

CUET Computer Science Solved Paper-2023

Held on 24 May 2023, (Shift-III)

1. Which of the following is not a limitation of File System?
(a) Data Redundancy (b) Data Consistency
(c) Data Isolation (d) Data Dependence
2. What type of error will be raised when a local variable name is not defined in a program?
(a) Syntax error (b) Import error
(c) Indentation (d) Name error
3. Which of the following SQL command is not used for Data Definition?
(a) CREATE (b) ALTER
(c) DROP (d) INSERT
4. Overflow Error in python occurs due to following reason:
(a) When the denominator in a division operation is zero
(b) When an operator is supplied with a value of incorrect data type
(c) When the result of a calculation exceeds the maximum limit for numeric data type
(d) Due to incorrect indentation in the program code
5. _____ command is used to view the structure of an already created table.
(a) VIEW (b) SHOW
(c) DESC (d) PUSH
6. Which of the following is not an example of network device?
(a) Modem (b) Repeater
(c) RJ 45 (d) Ring
7. Which of the following refers to a set of values from which an attribute can take a value in each row?
(a) Tuple (b) Degree
(c) Domain (d) Relation
8. Arrange the following types of network in their increasing order of geography area covered:
(A) Local Area Network
(B) Wide Area Network
(C) Personal Area Network
(D) Metropolitan Area Network
Choose the correct answer from the options given below:
(a) (A), (D), (C), (B) (b) (A), (C), (D), (B)
(c) (A), (D), (B), (C) (d) (C), (A), (D), (B)
9. _____ error is raised when the requested module definition is not found.
(a) EOF Error
(b) Import Error
(c) Type Error
(d) Index Error
10. Match List-I with List-II

List-I	List-II
(A) Gateway	(I) Sends signals to only selected devices instead of sending to all
(B) Router	(II) Entry and Exit point of a network
(C) Switch	(III) Receives the data, analyse it and transmit it to other networks
(D) Hub	(IV) A network device used to connect different devices through wires, data arriving on any of the wires are sent out on all the others

Choose the **correct** answer from the options given below:
(a) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)
(b) (A)-(IV), (B)-(II), (C)-(I), (D)-(III)
(c) (A)-(I), (B)-(IV), (C)-(III), (D)-(II)
(d) (A)-(II), (B)-(III), (C)-(I), (D)-(IV)
11. Which function of SQL out of the following will include NULL values in calculating the answer?
(a) count (*) (b) avg (attribute)
(c) count (attribute) (d) sum (attribute)
12. Identify the correct statement in relation to "with open" command used to open a file for reading or writing or both.
(a) The file is closed using closed () method.
(b) The file is closed automatically, no need to use close method.
(c) Can be used for only reading a file.
(d) Can be used for only writing data in a file.
13. Which of the following an aggregate function in SQL?
(a) Select (b) Create
(c) Alter (d) Count
14. Which of the following key is used to represent the relationship between two relations?
(a) Candidate key (b) Primary key
(c) Foreign key (d) Alternate key
15. _____ is a language which is used to design standardised web pages so that the web contents can be read and understood from any computer.
(a) HTTP (b) HTML
(c) FTP (d) SMTP
16. Given below are two statements:
Statement (I) : A foreign key is used to represent the relationship between two relations.
Statement (II) : Foreign key is an attribute whose value is derived from the primary key of another relation.
In the light of the above statements, choose the most **appropriate** answer from the options given below:

- (a) Both **Statement I** and **Statement II** are true
 (b) Both **Statement I** and **Statement II** are false
 (c) **Statement I** is true but **Statement II** is true
 (d) **Statement I** is false but **Statement II** is true
17. _____ follows insertion and deletion operations from any end.

- (a) Linked list (b) queue
 (c) stack (d) Deque

18. A device that finds the best route of forwards data packet from one network to another is called :

- (a) Hub (b) Gateway
 (c) Router (d) Bridge

19. Which of the following is not the searching technique?

- (a) Linear search (b) Binary search
 (c) Hashing (d) Array

20. 1. Binary search (numlist, key)

2. Step 1 : SET first = 0, last = n - 1

3. Step 2 : Calculate mid = (first + last) // 2

4. Step 3 : WHILE first <= last REPEAT step 4

5. Step 4 : If numlist[mid] = key

6. PRINT "Element found at position",

7. _____

8. Stop

9. ELSE

10. If numlist[mid] > key, THEN

11. Last = _____

12. ELSE first = mid + 1

13. PRINT "Unsuccessful search"

Which will be the correct statement at line no. 7 and 11?

- (a) mid + 1, mid - 1 (b) mid + 1, mid + 1
 (c) mid - 1, mid - 1 (d) mid - 1, mid + 1

21. _____ is a data structure in which insertion and deletion is done from one end only, usually referred as Top.

- (a) STACK (b) QUEUE
 (c) ARRAY (d) LIST

22. Deletion operation in a queue is called _____ and Insertion operation in a queue is _____.

- (a) ENQUEUE, DEQUEUE
 (b) DEQUEUE, ENQUEUE
 (c) DEQUE, ENQUE
 (d) DEQUE, ENQUEUE

23. Which of the following is not a guided communication medium?

- (a) Twisted pair cable (b) Radio waves
 (c) Coaxial cable (d) Optical fibre

24. _____ traversal from left to right of postfix/prefix expression is sufficient to evaluate in expression based on their precedences-

- (a) 01 (b) 02
 (c) 03 (d) 00

25. Match List-I with List-II.

List-I
 (A) OVER FLOW

(B) STACK
 (C) QUEUE

(D) Underflow

List-II

(I) Trying to delete an element from an empty stack

(II) LIFO

(III) Trying to add an element to a full stack

(IV) FIFO

Choose the **correct** answer from the options given below:

(a) (A)-(II), (B)-(III), (C)-(IV), (D)-(I)

(b) (A)-(III), (B)-(II), (C)-(I), (D)-(IV)

(c) (A)-(III), (B)-(II), (C)-(IV), (D)-(I)

(d) (A)-(II), (B)-(III), (C)-(I), (D)-(IV)

26. Identify the correct statements:

(A) Primary key in a relation is used for unique identification of tuples

(B) More than one attributes can not make primary key

(C) File system does not suffers from data redundancy

(D) Foreign key is used to relate two tables

Choose the **correct** answer from the options given below:

(a) (A) Only (b) (D) Only

(c) (A), (B) and (C) Only (d) (A) and (D) Only

27. The binary search is applicable only when the elements (numeric values) arranged in _____ of their key values.

(a) Ascending order

(b) Descending order

(c) Either in ascending or descending order

(d) order is not required

28. What will be the result of the given list after the pass 1 using Bubble sort?

8	7	13	1	-9	4
---	---	----	---	----	---

(a)

-9	1	4	7	8	13
----	---	---	---	---	----

(b)

-9	1	7	4	8	13
----	---	---	---	---	----

(c)

7	8	1	4	-9	13
---	---	---	---	----	----

(d)

7	8	1	-9	4	13
---	---	---	----	---	----

29. When all the values are sorted in ascending or descending order, the middle value is known as:

(a) Mean

(c) Mode

(b) Median

(d) Variance

30. _____ permits the principle of First Come first out approach.

(a) Stack

(c) Deque

(b) Queue

(d) Array

31. Sorting n elements using Bubble sort, requires number of comparisons in 1st pass and _____ number of passes.

(A) n, n - 1

(C) n + 1, n + 1

(E) n/2, n/2

(B) n - 1, n - 1

(D) n², n²

Choose the **correct** answer from the options given below:

(a) (B) Only

(c) (C) Only

(b) (A) Only

(d) (E) Only

32. In _____ sort, the smallest element is chosen from the unsorted array and swapped with the left most element, and that element becomes a part of the sorted array. The process continues for the next element in the unsorted array till the list is sorted.

- (a) Bubble (b) Insertion
(c) Selection (d) Merge

33. Which of the following is computed on the basis of frequency of occurrence of distinct values in given data?

- (a) Mean (b) Median
(c) Mode (d) Standard Deviation

34. Which of the following is not the constraint on data during insertion in table?

- (a) NOT NULL (b) UNIQUE
(c) PRIMARY KEY (d) ALTERNATE KEY

35. Select the wrong topology from the following options.

- (a) Ring (b) Circle
(c) Mesh (d) Tree

DIRECTIONS (Qs. 36-40) : Based on the above paragraph answer following question.

An exception is a python object that represents an error. Built-in exceptions are generated by the compiler/Interpreter. Some of built in exception are syntax error, value error, IO error, import error, EOF error, zero division error, index error, name error, indentation error. The raise statement can be used to throw an exception. The assert statement in python is used to test expression in the program code. Finally always executes its statements regardless of whether an exception occurred.

36. Built-in exception raised by which of the following.

- (a) Compiler/Interpreter (b) Programmer
(c) Computer (d) Assembler

37. Which of the following exception raised when the file specified in a program statement can't be opened?

- (a) .Value Error (b) IO Error
(c) EOF Error (d) Name Error

38. Which of the following exception is raised when a global variable name is not defined :

- (a) Type error (b) Syntax error
(c) Value error (d) Name error

39. The assert statement in python used to :

- (a) To catch the exception
(b) To raise the exception
(c) To text expression in the program code
(d) Always executes the statement inside finally block

40. Which of the following about raising exceptions is not correct.

- (a) Exception handlers are designed to execute when a specific exception is raised
(b) Once an exception is raised no further statement is executed in the current block
(c) It interrupts the current execution
(d) After finishing the current execution, the exception raised statement is executed

DIRECTIONS (Qs. 41-45) : Based on the above SQL table answer following question.

Consider the car INVENTORY table.

CarId	Car Name	Price	Model	Year	Type	Final Price
D001	Dzire	582613.00	CXI	2017	Petrol	652526.6
D002	Dzire	673112.00	VXI	2018	Petrol	753885.4
B001	Balero	567031.00	Signal.2	2019	Petrol	635074.7
B002	Balero	647858.00	Delta.2	2018	Petrol	725601.0
E001	EEOO	355205.00	5 STR STD	2017	CNG	397829.6
E002	EEOO	65491400	CARE	2018	CNG	733503.7
S001	SWIFT	514000.00	CXI	2017	Petrol	575680.0
S002	SWIFT	614000.00	VXI	2018	Petrol	687680.0

41. Which on the following SQL query is correct to select the maximum priced car from INVENTORY table?

- (a) SELECT MAX (Final Price) FROM INVENTORY;
(b) SELECT LARGE (Final Price) FROM INVENTORY;
(c) SELECT HIGH (Final Price) FROM INVENTORY;
(d) SELECT AVG (Final Price) FROM INVENTORY;

42. What does following SQL query returns SELECT COUNT (DISTINCT Model) FROM INVENTORY?

- (a) 2 (b) 6
(c) 8 (d) 4

43. Which of the following query Count Car Name by the no same type of car form INVENTORY table?

- (a) SELECT CarName, Type FROM INVENTORY GROUP By Type;
(b) SELECT COUNT (*) "different Type" FROM INVENTORY GROUP BY Type;
(c) SELECT CarName, Model FROM INVENTORY GROUP By Type;
(d) SELECT CarName, Type FROM INVENTORY;

44. What does following query return SELECT COUNT (*) FROM INVENTORY WHERE Model = 'VXI' ;?

- (a) 3 (b) 4
(c) 2 (d) 1

45. Which of the following SQL query used to delete the EEOO car from INVENTORY table?

- (a) DELETE FROM INVENTORY WHERE CarName = 'EEOO';
(b) DROP FROM INVENTORY WHERE CarName = 'EEOO';
(c) REMOVE FROM INVENTORY WHERE CarName = 'EEOO';
(d) ALTER FROM INVENTORY WHERE CarName = 'EEOO';

46. Which of the given device is used for conversion between analog signals and digital bits?

- (a) Router (b) Modem
(c) Gateway (d) Repeater

47. Match List-I with List-II.

List-I

- (A) TUPLE
(B) ATTRIBUTE
(C) DEGREE
(D) CARDINALITY

List-II

- (I) Row in a relation
(II) Number of rows
(III) Column of a relation
(IV) Number of columns

Choose the **correct** answer from the options given below:

- (a) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)
(b) (A)-(III), (B)-(I), (C)-(II), (D)-(IV)
(c) (A)-(I), (B)-(III), (C)-(IV), (D)-(II)
(d) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)
48. Prefix notation of $A \wedge B \wedge C \wedge D$ will evaluate to be:
- (a) $\wedge A \wedge B \wedge C D$ (b) $ABCD \wedge \wedge$
(c) $\wedge \wedge \wedge ABCD$ (d) $ABCD \wedge \wedge$

49. Given n values $x_1, x_2, x_3, \dots, x_n$, and their mean \bar{x} , the standard deviation is computed as σ having formula:

$$(a) \sigma = \sqrt{\sum_{i=2}^n \frac{(x_i - \bar{x})^2}{n}} \quad (b) \sigma = \sqrt{\sum_{i=2}^n \left(\frac{x_i - \bar{x}}{n} \right)^2}$$

$$(c) \sigma = \sum_{i=2}^n \left(\frac{x_i - \bar{x}}{n} \right)^2 \quad (d) \sigma = \sqrt{\sum_{i=2}^n \left(\frac{x_i + \bar{x}}{n} \right)^2}$$

50. Find the Median of the given data set of student height (in cm).

[100, 110, 83, 107, 85, 89, 91, 100, 90]

- (a) 90 (b) 91
(c) 100 (d) 89

Hints & Explanations

- (b) Not data consistency but data inconsistency is the disadvantage of the file system
Data inconsistency means that the data when updated at one place is not updated everywhere hence is a limitation to the file system.
- (d) This is because in case of invalid name, one which has not been defined a name error is raised. Though a syntax error is raised due to grammatical errors. An Indentation error is raised in case of wrong indent. Import error is observed when module being imported does not exist or cannot be found.
- (d) This is because insert is not a DDL (Data Definition Language) command but a Data Manipulation Language (DML) command.
- (c) When the result of a calculation exceeds the maximum limit for numeric data type.
This is because there is a limit to the amount of values holded by a variable of any data type, being different for each one.
For example if the limit to the no of values which can be holded by a list are 10 then if one tries to append the 11th element an overflow error is raised.
Further we can also see that all other three statements are the wrong descriptions of overflow error. While 1st statement causes zerodivision error, the 2nd statement raises type error and 4th statement raises indentation error.
- (c) DESC or DESCRIBE command in MySQL is used to see the final structure of any table in the database.
The query for the same is as follows:-
DESC <Table Name>;
- (d) While a modem, Repeater and R-J connectors are network devices, ring is a type of topology and nothing more.
- (c) A domain of a table database refers to a set of values from which values can be taken by different attributes in each row.
- (d) This is because while a PAN network can work within a room or a few metres, a LAN network works ranging over a few buildings, a MAN network can work throughout the city and the WAN network can work throughout a country or continent.
- (b) Such an error is raised when the module being imported is not found or does not exist.
- (d) A gateway helps connect dissimilar devices. A router connects the LAN to the internet. A switch connects multiple devices together intelligently and a hub connects all computers and shares information among all computers unintelligently.
- (a) This is because count is an aggregate function which can be used in two manners while count(*) method counts null values, the count(aggregate) method does not count null values.
- (b) The file is closed automatically, no need to use close method.
Closing a file is normally important if we use open statement as it frees up the resources and memory which are being used up by the file. However when we use with open statement these resources and memory are automatically released eliminating the need to close the file.
- (d) An aggregate function performs a calculation on a set of values, and returns a single value.
There are 5 basic aggregate function which are as follows:-
Min
Max
Count
Sum
Avg

14. (c) A foreign key is used to connect to different table using the primary keys. It is a field in one table which is used to connect to the primary key in another table.
15. (b) HTML or Hyper text markup language is used to design web pages. While all other three options are network protocols and not languages.
HTTP – Hyper Text Transfer Protocol
FTP – File Transfer Protocol
SMTP – Simple Mail Transfer Protocol
16. (a) We know that foreign key is a key which uses primary key over two relations to connect them.
17. (d) in deque, you can perform both insertion and deletion operations at both of its ends. That's why it is called a Double-Ended Queue (Deque).
18. (c) A router is a network device which is used to find the smallest distance for forwarding packets from one network to another.
19. (d) Array's are not a searching technique but they are containers which are able to store more than one item at the same time.
20. (a) Binary Search is defined as a searching algorithm **used in a sorted array by repeatedly dividing the search interval in half.**
21. (a) This is because a stack follows LIFO (Last In First Out) configuration such that the elements are inserted and deleted from same end.
22. (b) Deque is the double ended queue and not the deletion operation in queue.
23. (b) There are majorly two types of transmission media i.e guided and unguided media. While guided media requires manual connections using wires unguided media is wireless. Out of the given options while Twisted pair cables, Coaxial cables and Optical fibre cables are types of guided media Radio waves are unguided.
24. (a) This is because the operators are correctly positioned according to their order of precedence, only one traversal is necessary to evaluate a prefix or postfix expression.
25. (c) A list has a limit to the no of elements it can have, when a user tries to append an element which already has the maximum no of elements possible then overflow is seen.
A stack follows LIFO (last in first out) configuration and a queue follows FIFO (first in first out) configuration. Underflow is seen when the user tries to delete an element from an empty list.
26. (d) Multiple attributes can hold primary key constraint. The file system does suffer from data redundancy.
27. (c) This is because binary search method uses the mid approach making the list shorter and shorter by classifying it as greater or lesser than the mid element. Hence it does not matter if the order is ascending or descending.
28. (d) The first pass goes as follows:-
8,7,13,1,-9,4
7,8,13,1,-9,4
7,8,1,13,-9,4
7,8,1,-9,13,4
7,8,1,-9,4,13
29. (b) Mean is the average of all observations.
Mode is the element with the maximum frequency in a list.
Variance **measures variability from the average or mean.**
30. (b) As it works with the FIFO approach. Like we see in a line the one who is first gets his chance first.
31. (b) This is because we see while sorting a list using bubble sort in a pass every 2 consecutive no's are compared and moved accordingly.
32. (c) Bubble sort – A sorting method where adjacent elements are swapped again and again until the whole list is sorted.
Selection sort – A sorting method wherein each element of the list is placed suitably in each pass.
Insertion sort – A sorting method wherein the smallest element is selected from the whole list and is swapped with the left most element. This process takes place until the whole list is sorted.
33. (c) It is defined as the element in the list with the highest frequency of occurrence.
34. (d) While NOT NULL, UNIQUE AND PRIMARY KEY all three are constraints, alternate key is not a constraint but they are secondary alternate keys. They are basically Candidate keys – primary key.
35. (b) There is no type of topology named circle. The ring topology connects to a device on either side. A mesh topology connects each device to all other devices. Further the tree topology is where we have a central node which is our main device which connects to other devices via branches made of nodes and links.
36. (a) This is because such built in exceptions are defined inside the compiler/interpreter only.
37. (b) An I/O device error (short for Input/Output device error) happens when Windows is not able to perform an input/output action (such as reading or copying data) when it is trying to access a drive or disk.
38. (d) In Python, the Name Error occurs when you try to use a variable, function, or module that doesn't exist.
39. (c) Python's assert statement allows you to write sanity checks in your code. These checks are known as assertions, and you can use them to test if certain assumptions remain true while you're developing your code. If any of your assertions turn false, then you have a bug in your code.
40. (d) After finishing the current execution the exception raised statement is executed
The exception raised statement is never executed as it is found to have an error.

41. (a) This is because to find the max value an aggregate function known as max has to be used.
42. (b) This is because distinct keyword allows to count only unique values, even if a value appears twice or more times it is counted only once. Further count(attribute) aggregate function does not count null values however there is no such value here.
43. (b) The GROUP BY clause is used to get the summary data based on one or more groups.
Hence here we use this clause to get the data according to the which type of car it is petrol or CNG.
44. (c) This is because the given query is used to count the total no of cars with the particular model being 'VXI'. Hence as there are only two such cars the answer is 2.
45. (a) This is because the delete clause has to be used. The reason being firstly while drop and alter are data definition language(DDL) commands used in the definition and designing of tables. Delete is a DML(data manipulation language) command which are used to manipulate data inside the tables.
46. (b) A modem consists of a modulator and a demodulator while the modulator converts the analog signals to digital bits the demodulator converts digital bits to analog signals.
47. (c) This is because tuples are described as the rows of a table, while attributes refer to the columns of

the table. While degree gives the no of columns, cardinality gives the no of rows.

48. (c) $^{^^}ABCD$
The conversion to prefix notation will go as follows:-
 $A^B^C^D$
 $^AB^C^D$
 $^{^^}ABC^D$
 $^{^^}ABCD$

49. (a)
$$\sigma = \sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{N}}$$

Here N is total no of observations

X_i represents every element and \bar{x} represents the mean hence $x_i - \bar{x}$ gives each elements difference from the mean.

Standard deviation is a quantity expressing by how much the members of a group differ from the mean value for the group.

50. (b) Median is the middle element of the list once placed in ascending order.

In ascending order the list is as follows:-

83,85,89,90,91,100,100,107,110

Here there are 9 elements therefore

The $(n+1)/2$ th element is $(9+1)/2=5^{th}$

Here the fifth element is 91.