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Mizoram
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CS & Engineering - III
Aug, 2018

MIZORAM PUBLIC SERVICE COMMISSION

COMPETITIVE EXAMINATIONS FOR JUNIOR GRADE OF M.E.S. UNDER POWER & ELECTRICITY DEPARTMENT, AUGUST, 2018.

COMPUTER SCIENCE & ENGINEERING
PAPER - III

Time Allowed : 3 hours   FM : 200

SECTION - A *(Multiple Choice questions)*

(100 Marks)

All questions carry equal mark of 2 each. Attempt all questions.

*This Section should be answered only on the **OMR Response Sheet** provided.*

1. A relational database consists of a collection of
    - (a) Tables
    - (b) Fields
    - (c) Records
    - (d) Keys

2. The term _____ is used to refer to a row.
    - (a) Attribute
    - (b) Tuple
    - (c) Field
    - (d) Instance

3. For each attribute of a relation, there is a set of permitted values, called the _____ of that attribute.
    - (a) Domain
    - (b) Relation
    - (c) Set
    - (d) Schema

4. (course_id,sec_id,semester) ,Here the course_id,sec_id and semester are _____ and course is a
    - (a) Relations, Attribute
    - (b) Attributes, Relation
    - (c) Tuple, Relation
    - (d) Tuple, Attributes

5. A domain is atomic if elements of the domain are considered to be _____ units.
    - (a) Different
    - (b) Indivisbile
    - (c) Constant
    - (d) Divisible

6. The tuples of the relations can be of _____ order.
    - (a) Any
    - (b) Same
    - (c) Sorted
    - (d) Constant

7. A attribute in a relation is a foreign key if the _____ key from one relation is used as an attribute in that relation .
    - (a) Candidate
    - (b) Primary
    - (c) Super
    - (d) Sub

8. 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

9. A _____ consists of a sequence of query and/or update statements.
   (a) Transaction
   (b) Commit
   (c) Rollback
   (d) Flashback

10. In case of any shut down during transaction before commit which of the following statement is done automatically?
    (a) View
    (b) Commit
    (c) Rollback
    (d) Flashback

11. Select * from employee where dept_name="Comp Sci"; In the SQL given above there is an error . Identify the error .
    (a) Dept_name
    (b) Employee
    (c) "Comp Sci"
    (d) From

12. The descriptive property possessed by each entity set is
    (a) Entity
    (b) Attribute
    (c) Relation
    (d) Model

13. Which of the following can be a multivalued attribute ?
    (a) Phone_number
    (b) Name
    (c) Date_of_birth
    (d) All of these

14. Given the basic ER and relational models, which of the following is INCORRECT?
    (a) An attribute of an entity can have more than one value
    (b) An attribute of an entity can be composite
    (c) In a row of a relational table, an attribute can have more than one value
    (d) In a row of a relational table, an attribute can have exactly one value or a NULL value

15. Key to represent relationship between tables is called
    (a) Primary key
    (b) Secondary Key
    (c) Foreign Key
    (d) None of these

16. A table on the many side of a one to many or many to many relationship must:
    (a) Be in Second Normal Form (2NF)
    (b) Be in Third Normal Form (3NF)
    (c) Have a single attribute key
    (d) Have a composite key

17. Which forms are based on the concept of functional dependency:
    (a) 1NF
    (b) 2NF
    (c) 3NF
    (d) 4NF

18. Consider money is transferred from (1)account-A to account-B and (2) account-B to account-A. Which of the following form a transaction ?
    (a) Only 1
    (b) Only 2
    (c) Both 1 and 2 individually
    (d) Either 1 or 2

19. The database system must take special actions to ensure that transactions operate properly without interference from concurrently executing database statements. This property is referred to as
    (a) Atomicity
    (b) Durability
    (c) Isolation
    (d) All of these

20. In the layer hierarchy as the data packet moves from the upper to the lower layers, headers are
    (a) Added
    (b) Removed
    (c) Rearranged
    (d) Modified

21. Communication between a computer and a keyboard involves _____ transmission

    (a) Automatic   (b) Half-duplex

    (c) Full-duplex   (d) Simplex

22. The _____ is the physical path over which a message travels

    (a) Path   (b) Medium

    (c) Protocol   (d) Route

23. In TCP, sending and receiving data is done as

    (a) Stream of bytes   (b) Sequence of characters

    (c) Lines of data   (d) Packets

24. TCP groups a number of bytes together into a packet called

    (a) Packet   (b) Buffer

    (c) Segment   (d) Stack

25. Which of the following is false with respect to UDP

    (a) Connection-oriented   (b) Unreliable

    (c) Transport layer protocol   (d) All of these

26. Beyond IP, TCP provides additional services such as

    (a) Routing and switching   (b) Sending and receiving of packets

    (c) Multiplexing and demultiplexing   (d) Demultiplexing and error checking

27. When the mail server sends mail to other mail servers it becomes

    (a) SMTP server   (b) SMTP client

    (c) Peer   (d) None of these

28. Physical or logical arrangement of network is

    (a) Topology   (b) Routing

    (c) Networking   (d) None of these

29. In TDM, slots are further divided into

    (a) Seconds   (b) Frames

    (c) Packets   (d) None of these

30. Which multiplexing technique transmits digital signals ?

    (a) FDM   (b) TDM

    (c) WDM   (d) None of these

31. UTP is commonly used in

    (a) DSL   (b) FTTP

    (c) HTTP   (d) None of these

32. Radio channels are attractive medium because

    (a) Can penetrate walls   (b) Connectivity can be given to mobile user

    (c) Can carry signals for long distance   (d) All of these

33. Optical fibre works in the principle of

    (a) Total internal reflection   (b) Total internal refraction

    (c) Total external reflection   (d) Total external refraction

34. Which of this is not a guided media ?

    (a) Fiber optical cable   (b) Coaxial cable

    (c) Wireless LAN   (d) Copper wire

35. In Network Management System, maps track each piece of hardware and its connection to the

    (a) IP Server   (b) Domain

    (c) Network   (d) Data

36. "Software engineers should not use their technical skills to misuse other people's computers."Here the term misuse refers to:

    (a) Unauthorized access to computer material

    (b) Unauthorized modification of computer material

    (c) Dissemination of viruses or other malware

    (d) All of these

37. What is a Software ?

    (a) Software is set of programs

    (b) Software is documentation and configuration of data

    (c) Software is set of programs, documentation & configuration of data

    (d) None of these

38. RAD stands for

    (a) Relative Application Development   (b) Rapid Application Development

    (c) Rapid Application Document   (d) None of these

39. Which model can be selected if user is involved in all the phases of SDLC?

    (a) Waterfall Model   (b) Prototyping Model

    (c) RAD Model   (d) both Prototyping Model & RAD Model

40. Which one of the following is not an Evolutionary Process Model?

    (a) WINWIN Spiral Model   (b) Incremental Model

    (c) Concurrent Development Model   (d) All of these

41. Which one of the following is not a fundamental activity for software processes in software engineering?

    (a) Software Verification   (b) Software Validation

    (c) Software design and implementation   (d) Software evolution

42. Which is the first step in the software development life cycle ?

    (a) Analysis   (b) Design

    (c) Problem/Opportunity Identification   (d) Development and Documentation

43. In the Analysis phase, the development of the _____ occurs, which is a clear statement of the goals and objectives of the project.

    (a) documentation   (b) flowchart

    (c) program specification   (d) design

44. White Box techniques are also classified as

    (a) Design based testing   (b) Structural testing

    (c) Error guessing technique   (d) None of these

45. Alpha testing is done at

    (a) Developer's end   (b) User's end

    (c) Developer's & User's end   (d) None of these

46. Software Testing with real data in real environment is known as

    (a) alpha testing   (b) beta testing

    (c) regression testing   (d) none of these

47. Which of the following is not a conflict in software development team?

    (a) Simultaneous updates   (b) Shared and common code

    (c) Versions   (d) Graphics issues

48. Which of the following is not a part of Software Configuration Management Basics?

    (a) Identification   (b) Version

    (c) Auditing and Reviewing   (d) Status Accounting

49. The construction of object-oriented software begins with the creation of

    (a) design model   (b) analysis model

    (c) code levels   (d) both design and analysis model

50. _____ methods can be used to drive validations tests

    (a) Yellow-box testing   (b) Black-box testing

    (c) White-box testing   (d) All of these

SECTION - B *(Short answer type question)*
(100 Marks)

All questions carry equal marks of 5 each.

*This Section should be answered only on the **Answer Sheet** provided.*

1. What are the characteristics of a data in a database?

2. What are the disadvantages of database system? Explain them briefly.

3. Explain the difference between an attribute and value set.

4. Discuss the conventions for displaying an ER schema as an ER diagram.

5. What is the significance of views in SQL? Give SQL statement to update data.

6. What are the different types of relations between the entities in a table?

7. Discuss the types of privileges at the account level and at the relational level.

8. Explain locking techniques for concurrency control.

9. Discuss the TCP Header.

10. What are the different types of transmission impairments?

11. Distinguish between adaptive and non-adaptive routing algorithms.

12. Explain function of token bus.

13. Compare and contrast FDMA, TDMA and CDMA techniques.

14. What is ISDN? Explain types of services provided by ISDN.

15. What are the various categories of software?

16. What are the Drawbacks of RAD Model?

17. What are the benefits of prototyping?

18. What is the role of SRS? Explain.

19. What is the importance of data dictionary?

20. Differentiate between verification and Validation.

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