

Roll. No. ....

O.M.R. Serial No.

Question Booklet Number

403961

**BCA (SEM.-IV) (NEP) EXAMINATION, 2024**  
**COMPUTER APPLICATION**  
**(Software Engineering)**

[ BCA-4003 ]

Paper Code						
Z	2	0	0	0	8	2

Time : 1 : 30 Hours

Question Booklet Series
A

Max. Marks : 75

**Instructions to the Examinee :**

1. Do not open the booklet unless you are asked to do so.
2. The booklet contains 100 questions. Examinee is required to answer 75 questions in the OMR Answer-Sheet provided and not in the question booklet. All questions carry equal marks.
3. Examine the Booklet and the OMR Answer-Sheet very carefully before you proceed. Faulty question booklet due to missing or duplicate pages/questions or having any other discrepancy should be got immediately replaced.
4. Four alternative answers are mentioned for each question as - A, B, C & D in the booklet. The candidate has to choose the correct / answer and mark the same in the OMR Answer-Sheet as per the direction :

*(Remaining instructions on last page)*

**परीक्षार्थियों के लिए निर्देश :**

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाए।
2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। परीक्षार्थी को 75 प्रश्नों को केवल दी गई OMR आन्सर-शीट पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR आन्सर-शीट को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गए हों या प्रश्न एक से अधिक बार छप गए हों या उसमें किसी अन्य प्रकार की कमी हो, उसे तुरन्त बदल लें।
4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर- A, B, C एवं D हैं। परीक्षार्थी को उन चारों विकल्पों में से सही उत्तर छाँटना है। उत्तर को OMR उत्तर-पत्रक में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

*(शेष निर्देश अन्तिम पृष्ठ पर)*

1. What is Software Engineering?
  - (A) Engineering of Software
  - (B) A field of engineering related to Software development
  - (C) The process of designing, creating, and maintaining Software
  - (D) All of the above
2. Which of the following is not a Software Development Life Cycle (SDLC) model?
  - (A) Waterfall
  - (B) Agile
  - (C) Linear
  - (D) Spiral
3. What is the first phase of the Waterfall model?
  - (A) Design
  - (B) Implementation
  - (C) Maintenance
  - (D) Requirements Analysis
4. Agile methodology focuses on:
  - (A) Fixed requirements
  - (B) Flexibility and iterative development
  - (C) No documentation
  - (D) Sequential process
5. Which model is also known as the sequential model?
  - (A) Spiral
  - (B) Waterfall
  - (C) Agile
  - (D) V-Model
6. What is a functional requirement?
  - (A) Describes what the system should do
  - (B) Describes how the system performs a function
  - (C) Describes the Software's reliability
  - (D) None of the above
7. What is a non-functional requirement?
  - (A) Describes what the system should do
  - (B) Describes the constraints on the system
  - (C) Describes the interactions with external systems
  - (D) Describes the design of the system
8. Which technique is used for gathering requirements?
  - (A) Prototyping
  - (B) Interviews
  - (C) Surveys
  - (D) All of the above
9. A use case diagram is used to:
  - (A) Represent the static structure of a system
  - (B) Capture functional requirements
  - (C) Represent the behavior of a system
  - (D) Model the interactions between objects

10. Which is not a requirement elicitation technique?
- (A) Interviews  
(B) Brainstorming  
(C) Flowcharting  
(D) Observation
11. What is Software design?
- (A) The process of defining Software methods  
(B) The process of programming  
(C) The process of defining the architecture, components, interfaces, and other characteristics of a system  
(D) Writing code
12. Which design principle promotes the division of a system into smaller, manageable components?
- (A) Encapsulation  
(B) Modularity  
(C) Inheritance  
(D) Abstraction
13. What is UML?
- (A) Unified Modeling Language  
(B) Uniform Modeling Language  
(C) Universal Modeling Language  
(D) None of the above
14. Which UML diagram represents the dynamic behavior of a system?
- (A) Class diagram  
(B) Sequence diagram
15. A class diagram shows:
- (A) The classes of a system and their relationships  
(B) The sequence of operations  
(C) The flow of control  
(D) None of the above
16. What is Software testing?
- (A) Writing code  
(B) The process of executing a program to find errors  
(C) The process of maintaining Software  
(D) None of the above
17. What type of testing is performed without executing the program?
- (A) Black-box testing  
(B) White-box testing  
(C) Static testing  
(D) Dynamic testing
18. Which type of testing focuses on the internal structure of the software?
- (A) Black-box testing  
(B) White-box testing  
(C) Alpha testing  
(D) Beta testing

19. Unit testing is performed during:  
(A) System testing  
(B) Integration testing  
(C) Implementation phase  
(D) Requirements gathering
20. Which type of testing is done by end-users?  
(A) Unit testing  
(B) System testing  
(C) Alpha testing  
(D) Beta testing
21. What is Software maintenance?  
(A) Adding new features to the Software  
(B) Correcting errors found after the Software is in use  
(C) Improving the performance of the Software  
(D) All of the above
22. Which is not a type of Software maintenance?  
(A) Corrective maintenance  
(B) Adaptive maintenance  
(C) Perfective maintenance  
(D) Progressive maintenance
23. What is the primary objective of corrective maintenance?  
(A) Improve performance  
(B) Fix defects  
(C) Add new features  
(D) Adapt to a new environment
24. Which maintenance activity deals with changing Software to keep it usable in a changed environment?  
(A) Adaptive maintenance  
(B) Corrective maintenance  
(C) Perfective maintenance  
(D) Preventive maintenance
25. Preventive maintenance involves:  
(A) Adding new features  
(B) Fixing defects  
(C) Improving Software to prevent future problems  
(D) Adapting to new environments
26. What is the main objective of project management?  
(A) Completing the project on time and within budget  
(B) Writing code  
(C) Testing Software  
(D) Documenting requirements
27. Which of the following is not a project management process?  
(A) Initiation  
(B) Planning  
(C) Execution  
(D) Debugging
28. A Gantt chart is used for:  
(A) Writing code  
(B) Designing Software  
(C) Scheduling project activities  
(D) Testing Software

29. What is risk management in project management?
- (A) Identifying, assessing, and prioritizing risks
  - (B) Writing test cases
  - (C) Debugging code
  - (D) Writing requirements
30. Which document defines the scope, objectives, and participants in a project?
- (A) Project charter
  - (B) Design document
  - (C) Test plan
  - (D) User manual
31. Which model is also known as the incremental model?
- (A) Waterfall model
  - (B) Agile model
  - (C) Spiral model
  - (D) V-Model
32. In the Waterfall model, each phase must be:
- (A) Completed before the next phase begins
  - (B) Started before the previous phase ends
  - (C) Repeated multiple times
  - (D) Skipped if not necessary
33. Which SDLC model emphasizes risk analysis?
- (A) Agile model
  - (B) Waterfall model
  - (C) Spiral model
  - (D) V-Model
34. Which model is based on iterative and incremental development?
- (A) Waterfall model
  - (B) Agile model
  - (C) V-Model
  - (D) Big Bang model
35. Which SDLC model is considered to have the highest flexibility?
- (A) Waterfall model
  - (B) Agile model
  - (C) Spiral model
  - (D) V-Model
36. What does "XP" stand for in Software engineering?
- (A) Extreme Programming
  - (B) Extensive Programming
  - (C) Extended Programming
  - (D) Exclusive Programming
37. What is a Software metric?
- (A) A measurement of Software characteristics
  - (B) A programming language
  - (C) A debugging tool
  - (D) None of the above

38. LOC stands for:
- (A) Lines of Communication
  - (B) Lines of Code
  - (C) Lines of Connection
  - (D) Lines of Calculation
39. Which metric measures the complexity of a Software module?
- (A) LOC
  - (B) Function Points
  - (C) Cyclomatic Complexity
  - (D) Defect Density
40. Function Points are used to measure:
- (A) Software functionality
  - (B) Software size
  - (C) Software defects
  - (D) Software performance
41. Defect Density is calculated as:
- (A) Number of defects per LOC
  - (B) Number of defects per function point
  - (C) Number of defects per module
  - (D) None of the above
42. What is the goal of Software Quality Assurance (SQA)?
- (A) To ensure that Software meets specified requirements
  - (B) To fix bugs in Software
  - (C) To write code
  - (D) To design Software
43. Which of the following is a quality attribute of Software?
- (A) Reliability
  - (B) Maintainability
  - (C) Usability
  - (D) All of the above
44. What is the difference between validation and verification?
- (A) Validation ensures the product meets customer needs; verification ensures it is built correctly
  - (B) Validation is testing; verification is coding
  - (C) Validation is designing; verification is maintaining
  - (D) Validation is debugging; verification is implementing
45. Which review technique involves a formal meeting for evaluation?
- (A) Walkthrough
  - (B) Inspection
  - (C) Pair programming
  - (D) Debugging
46. What is a test plan?
- (A) A document describing the scope, approach, resources, and schedule of testing activities
  - (B) A program code
  - (C) A design document
  - (D) A bug report

47. What is Configuration Management?
- (A) Testing Software
  - (B) Writing code
  - (C) Managing changes to Software
  - (D) Designing Software
48. Which tool is commonly used for version control?
- (A) Photoshop
  - (B) Microsoft Word
  - (C) Excel
  - (D) Git
49. What is a baseline in Software configuration management?
- (A) A Software bug
  - (B) A fixed reference point in the Software development process
  - (C) A requirement
  - (D) A test case
50. What is branching in version control systems?
- (A) Writing documentation
  - (B) Fixing bugs
  - (C) Merging code
  - (D) Creating a separate line of development
51. Merging in version control refers to:
- (A) Combining changes from different branches
  - (B) Splitting a project into parts
  - (C) Deleting old versions
  - (D) None of the above
52. What is the goal of Software process improvement?
- (A) To enhance Software quality
  - (B) To improve process efficiency
  - (C) To reduce costs
  - (D) All of the above
53. CMMI stands for:
- (A) Capability Maturity Model Integration
  - (B) Computer Maturity Model Integration
  - (C) Capability Method Model Integration
  - (D) None of the above
54. Which level of CMMI represents a managed process?
- (A) Level 1
  - (B) Level 2
  - (C) Level 3
  - (D) Level 4
55. Which is a benefit of implementing CMMI?
- (A) Improved product quality
  - (B) Better project predictability
  - (C) Enhanced process control
  - (D) All of the above
56. What is the focus of the CMMI level 5?
- (A) Initial
  - (B) Managed
  - (C) Defined
  - (D) Optimizing

57. What is Software security?
- (A) The protection of Software against unauthorized access and modification
  - (B) Writing secure code
  - (C) Testing Software for vulnerabilities
  - (D) All of the above
58. Which is a common Software vulnerability?
- (A) Buffer overflow
  - (B) SQL injection
  - (C) Cross-site scripting (XSS)
  - (D) All of the above
59. Which tool is used for static code analysis?
- (A) SonarQube
  - (B) JIRA
  - (C) Jenkins
  - (D) Selenium
60. What is the principle of least privilege?
- (A) Users should have the minimum level of access necessary
  - (B) Granting full access to users
  - (C) Allowing access to all system resources
  - (D) None of the above
61. Which technique is used to detect and fix security vulnerabilities in Software?
- (A) Penetration testing
  - (B) Code review
  - (C) Static analysis
  - (D) All of the above
62. What is an IDE?
- (A) Integrated Development Environment
  - (B) Internet Development Environment
  - (C) Integrated Debugging Environment
  - (D) Internet Debugging Environment
63. Which of the following is an example of an IDE?
- (A) Notepad
  - (B) Visual Studio
  - (C) MS Word
  - (D) Excel
64. What does TDD stand for?
- (A) Time-Driven Development
  - (B) Test-Driven Development
  - (C) Technology-Driven Development
  - (D) Test Debug Deploy
65. GitHub is a platform for:
- (A) Managing databases
  - (B) Writing documentation
  - (C) Drawing diagrams
  - (D) Version control and collaboration

66. Which tool is used for tracking issues and bugs in Software projects?  
(A) ~~Selenium~~ Selenium  
(B) Jenkins  
(C) Git  
(D) JIRA
67. What is Software architecture?  
(A) The high-level structure of a Software system  
(B) Writing code  
(C) Designing databases  
(D) Testing Software
68. Which pattern is used to separate the concerns of data, presentation, and control logic?  
(A) Factory  
(B) Singleton  
(C) MVC (Model-View-Controller)  
(D) Observer
69. What is a design pattern?  
(A) A general reusable solution to a common problem in Software design  
(B) A programming language  
(C) A type of testing  
(D) None of the above
70. Which pattern ensures a class has only one instance?  
(A) Observer  
(B) Factory  
(C) Singleton  
(D) Adapter
71. Which design pattern provides a way to create families of related objects without specifying their concrete classes?  
(A) Adapter  
(B) Singleton  
(C) Observer  
(D) Abstract Factory
72. What is the purpose of a use case diagram?  
(A) To represent the functional requirements of a system  
(B) To design the database  
(C) To write code  
(D) To test Software
73. Which practice helps ensure code quality by having developers review each other's code?  
(A) Pair programming  
(B) Code review  
(C) Unit testing  
(D) Continuous integration
74. What is the purpose of Software documentation?  
(A) To describe the architecture and design of Software  
(B) To provide instructions on using the Software  
(C) To record requirements and specifications  
(D) All of the above

75. Which document outlines the objectives, scope, and success criteria of a project?
- (A) Project Charter
  - (B) User Manual
  - (C) Design Document
  - (D) Test Plan
76. A User Manual is designed for:
- (A) Testers of the Software
  - (B) Developers of the Software
  - (C) End users of the Software
  - (D) None of the above
77. What is a System Design Document?
- (A) A document that outlines the architecture and design of the system
  - (B) A test plan
  - (C) A project schedule
  - (D) An end-user guide
78. Which type of documentation is used to track changes and progress in Software development?
- (A) Requirements Specification
  - (B) User Manual
  - (C) Design Document
  - (D) Version control logs
79. What is a "User Story" in Agile methodology?
- (A) A technical design document
  - (B) A short description of a feature from the perspective of an end user
  - (C) A test case
  - (D) A bug report
80. What is a "burndown chart"?
- (A) A list of completed tasks
  - (B) A graphical representation of work left to do versus time
  - (C) A test plan
  - (D) A design document
81. What is Software quality?
- (A) The degree to which Software meets requirements and customer expectations
  - (B) Writing code
  - (C) Designing Software
  - (D) Debugging Software
82. Which quality model is used to assess Software quality?
- (A) Waterfall
  - (B) CMMI
  - (C) Agile
  - (D) ISO/IEC 25010
83. Which is not a Software quality attribute?
- (A) Functionality
  - (B) Usability
  - (C) Flexibility
  - (D) Performance
84. Reliability in Software quality refers to:
- (A) The ability of Software to perform its required functions under stated conditions
  - (B) The ease with which Software can be understood
  - (C) The speed at which Software performs
  - (D) The ability to prevent unauthorized access

85. Usability in Software quality refers to:
- (A) The Software's speed
  - (B) The ease with which users can learn and use the Software
  - (C) The Software's reliability
  - (D) The Software's flexibility
86. Which programming paradigm is based on objects and classes?
- (A) Object-oriented programming (OOP)
  - (B) Procedural programming
  - (C) Functional programming
  - (D) None of the above
87. What is the primary goal of Software engineering?
- (A) To design Software
  - (B) To write as much code as possible
  - (C) To test Software
  - (D) To produce high-quality Software
88. What is pair programming?
- (A) Writing code alone
  - (B) A technique where two programmers work together at one workstation
  - (C) Testing Software
  - (D) Debugging Software
89. Which Software development practice involves writing tests before code?
- (A) Test-driven development (TDD)
  - (B) Waterfall model
  - (C) Spiral model
  - (D) Big Bang model
90. What is the main focus of the spiral model?
- (A) Speed
  - (B) Risk management
  - (C) No documentation
  - (D) Sequential phases
91. What does "DRY" stand for in Software development?
- (A) Don't Repeat Yourself
  - (B) Debug Really Well
  - (C) Do Right Yourself
  - (D) Develop Rapidly
92. Which type of diagram is used to represent the static structure of a system?
- (A) Activity diagram
  - (B) Sequence diagram
  - (C) Class diagram
  - (D) Use case diagram

93. What is continuous integration?  
(A) Writing code continuously  
(B) The practice of merging all developer working copies to a shared mainline several times a day  
(C) Designing Software without breaks  
(D) Testing Software continuously
94. What is the main advantage of the V-Model?  
(A) No documentation  
(B) Speed of development  
(C) Flexibility in requirements  
(D) Verification and validation at each stage
95. Which design pattern provides a way to access the elements of an aggregate object sequentially without exposing its underlying representation?  
(A) Factory  
(B) Iterator  
(C) Adapter  
(D) Observer
96. Which document provides a detailed description of the functional and non-functional requirements of the system?  
(A) Requirements Specification  
(B) Design Document  
(C) Test Plan  
(D) User Manual
97. What is a common technique to identify the root cause of a defect?  
(A) Debugging  
(B) Code Review  
(C) Root Cause Analysis  
(D) Testing
98. Which design pattern is used to decouple an abstraction from its implementation?  
(A) Bridge  
(B) Singleton  
(C) Observer  
(D) Factoryh
99. What is the main characteristic of the Waterfall model?  
(A) Customer collaboration  
(B) Iterative development  
(C) No documentation  
(D) Sequential phases
100. What does the acronym CASE stand for in Software engineering?  
(A) Computer-Aided Software Engineering  
(B) Continuous Agile Software Engineering  
(C) Computer Algorithm System Engineering  
(D) Collaborative Agile System Engineering

## **Rough Work**

Z200082T-A/1300

( 14 )

**Rough Work**

Z200082T-A/1300

( 15 )

### **Example :**

### **Question :**

Q.1 A ● C D

Q.2 A B ● D

Q.3 A ● C D

5. Each question carries equal marks. Marks will be awarded according to the number of correct answers you have.
6. All answers are to be given on OMR Answer Sheet only. Answers given anywhere other than the place specified in the answer sheet will not be considered valid.
7. Before writing anything on the OMR Answer Sheet, all the instructions given in it should be read carefully.

After the completion of the examination, candidates should leave the examination hall only after providing their OMR Answer Sheet to the invigilator. Candidate can carry their Question Booklet.

9. There will be no negative marking.
10. Rough work, if any, should be done on the blank pages provided for the purpose in the booklet.
11. To bring and use of log-book, calculator, pager & cellular phone in examination hall is prohibited.
12. In case of any difference found in English and Hindi version of the question, the English version of the question will be held authentic.

**Imp.** On opening the question booklet, first check that all the pages of the question booklet are printed properly. If there is any discrepancy in the question Booklet, then after showing it to the invigilator, get another question Booklet of the same series.

### **उदाहरण :**

### **प्रश्न :**

प्रश्न 1 A ● C D

प्रश्न 2 A B ● D

प्रश्न 3 A ● C D

5. प्रत्येक प्रश्न के अंक समान हैं। आपके जितने उत्तर सही होंगे, उन्हीं के अनुसार अंक प्रदान किये जायेंगे।
6. सभी उत्तर केवल ओ०एम०आर० उत्तर-पत्रक (OMR Answer Sheet) पर ही दिये जाने हैं। उत्तर-पत्रक में निर्धारित स्थान के अलावा अन्यत्र कहीं पर दिया गया उत्तर मान्य नहीं होगा।
7. ओ०एम०आर० उत्तर-पत्रक (OMR Answer Sheet) पर कुछ भी लिखने से पूर्व उसमें दिये गये सभी अनुदेशों को सावधानीपूर्वक पढ़ लिया जाये।
8. परीक्षा समाप्ति के उपरान्त परीक्षार्थी कक्ष निरीक्षक को अपनी OMR Answer Sheet उपलब्ध कराने के बाद ही परीक्षा कक्ष से प्रस्थान करें। परीक्षार्थी अपने साथ प्रश्न-पुस्तिका ले जा सकते हैं।
9. निगेटिव मार्किंग नहीं है।
10. कोई भी रफ कार्य, प्रश्न-पुस्तिका में, रफ-कार्य के लिए दिए खाली पेज पर ही किया जाना चाहिए।
11. परीक्षा-कक्ष में लॉग-बुक, कैल्कुलेटर, पेजर तथा सेल्युलर फोन ले जाना तथा उसका उपयोग करना वर्जित है।
12. प्रश्न के हिन्दी एवं अंग्रेजी रूपान्तरण में भिन्नता होने की दशा में प्रश्न का अंग्रेजी रूपान्तरण ही मान्य होगा।

**महत्वपूर्ण:** प्रश्नपुस्तिका खोलने पर प्रथमतः जाँच कर देख लें कि प्रश्नपुस्तिका के सभी पृष्ठ भलीभाँति छपे हुए हैं। यदि प्रश्नपुस्तिका में कोई कमी हो, तो कक्षनिरीक्षक को दिखाकर उसी सिरीज की दूसरी प्रश्नपुस्तिका प्राप्त कर लें।