

**ROYAL CIVIL SERVICE COMMISSION  
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2022  
EXAMINATION CATEGORY: TECHNICAL**

**PAPER II: GENERAL SUBJECT KNOWLEDGE PAPER FOR ICT**

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<b>Date</b>	: October 8, 2022
<b>Total Marks</b>	: 100
<b>Writing Time</b>	: 90 minutes (1.5 hours)
<b>Reading Time</b>	: 15 Minutes (prior to writing time)

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**GENERAL INSTRUCTIONS:**

1. Write your Registration Number clearly and correctly on the Answer Booklet.
2. The first 15 minutes is to check the number of pages of Question Paper, printing errors, clarify doubts and to read the instructions. You are NOT permitted to write during this time.
3. This paper consists of **TWO Parts: Part I & Part II**  
**Part I** consists of 70 multiple choice questions of 1 (one) mark each, and  
**Part II** consists of 7 short answer questions
4. All questions are COMPULSORY.
5. All answers should be written on the Answer Booklet provided to you. Candidates are not allowed to write anything on the question paper. If required, ask for additional Answer Booklet.
6. All answers should be written with correct numbering of Part and Question Number in the Answer Booklet provided to you. Note that any answer written without indicating the correct Part and Question Number will NOT be evaluated and no marks will be awarded.
7. Begin each Part in a fresh page of the Answer Booklet.
8. You are not permitted to tear off any sheet(s) of the Answer Booklet as well as the Question Paper.
9. Use of any other paper including paper for rough work is not permitted.
- 10. You must hand over the Answer Booklet/s to the Invigilator before leaving the examination hall.**
11. This paper has **12 printed pages**, including this instruction page.

**GOOD LUCK**

Part I

Multiple Choice Questions [70 marks]

Choose the correct answer and write down the letter of your chosen answer in the Answer Booklet against the question number e.g. 71 (a). Each question carries ONE mark. Any double writing, smudgy answers or writing more than one choice shall not be evaluated.

1. How much Simple Interest can a person get on Nu 8,200 at 17.5% per annum for a period of 2 years and 6 months?
  - a) Nu. 2,850
  - b) Nu. 3,587.50
  - c) Nu. 3,750
  - d) Nu. 3,770.50
  
2. If one-third of one-fourth of a number is 15, then three-tenth of that number is:
  - a) 35
  - b) 36
  - c) 45
  - d) 54
  
3. A two-digit number is such that the product of the digits is 8. When 18 is added to the number, then the digits are reversed. The number is:
  - a) 18
  - b) 24
  - c) 42
  - d) 81
  
4. What is the correct HTML for adding a background color?
  - a) `<body color = "green">`
  - b) `<body bgcolor = "green">`
  - c) `<background> green </background>`
  - d) `<body bg = "green">`
  
5. In a certain code, TEACHER has been coded as VGCEJGT. How CHILDREN will be coded?
  - a) EJKNEGTP
  - b) EGKNFITP
  - c) EJKNFGTO
  - d) EJKNFTGP
  
6. What is the full subnet mask for the address 172.16.5.10/28?
  - a) 255.255.0.0
  - b) 255.255.255.0
  - c) 255.255.255.240
  - d) 255.255.255.255

7. What is the output of this C Program?

```
int main()
{
    int a=0;
    a = 4 + 5/2*10 + 5;
    printf("%d", a);
    return 0;
}
```

- a) 29
- b) 5
- c) 9.25
- d) 34

8. What is the output of this C Program.?

```
int main()
{
    float a=10.0;
    a = a % 3;
    printf("%f", a);
    return 0;
}
```

- a) 0
- b) 1
- c) 1.000000
- d) Compiler error

9. URL stands for

- a) Universal Resource Locator
- b) Uniform Resource Locator
- c) Universal Response Location
- d) Universal Response Link

10. Solve for x:  $(x+2)^2 = (x-5)^2 + 7$

- a) 3
- b) 4
- c) 2
- d) 5

11. Which of the following are the components of FQDN?

- a) URL and URI
- b) Host name and Domain name
- c) DNS and DHCP
- d) None of the above

12. Why was the OSI model developed?
- a) Manufacturers disliked the TCP/IP protocol suite
  - b) The rate of data transfer was increasing exponentially
  - c) Standards were needed to allow any two systems to communicate
  - d) None of the above
13. The OSI model consists of \_\_\_\_\_ layers.
- a) 3
  - b) 4
  - c) 6
  - d) 7
14. The \_\_\_\_\_ address uniquely defines a host on the Internet.
- a) Physical
  - b) Port
  - c) IP
  - d) Specific
15. Which of the following are commonly used tools for Microservices?
- a) WireMock
  - b) Docker
  - c) Hystrix
  - d) All of the above
16. Which are the advantages of microservices?
- a) Technology diversity
  - b) Fault isolation
  - c) Independent deployment
  - d) All of the above
17. Which one of the following is **NOT** the characteristic of Microservices?
- a) Essential messaging frameworks
  - b) Centralized Governance
  - c) Independent deployment
  - d) None of the above
18. Which of the following is not the Functional Testing?
- a) Integration Testing
  - b) Unit Testing
  - c) Installation Testing
  - d) Regression Testing
19. Which operation is used to create a new entry in a database or table?
- a) Read
  - b) Update
  - c) Create
  - d) Make

20. Which command is used to retrieve entries from a database using SQL?

- a) COMMIT
- b) QUERY
- c) SELECT
- d) INSERT

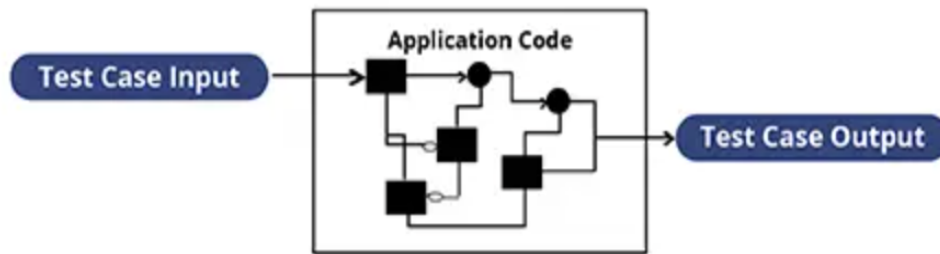
21. How would you delete all records from a table called 'users'?

- a) DELETE \* FROM TABLE users
- b) DELETE \* FROM users
- c) DELETE FROM TABLE users
- d) DELETE FROM users

22. Which keyword is used in SQL query to retrieve a unique record?

- a) UNIQUE
- b) DISTINCT
- c) PRIMARY
- d) None of the above

23. What type of testing is depicted in the following diagram?



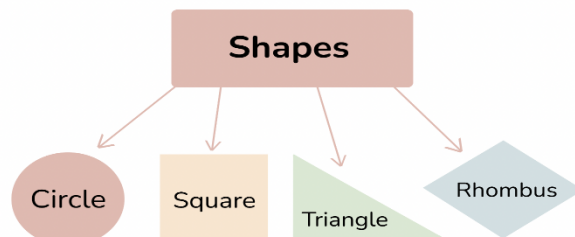
- a) Black Box Testing
- b) Unit Testing
- c) Regression Testing
- d) White Box Testing

24. Which of the following is **NOT** the main feature of OOPs?

- a) Inheritance
- b) Encapsulation
- c) Polymorphism
- d) Exception

25. Which characteristic of the OOPs is shown by this diagram?

- a) Inheritance
- b) Encapsulation
- c) Polymorphism
- d) Data Abstraction



26. What is the postfix expression for  $2*3 + 4*5$ ?
- a)  $23*4+5*$
  - b)  $234*+5*$
  - c)  $23*45*+$
  - d)  $2*34+5*$
27. What is the prefix notation for  $(a + b) * (c - d)$ ?
- a)  $+ab*c-d$
  - b)  $*+ab-cd$
  - c)  $+*abc-d$
  - d)  $+*ab-cd$
28. If  $a - b = 3$  and  $a^2 + b^2 = 29$ , find the value of  $ab$
- a) 15
  - b) 12
  - c) 10
  - d) 25
29. Tickets numbered 1 to 20 are mixed up and then a ticket is drawn at random. What is the probability that the ticket drawn has a number which is a multiple of 3 or 5?
- a)  $7/20$
  - b)  $2/5$
  - c)  $8/15$
  - d)  $9/20$
30. Which query will select all records with "gang" in their name?
- a) `SELECT * FROM table WHERE name = "%gang%";`
  - b) `SELECT * FROM table WHERE name LIKE "%gang%";`
  - c) `SELECT * FROM table WHERE name IN ("gang");`
  - d) `SELECT * FROM table WHERE name = "gang";`
31. What is the value of X in this conversion  $(145)_{10}$  is  $X_2$
- a) 11110001
  - b) 10010001
  - c) 10010011
  - d) 11010001
32. The hexadecimal digits are 1 to 0 and A to \_\_\_\_\_.
- a) E
  - b) G
  - c) F
  - d) Z
33. ASCII code is a 7 bit code for \_\_\_\_\_.
- a) Letters
  - b) Numbers
  - c) Symbols
  - d) All of the above

34. An OR gate has 6 inputs, how many input words are in its truth table?
- a) 32
  - b) 12
  - c) 64
  - d) 128
35. The binary equivalent of the octal Numbers 13.54 is:
- a) 1011.1011
  - b) 1101.1110
  - c) 1001.1110
  - d) None of these
36. The octal equivalent of 111010 is:
- a) 73
  - b) 71
  - c) 74
  - d) 72
37. The binary system has the radix of:
- a) 0
  - b) 1
  - c) 2
  - d) 3
38. The parity bit is added for \_\_\_\_\_.
- a) coding
  - b) indexing
  - c) error detection
  - d) control key
39. The process of arranging the data in a given array is called:
- a) Merging
  - b) Filtering
  - c) Ordering
  - d) Sorting
40. Who is responsible for conducting the sprint meeting in the project execution?
- a) Product owner
  - b) Scrum team
  - c) Scrum master
  - d) All of the above
41. A \_\_\_\_\_ is a collection of variables of the same type.
- a) Program
  - b) Array
  - c) Constant
  - d) Variable

42. Which data structures allow deleting data elements from and inserting at the rear?
- a) Stakes
  - b) Dequeues
  - c) Queues
  - d) Binary search tree
43. A light sensitive device that converts drawing, printed text or other images into digital form is:
- a) Keyboard
  - b) Plotter
  - c) Scanner
  - d) OMR
44. What is the loopback (localhost) ip address?
- a) 192.164.0.0
  - b) 127.0.0.1
  - c) 172.0.0.1
  - d) None of the above
45. What is the maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 255.255.255.224 subnet mask?
- a) 14
  - b) 15
  - c) 29
  - d) 30
46. IEEE standard for Wi-Fi 6 is
- a) 802.11ac
  - b) 802.11az
  - c) 802.11ax
  - d) 802.11.a6
47. Which among the following is the least strong security encryption standard?
- a) WEP
  - b) WPA
  - c) WPA2
  - d) QPA3
48. Which of the following is **NOT** a model of cloud computing?
- a) PaaS
  - b) IaaS
  - c) BaaS
  - d) SaaS
49. Data Analytics uses \_\_\_\_\_ to get insights from data.
- a) Statistical Figures
  - b) Numerical Aspects
  - c) Statistical Methods
  - d) None of the above



50. What does DDoS stand for?
- a) Data Denial-of-Service
  - b) Distributed Denial-of-Service
  - c) Distributed Data of Server
  - d) Distribution of Data Service
51. You have been asked to create a subnet that supports 16 hosts. What subnet mask should you use?
- a) 255.255.255.252
  - b) 255.255.255.248
  - c) 255.255.255.240
  - d) 255.255.255.224
52. The default port for SSH client connections is:
- a) 23
  - b) 21
  - c) 22
  - d) 20
53. In computing, one nibble is equal to\_\_\_\_\_.
- a) 4 bits
  - b) 8 bits
  - c) 6 bits
  - d) 16 bits
54. What is the mode of the following set of numbers: 1, 2, 3, 2, 1, 5, 6, 1
- a) 2
  - b) 2.5
  - c) 1
  - d) 1.5
55. Find the mean of the following set of numbers: 1, 1, 1, 2, 4, 5, 5, 7, 8, 12
- a) 4.5
  - b) 4.0
  - c) 4.6
  - d) 5.0
56. Which type of the following languages is Javascript?
- a) Scripting
  - b) Programming
  - c) Markup
  - d) None of the above
57. What is NOS?
- a) Network Operating System
  - b) Novell Operating System
  - c) Network Operating Services
  - d) New Operating Services

58. Which of the following is a valid IPv6 address format?
- a) G412:AFFA:2001:0000:0000:0000:0001
  - b) 2001:8888:EEEE:1010:0000:0000:0000:0001
  - c) 2001::8888::1
  - d) 2010:2112:5440:1812:1867
59. Which one of the following is **NOT** an output device?
- a) Printer
  - b) Monitor
  - c) Plotter
  - d) Touch Screen
60. Which of the following are forms of malicious attack?
- a) Theft of information
  - b) Modification of data
  - c) Wiping of information
  - d) All of the above
61. Which is **NOT** a common file permission?
- a) Read
  - b) Write
  - c) Stop
  - d) Execute
62. The SQL data-definition language includes commands to grant and \_\_\_\_\_.
- a) authorize
  - b) transfer privileges
  - c) transmit privileges
  - d) revoke privileges
63. Which happens first -authorization or authentication?
- a) Authorization
  - b) Authentication
  - c) Both are same
  - d) None of the above
64. What are the characteristics of Authorization?
- a) RADIUS and RSA
  - b) 3-way handshaking with syn and fin
  - c) Multilayered protection for securing resources
  - d) Deals with privileges and rights
65. The problem of being unable to represent some information, can be solved by introducing
- a) 0 value
  - b) Null values
  - c) Pointers
  - d) Null pointer

66. If an attacker manages to get an application to execute an SQL query created by the attacker, then such attacks are called as \_\_\_\_\_.
- a) Pharming
  - b) SQL injection
  - c) Phishing
  - d) Spoofing
67. A type of malicious software designed to block access to a computer system until a sum of money is paid:
- a) Ransomware
  - b) Malware
  - c) Adware
  - d) Spyware
68. An attack on a website that stores and displays text to a user is known as \_\_\_\_\_.
- a) SQL attack
  - b) XSS attack
  - c) XRP attack
  - d) None of the above
69. What are phishing attacks?
- a) Users are forced to use a second server which causes the attack.
  - b) Users are forced to divert to a fake site where the attack takes place.
  - c) Users are fooled by similar GUI and data is extracted from them.
  - d) None of the above
70. Which of the following is a valid encryption technique?
- a) Parallel key encryption
  - b) Public key encryption
  - c) Systematic key encryption
  - d) All of the above

**PART II – Short Answer Questions [30 marks]**

**Answer ALL 7 short answer questions. A mark for each question is indicated in the brackets.**

1. Write C program to calculate the sum of even for  $n$  given number. **[4 marks]**
2. Write html code to display the following given data into tabular format **[5 marks]**

Sl#	Name	Agency	Department	Division
1	Sonam	MoIC	DITT	HR

3. Write C program to the following shape. **[5 Marks]**

```
*
* *
* * *
* * * *
* * * * *
* * * * * *
```

4. Convert the following. **[4 marks]**

- a) 100 - Decimal to binary
- b) 254 - Decimal to binary
- c) 10101010 - Binary to decimal
- d) 01100111 - Binary to decimal

5. Write a program in C to print the first 100 natural numbers using recursion. **[4 marks]**

6. What does the following acronyms stands for? **[4 marks]**

- a) KYC
- b) OTP
- c) SMTP
- d) TTL

7. What are the four main operations performed in database systems? **[4 Marks]**

**TASHI DELEK**