

MIZORAM PUBLIC SERVICE COMMISSION

TECHNICAL COMPETITIVE EXAMINATIONS FOR RECRUITMENT TO THE POST OF INFORMATICS OFFICER UNDER INFORMATION & COMMUNICATION TECHNOLOGY DEPARTMENT, GOVERNMENT OF MIZORAM. FEBRUARY, 2021

TECHNICAL PAPER - I

Time Allowed : 2 hours

Full Marks : 200

*All questions carry equal marks of 2 each.
Attempt all questions.*

- How long is an IPv6 address?
 - 32 bits
 - 64 bits
 - 128 bytes
 - 128 bits
- Which address is used in an internet employing the TCP/IP protocols?
 - Physical address and logical address
 - Port address
 - Specific address
 - All of the mentioned
- What is the header length of an IPv6 datagram?
 - 10 bytes
 - 25 bytes
 - 30 bytes
 - 40 bytes
- Which command would you place on interface on a private network?
 - ip nat inside
 - ip nat outside
 - ip outside global
 - ip inside local
- What is the maximum distance with maximum data rate for 802.11a?
 - About 65-75 feet
 - About 90-100 feet
 - About 150 feet
 - Over 200 feet
- For a 10Mbps Ethernet link, if the length of the packet is 32bits, the transmission delay is(in microseconds):
 - 3.2
 - 32
 - 0.32
 - 320
- _____ is a high performance fiber optic token ring LAN running at 100 Mbps over distances upto 1000 stations connected.
 - FDDI
 - FDDT
 - FDDR
 - FOTR
- IPv6 does not use _____ type of address which is used by IPv4.
 - Broadcast
 - Multicast
 - Anycast
 - None of the mentioned
- A switch in a datagram network uses a:
 - destination address
 - sender address
 - routing table
 - header
- You need to subnet a network that has 5 subnets, each with at least 16 hosts. Which classful subnet mask would you use?
 - 255.255.255.192
 - 255.255.255.224
 - 255.255.255.240
 - 255.255.255.248

11. Which command loads a new version of the Cisco IOS into a router?
 - (a) copy flash ftp
 - (b) copy ftp flash
 - (c) copy flash tftp
 - (d) copy tftp flash
12. In which layer segments are made?
 - (a) Session layer
 - (b) Transport layer
 - (c) Application layer
 - (d) Network layer
13. In a network of LANs connected by bridges, packets are sent from one LAN to another through intermediate bridges. Since more than one path may exist between two LANs, packets may have to be routed through multiple bridges. Why is the spanning tree algorithm used for bridge-routing?
 - (a) For shortest path routing between LANs
 - (b) For avoiding loops in the routing paths
 - (c) For fault tolerance
 - (d) For minimizing collisions
14. The Identifier that is used for data transfer in virtual circuit network is:
 - (a) Global address
 - (b) Virtual circuit identifier
 - (c) Network identifier
 - (d) IP identifier
15. Wireless transmission can be done via:
 - (a) Radio waves
 - (b) Microwaves
 - (c) Infrared
 - (d) all of the mentioned
16. Transmission data rate is primarily decided by:
 - (a) Network layer
 - (b) Physical layer
 - (c) Datalink layer
 - (d) Transport layer
17. A DNS client is called _____.
 - (a) DNS updater
 - (b) DNS resolver
 - (c) DNS handler
 - (d) None of the mentioned
18. Open Shortest Path First (OSPF) is also called as _____.
 - (a) Link state protocol
 - (b) Error-correction protocol
 - (c) Routing information protocol
 - (d) All of the mentioned
19. Which command will display all the EIGRP feasible successor routes known to a router?
 - (a) show ip routes *
 - (b) show ip EIGRP summary
 - (c) show ip EIGRP topology
 - (d) show ip EIGRP adjacencies
20. In OSI reference model, the lowest layer for end-to-end communication is:
 - (a) Physical layer
 - (b) Datalink layer
 - (c) Network Layer
 - (d) Transport layer
21. Which model can be selected if user is involved in all the phases of Software Development Life Cycle (SDLC)?
 - (a) Waterfall Model
 - (b) Prototyping Model
 - (c) Rapid Application Development (RAD) Model
 - (d) Both (b) & (c)
22. What is the major advantage of using Incremental Development Model?
 - (a) Customer can respond to each increment
 - (b) Easier to test and debug
 - (c) It is used when there is a need to get a product to the market early
 - (d) Both (b) & (c)

23. Which of the following life cycle model can be chosen if the development team has less experience on similar projects?
- (a) Spiral (b) Waterfall
(c) Rapid Application Development (RAD) Model (d) Iterative Enhancement Model
24. For the best Software model suitable for the project, in which of the phase the developers decide a road-map for project plan?
- (a) Software Design (b) System Analysis
(c) Coding (d) Testing
25. Which of the following is/are the activities used in the design process for large software systems?
- i) Architectural designs ii) Abstract specification
iii) Code design iv) Interface design
- (a) i, ii and iii only (b) ii, iii and iv only
(c) i, ii and iv only (d) All i, ii, iii and iv
26. Single inheritance, Multiple inheritance, and Aggregation comes under:
- (a) Modularity (b) Typing
(c) Hierarchy (d) None of the mentioned
27. In an Agile environment, what is the main responsibility of a tester?
- (a) Create test scenarios and test cases (b) Finding bugs
(c) Send test execution reports to the stakeholders (d) There is no role as a tester in Scrum
28. What are three framework activities for the Adaptive Software Development (ASD) process model?
- (a) Analysis, design, coding
(b) Feasibility study, functional model iteration, implementation
(c) Requirements gathering, adaptive cycle planning, iterative development
(d) Speculation, Collaboration, learning
29. Which of the following Unified Modelling Languages (UML) diagrams has a static view?
- (a) Activity (b) State chart
(c) Collaboration (d) Use case
30. The object-oriented development life cycle is which of the following?
- (a) Analysis, design, and implementation steps in the given order and using the steps no more than one time.
(b) Analysis, design, and implementation steps in any order and using the steps no more than one time.
(c) Analysis, design, and implementation steps in any order and using multiple iterations.
(d) Analysis, design, and implementation steps in the given order and using multiple iterations.
31. What is the main aim of Software Configuration Management (SCM)?
- (a) Identify change (b) Control change
(c) Ensure that change is being properly implemented (d) All of the above
32. One of the properties of Object Oriented Programming that allows obtaining some property which is attained by other object is _____.
- (a) Objects (b) Inheritance
(c) Messages (d) Polymorphism

33. Activities and action taken on the data that are represented by Circle or Round-edged Rectangles in DFD are called _____.
- (a) Process (b) Data storage
(c) Data flow (d) Entities
34. What do the physical connections between the elements of the OO design represent?
- (a) Cohesion (b) Coupling
(c) Both (a) & (b) (d) None of the above
35. Techniques that allows a software engineer to understand how a work process is completed when several people are included, is called _____.
- (a) Does not track potential risks (b) Cover problem areas before they go “critical”
(c) Does not adjust work flow or tasks (d) Work flow analysis
36. Measure of reliability is given by _____.
- (a) Mean Time between successes. (b) Mean reliable time
(c) Mean Time between failure. (d) MTTR
37. Which one of the following is NOT desired in a good Software Requirement Specifications (SRS) document?
- (a) Functional requirements (b) Non-functional requirements
(c) Goals of implementation (d) Algorithms for software development
38. What is the appropriate pairing of items in the two columns listing various activities encountered in a software life cycle?
- | | |
|--------------------------|--|
| P : Requirements Capture | 1 : Module Development and Integration |
| Q : Design | 2 : Domain Analysis |
| R : Implementation | 3 : Structural and Behavioral Modeling |
| S : Maintenance | 4 : Performance Tuning |
- (a) P-2, Q-3, R-4, S-1 (b) P-3, Q-2, R-1, S-4
(c) P-3, Q-2, R-4, S-1 (d) P-2, Q-3, R-1, S-4
39. In the context of modular software design, which one of the following combinations is desirable?
- (a) High cohesion and high coupling (b) High cohesion and low coupling
(c) Low cohesion and high coupling (d) Low cohesion and low coupling
40. Staff turnover, poor communication with the customer are risks that are extrapolated from past experience are called _____.
- (a) Business risks (b) Predictable risks
(c) Project risks (d) Technical risks
41. Syntax for opening and closing the connection in ADO.net is:
- (a) sqlConn.Open() and sqlConn.close() (b) sqlConn.open() and sqlConn.Close()
(c) sqlConn.Open() and sqlConn.Close() (d) None of the mentioned
42. Which interface you will use wrap an AJAX client control into a custom server control?
- (a) IScriptManager (b) IScriptControl
(c) IScriptAJAX (d) None of the above
43. Which of the following is true?
- | | |
|--|--|
| 1. AJAX is a platform-independent technology | 2. AJAX can work with web application |
| 3. AJAX can only work with ASP.NET | 4. AJAX is a platform-dependent technology |
- (a) 1, 2 (b) 1, 2, 3
(c) 1, 3, 4 (d) None of the above

52. Which of the following statement is correct in asp.net?
- (a) Anonymous types are class types that derive directly from object.
 - (b) Anonymous types are not class types that derive directly from object.
 - (c) Anonymous types are class types that derive directly from System.Class.
 - (d) None of the above
53. Which of the following web server is developed by Microsoft?
- (a) Apache Tomcat
 - (b) Caudium
 - (c) Internet Information Service (IIS)
 - (d) WEBrick
54. To use the .NET Framework Data Provider for SQL Server, an application must reference the _____ namespace.
- (a) System.Data.Client
 - (b) System.Data.SqlClient
 - (c) System.Data.Sql
 - (d) None of the mentioned
55. Which of the following are parts of the .NET Framework?
- i) The Common Language Runtime (CLR)
 - ii) The Framework Class Libraries (FCL)
 - iii) Microsoft Published Web Services
 - iv) Applications deployed on IIS
 - v) Mobile Applications
- (a) Only 1, 2, 3
 - (b) Only 1, 2
 - (c) Only 1, 2, 4
 - (d) Only 4, 5
56. What will happen if two thread of the same priority are called to be processed simultaneously?
- (a) Anyone will be executed first lexographically
 - (b) Both of them will be executed simultaneously
 - (c) None of them will be executed
 - (d) It is dependent on the operating system
57. What is the name of the thread in the following Java program?
- ```
class multithreaded_programing
{
 public static void main(String args[])
 {
 Thread t = Thread.currentThread();
 System.out.println(t);
 }
}
```
- (a) main
  - (b) Thread
  - (c) System
  - (d) None of the mentioned
58. Which JDBC type represents a “single precision” floating point number that supports seven digits of mantissa?
- (a) REAL
  - (b) DOUBLE
  - (c) FLOAT
  - (d) INTEGER
59. How many result sets are available with the JDBC 2.0 core API?
- (a) 2
  - (b) 3
  - (c) 4
  - (d) 5
60. Which case of a session bean obtains the UserTransaction object via the EJBContext using the get UserTransaction() method in EJB transaction management?
- (a) Bean-managed transactions
  - (b) Container-managed transactions
  - (c) Both (a) & (b)
  - (d) None of the above

61. Struts combine which of these into a unified Framework?
  - (a) Java Servlets
  - (b) Java Server pages
  - (c) Custom tags and Message Resources
  - (d) All mentioned above
62. Which locale (i.e., from an internationalization properties file) to use for a user is based on?
  - (a) /grails-app/conf/spring/resource.groovy file
  - (b) user's browser language preferences
  - (c) all of the mentioned
  - (d) none of the mentioned
63. Which of these access specifiers can be used for an interface?
  - (a) public
  - (b) protected
  - (c) private
  - (d) All of the mentioned
64. In Java, when does method overloading is determined?
  - (a) At run time
  - (b) At compile time
  - (c) At coding time
  - (d) At execution time
65. Which component is used to compile, debug and execute java program?
  - (a) JVM
  - (b) JDK
  - (c) JIT
  - (d) JRE
66. What is true about threading?
  - (a) run() method calls start() method and runs the code
  - (b) run() method creates new thread
  - (c) run() method can be called directly without start() method being called
  - (d) start() method creates new thread and calls code written in run() method
67. Which of the following will ensure the thread will be in running state?
  - (a) yield()
  - (b) notify()
  - (c) wait()
  - (d) Thread.killThread()
68. Which option is true about session scope in JSP?
  - (a) Objects are accessible only from the page in which they are created
  - (b) Objects are accessible only from the pages which are in same session
  - (c) Objects are accessible only from the pages which are processing the same request
  - (d) Objects are accessible only from the pages which reside in same application
69. Which one is the correct order of phases in JSP life cycle?
  - (a) Initialization, Cleanup, Compilation, Execution
  - (b) Initialization, Compilation, Cleanup, Execution
  - (c) Compilation, Initialization, Execution, Cleanup
  - (d) Cleanup, Compilation, Initialization, Execution
70. Which of these data types is used by operating system to manage the Recursion in Java?
  - (a) Array
  - (b) Stack
  - (c) Queue
  - (d) Tree
71. In relational model terminology, table is considered as:
  - (a) range
  - (b) domain
  - (c) relation
  - (d) Tuple

72. Which of the following locks the item from access of any type?
- (a) Implicit lock
  - (b) Explicit lock
  - (c) Exclusive lock
  - (d) Shared lock
73. Which of the following statements concerning business rules is true?
- (a) It should be complex
  - (b) It should not be convertible to computer code
  - (c) It may include restrictions
  - (d) All of the above
74. Data warehouse is:
- (a) The actual discovery phase of a knowledge discovery process
  - (b) The stage of selecting the right data for a KDD process
  - (c) A subject-oriented integrated time variant non-volatile collection of data in support of management
  - (d) None of these
75. Which of the following state a heterogeneous distributed database?
- (a) The same DBMS is used at each location and data are not distributed across all nodes.
  - (b) The same DBMS is used at each location and data are distributed across all nodes.
  - (c) A different DBMS is used at each location and data are not distributed across all nodes.
  - (d) A different DBMS is used at each location and data are distributed across all nodes.
76. The following SQL is which type of join:
- ```
SELECT CUSTOMER_T. CUSTOMER_ID, ORDER_T. CUSTOMER_ID, NAME, ORDER_ID
FROM CUSTOMER_T, ORDER_T WHERE CUSTOMER_T. CUSTOMER_ID = ORDER_T.
CUSTOMER_ID
```
- (a) Equi-join
 - (b) Natural join
 - (c) Outer join
 - (d) Cartesian join
77. Which of the following is a transitive dependency?
- (a) A functional dependency between two or more key attributes.
 - (b) A functional dependency between two or more nonkey attributes.
 - (c) A relation that is in first normal form.
 - (d) A relation that is in second normal form.
78. Which type of entity cannot exist in the database unless another type of entity also exists in the database, but does not require that the identifier of that other entity be included as part of its own identifier?
- (a) Weak entity
 - (b) Strong entity
 - (c) ID-dependent entity
 - (d) ID-independent entity
79. _____ is a special kind of a store procedure that executes in response to certain action on the table like insertion, deletion or updation of data.
- (a) Procedure
 - (b) Trigger
 - (c) Function
 - (d) None of the mentioned
80. A system is in a _____ state if there exists a set of transactions such that every transaction in the set is waiting for another transaction in the set.
- (a) Idle
 - (b) Waiting
 - (c) Deadlock
 - (d) Ready

- 81.** If an transaction is performed in a database and committed, the changes are taken to the previous state of transaction by:
- (a) Flashback
 - (b) Rollback
 - (c) Both Flashback and Rollback
 - (d) Cannot be done
- 82.** Which of the join operations do not preserve non matched tuples?
- (a) Left outer join
 - (b) Right outer join
 - (c) Inner join
 - (d) Natural join
- 83.** Which one of the following is a set of one or more attributes taken collectively to uniquely identify a record?
- (a) Candidate key
 - (b) Sub key
 - (c) Super key
 - (d) Foreign key
- 84.** A relational database system needs to maintain data about the relations, such as the schema of the relations. This is called:
- (a) Metadata
 - (b) Catalog
 - (c) Log
 - (d) Dictionary
- 85.** The attribute AGE is calculated from DATE_OF_BIRTH. The attribute AGE is:
- (a) Single valued
 - (b) Multi valued
 - (c) Composite
 - (d) Derived
- 86.** Six Sigma methodology defines three core steps.
- (a) analyze, improve, control
 - (b) analyze, design, verify
 - (c) define, measure, analyze
 - (d) define, measure, control
- 87.** What is the main purpose of integration testing?
- (a) Design errors
 - (b) Interface errors
 - (c) Procedure errors
 - (d) None of the above
- 88.** What is Cyclomatic complexity?
- (a) Black box testing
 - (b) White box testing
 - (c) Yellow box testing
 - (d) Green box testing
- 89.** The object of _____ within an OO system is to design tests that have a high likelihood of uncovering plausible bugs.
- (a) Fault-based testing
 - (b) Integration testing
 - (c) Use-based testing
 - (d) Scenario-based testing
- 90.** _____ regression testing is triggered by changes of the source code, whereas _____ regression testing is triggered by specification changes.
- (a) progressive, Corrective
 - (b) Corrective, progressive
 - (c) incremental, unincremental
 - (d) None of above
- 91.** Which of the following is not the objective of CMMI?
- (a) Produce quality product or services by process improvement
 - (b) Increase customer satisfaction and Expanding market presence
 - (c) Achieve excellence and create value for stakeholders
 - (d) Removing the bugs in product thereby direct product improvement

92. Choose the correct option according to the given statements.
Statement 1 : Unit Testing focuses verification effort on the smallest unit of Software Design.
Statement 2 : In general Unit Testing is done by Software Developer.
Statement 3 : Unit Testing comes under White Box Testing.
Statement 4 : Unit Testing comes under Black Box Testing.
- (a) Statement 1, 2, 3, are correct (b) Only statement 1 and 2 are correct
(c) Only statement 3 is correct (d) Only statement 4 is correct
93. If a problem occurs in a software system 6 months after it completely goes live, what will be the approach for fixing that problem on very urgent basis?
- (a) Do not involve testers
(b) Just go for retest
(c) Always go for full regression test
(d) Go for retest and then use risk assessment to decide reasonable subset of regression test suit that will be executed.
94. Which of the following is a black box testing strategy?
- (a) All Statements Coverage (b) Control Structure Coverage
(c) Cause-Effect Graphs (d) All Paths Coverage
95. Which of the following issues must be addressed if a successful software testing strategy is to be implemented?
- (a) Use effective formal technical reviews as a filter prior to testing
(b) Develop a testing plan that emphasizes “rapid cycle testing.”
(c) State testing objectives explicitly
(d) All of the mentioned
96. Which things are measured by Software Test Effectiveness?
- (a) How many customer requirements are implemented in system?
(b) How well the customer specifications are achieved by the system?
(c) How much effort is put in developing the system?
(d) All of the above
97. Which of the following is non-functional testing?
- (a) Black box testing (b) Performance testing
(c) Unit testing (d) None of the mentioned
98. Which of the following term describes testing?
- (a) Finding broken code (b) Evaluating deliverable to find errors
(c) A stage of all projects (d) None of the mentioned
99. Which of the following is one of the steps in the integration testing of OO software?
- (a) cluster testing (b) thread-based testing
(c) use-based testing (d) none of the mentioned
100. Which software testing tool does a simple job of enforcing standards in a uniform way of many programs?
- (a) Static Analyzer only (b) Code Inspector only
(c) Standard Enforcer only (d) Both Code Inspector & Standard Enforcer