(08 Marks)**

Module-2

3 a. Describe the operations required to maintain an indexed file. **(08 Marks)**
  b. Build the Huffman tree and code the input symbols for the following input sequence cddaf.

Symbol	a	b	c	d	e	f
Probability	0.1	0.4	0.06	0.1	0.04	0.3

(08 Marks)
  c. Explain the limitations of binary searching and internal sorting. **(04 Marks)**

OR

4 a. Explain the different way of reclaiming space in files. **(10 Marks)**
  b. Discuss the limitations of retrieving the records using combination of secondary key. Explain the solution by using linking list of reference techniques. **(10 Marks)**

Module-3

5 a. Write an algorithm for heap sorting method. Show the construction of heap tree for following incoming sequence FDCGHIBEA. **(10 Marks)**
  b. What is co-sequential processing and what are the assumptions and components of the model? **(10 Marks)**

OR

6 a. What is multilevel indexing? Explain the concept of B-Trees in multilevel indexing. Construct a B-tree for the sequence (order 4) Q, P, A, E, C, X, Z, D, H, I, F. **(10 Marks)**
  b. With examples explain the following operations in a B-tree:
  i) Deletion   ii) Merging   iii) Redistribution. **(10 Marks)**

Module-4

7 a. Give the structure of indexed sequential access with a neat diagram. Discuss simple prefix B+ tree maintenance. **(10 Marks)**
  b. Compare : B trees, B+ trees, Simple prefix, B+ trees. **(10 Marks)**

OR

8	a.	Explain a B tree and its creation with example.	**(10 Marks)**
	b.	Explain the internal structure of index set blocks.	**(10 Marks)**

Module-5

9	a.	Discuss any 3 methods used to avoid collision in hashing.	**(10 Marks)**
	b.	Suppose that 10000 addresses are allocated to hold 8000 records in a randomly hashed file and that each address can held one record compute the following values.	
		i) The packing density	
		ii) The expected number of address with no records assigned.	
		iii) The expected number of address with one record assigned.	
		iv) Expected number of overflow records.	**(10 Marks)**

OR

10	a.	Explain :	
		i) Dynamic Hashing	
		ii) Linear Hashing	
		iii) Extendible Hashing.	**(12 Marks)**
	b.	Explain the working of extendible hashing.	**(08 Marks)**

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Sixth Semester B.E. Degree Examination, Dec.2024/Jan.2025
Software Testing

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. What is the necessity of software Testing? Which are the two fundamental approaches used to identify test cases. **(10 Marks)**
   b. Define the terms : i) Error   ii) Fault   iii) Failure   iv) Incident   v) Test case. **(10 Marks)**

OR

2 a. Explain structured implementation of a triangle problem with a neat dataflow diagrams. **(10 Marks)**
   b. With a neat diagram, explain currency converter system and Saturn windshield wiper. **(10 Marks)**

Module-2

3 a. Explain Boundary value Analysis, what are the limitations of BVA. Derive testcases for triangle problem using BVA. **(10 Marks)**
   b. Describe Weak Normal, Strong Normal, Weak Robust and Strong Robust equivalence class testing in detail. **(10 Marks)**

OR

4 a. Write a note on : i) Fault – Based Testing   ii) Mutation analysis. **(10 Marks)**
   b. Briefly explain decision table approach. Derive the testcases for triangle problem using decision table approach. **(10 Marks)**

Module-3

5 a. Explain the following :
      i) Data flow testing   ii) Scaffolding   iii) Define use testing   iv) Path testing
      v) Test oracles. **(10 Marks)**
   b. Define program graph? Draw program graph for the commission program and discuss the same in detail. **(10 Marks)**

OR

6 a. What is DD – Path? Explain basis-path testing with suitable example. **(10 Marks)**
   b. Write a note on : i) Statement Testing   ii) Slice based Testing. **(10 Marks)**

Module-4

7 a. Explain any five principles of software testing. **(10 Marks)**
   b. Discuss on dependability properties. **(10 Marks)**

OR

8 a. Write a note on :   i) Risk planning   ii) Planning and Monitoring the process
      iii) Analysis Testing   iv) Improving the process. **(10 Marks)**

b. With a neat diagram, explain clean room process model and software reliability engineered testing (SRET). **(10 Marks)**

Module-5
9 a. Explain integration testing strategies along with different integration faults. **(10 Marks)**
   b. Write a note on :
   i) system testing   ii) Usability   iii) Acceptance testing   iv) Regression testing **(10 Marks)**

OR
10 a. Explain code based regression test selection and control flow and data flow regression test selection. **(10 Marks)**
   b. Discuss traditional view of testing levels and alternative life cyclemodels. **(10 Marks)**

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Sixth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Software Testing

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. List and explain error and fault taxonomies. **(07 Marks)**
   b. Discuss Quality attributes in detail associated with software quality. **(07 Marks)**
   c. What are Test Cases? Explain testing life cycle. **(06 Marks)**

OR

2 a. How can we identify test cases using function and structural testing explain? Also write their differences. **(10 Marks)**
   b. Explain triangle problem with structural implementation. **(10 Marks)**

Module-2

3 a. Explain Boundary – Value – Analysis with its types, examples and limitations. **(10 Marks)**
   b. Draw Decision table with rule count for triangle problem, Also list and explain different types of Decision Tables. **(10 Marks)**

OR

4 a. Explain Equivalence class analysis and its types and write testcases for next data function. **(10 Marks)**
   b. Write the test cases for the following :
      i) Apply Boundary value Analysis for commission problem
      ii) Apply equivalence class testing for commission problem. **(10 Marks)**

Module-3

5 a. Explain statement, Block and condition converge with suitable code. **(10 Marks)**
   b. Explain Mc Cabes Basis path testing. **(10 Marks)**

OR

6 a. Define Data flow Testing. Define all the definitions involved in dataflow testing. **(10 Marks)**
   b. Explain Test – converge metrics for path testing proposed by EF miller. **(10 Marks)**

Module-4

7 a. Explain alternative life cycle models in software testing. **(10 Marks)**
   b. Explain SATM in brief, draw and explain context diagram and dataflow diagram of SATM. **(10 Marks)**

OR

8 a. Explain Decomposition based integration testing. **(10 Marks)**
   b. Explain Call graph based integration testing. **(10 Marks)**

Module-5

9 a. Illustrate Basic concept for requirements specification. **(10 Marks)**
   b. Explain Functional strategies for Thread Testing. **(10 Marks)**

OR

10 a. Explain taxonomy of interactions and explain their dynamic interaction in a single and multiple processors. **(10 Marks)**
    b. Explains Client – Server Testing with a neat diagram. **(10 Marks)**

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Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Cryptography and Network Security

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Draw the simplified model of symmetric encryption and explain it. **(06 Marks)**
   b. Explain caeser cipher with example. **(04 Marks)**
   c. Explain playfair cipher algorithm. Find the cipher text for plain text = "instruments" with key = "MONARCHY". **(10 Marks)**

OR

2 a. Encrypt the plaintext "Cryptography" using Hill Cipher algorithm with key
   $K = \begin{bmatrix} 9 & 4 \\ 5 & 7 \end{bmatrix}$ and decrypt the same. **(10 Marks)**
   b. With a neat schematic diagram, explain the DES encryption algorithm. **(10 Marks)**

Module-2

3 a. With a neat diagram, explain the six ingredients of a public-key cryptography. **(06 Marks)**
   b. Explain the requirements and applications for public key cryptography. **(04 Marks)**
   c. Explain the Elganal crypto system. **(10 Marks)**

OR

4 a. Explain RSA Algorithm. Using RSA algorithm perform encryption and decryption using $p = 17$, $q = 11$, $e = 7$ and $M = 88$. **(10 Marks)**
   b. Explain the Diffe-Hellman key exchange algorithm. **(10 Marks)**

Module-3

5 a. With a neat diagram, explain public key Authority and Public key certificates techniques for distribution of public keys. **(10 Marks)**
   b. Explain the key distribution scenario with relevant diagram. **(10 Marks)**

OR

6 a. Explain secret key distribution with confidentiality and authentication, with a neat diagram. **(10 Marks)**
   b. With a neat diagram, explain control vector Encryption and Decryption. **(10 Marks)**

Module-4

7 a. Describe Public key infrastructure, with neat diagram. **(10 Marks)**
   b. Explain Remote user – Authentication principles. **(10 Marks)**

OR

8 a. With a neat diagram, explain the general format of X.509 certificate. **(10 Marks)**
   b. Explain the differences between Kerberos version 4 and version 5 and also mention the technical deficiencies in Kerberos version 4 protocols. **(10 Marks)**

Module-5

9   a.   Describe in detail PGP (Pretty Good Privacy) cryptographic functions.   **(10 Marks)**
    b.   Describe the various header fields defined in MIME.   **(05 Marks)**
    c.   List the important features of IKE key determination algorithm.   **(05 Marks)**

OR

10   a.   Explain the Applications and Benefits of IPsec.   **(10 Marks)**
     b.   With a neat diagram, describe IKE header and payload format.   **(10 Marks)**

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