

**ROYAL CIVIL SERVICE COMMISSION  
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2020  
EXAMINATION CATEGORY: TECHNICAL**

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

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<b>Date</b>	: February 26, 2021
<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 the 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 10 short answer questions of 3 (three) marks each.
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 on 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 to the Invigilator before leaving the examination hall.**
11. This paper has **14 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. Consider the following series: 26, 21, ..., 11, 6. What is the missing number?
  - a) 27
  - b) 23
  - c) 16
  - d) 29
  
2. Find the mean of the following set of numbers: 1,1,1,2,4,5,5,7,8,12
  - a) 5
  - b) 4.5
  - c) 4
  - d) 4.6
  
3. What is the binary equivalent of the decimal number 35?
  - a) 100011
  - b) 110001
  - c) 110101
  - d) 101011
  
4. SATA is the abbreviation of
  - a) Serial Advanced Technology Attachment.
  - b) Serial Advanced Technology Architecture.
  - c) Serial Advanced Technology Adapter.
  - d) Serial Advanced Technology Array.
  
5. Debugging is the Process of
  - a) rolling out a software program.
  - b) modifying a software program.
  - c) checking the design structure of the software program.
  - d) checking errors in a software program.
  
6. What is the maximum header size of an IP packet?
  - a) 32 bits
  - b) 32 bytes
  - c) 60 bytes
  - d) 60 bits

7. Which one of the following converts assembly language into machine language?
- a) Algorithm
  - b) Interpreter
  - c) Compiler
  - d) Assembler

8. URL stands for
- a) Uniform Resource Locator
  - b) Uniform Resource Library
  - c) United Resource Locators
  - d) United Resource Library

```
9. class Vehicle {
    Protected String brand = "Toyota";
    Public void honk() {
        System.out.println("Tuut, tuut!");
    }
}

Class Car extends Vehicle {
    Private String modelName = "Prado";
    Public static void main (.....) {
        Car myCar = new Car();
        myCar.honk();
    }
}
```

This is an example of

- a) Polymorphism
  - b) Inheritance
  - c) Encapsulation
  - d) All of the above.
10. IEEE Standard for Bluetooth technology is
- a) IEEE 802.15.1
  - b) IEEE 802.15.2
  - c) IEEE 803.15.1
  - d) IEEE 801.15.1
11. The processes that are residing in the main memory and are ready and waiting to execute are kept on a list called
- a) Job queue
  - b) Ready queue
  - c) Execution queue
  - d) Process queue

12. When is a destructor called?

- a) After the end of object life.
- b) Anytime in between object's lifespan.
- c) At end of whole program.
- d) Just before the end of object life.

13. How is friction due to air reduced?

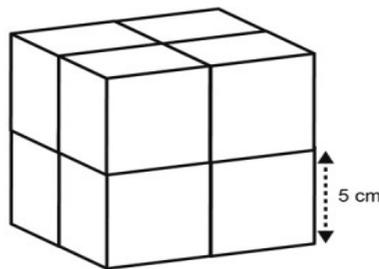
- a) Streamlining
- b) Lubrication
- c) By using ball bearings
- d) By polishing

14. A hybrid computer is the one having the combined properties of

- a) Super and microcomputers
- b) Mini and microcomputers
- c) Analog and digital computers
- d) Super and minicomputers

15. What is the volume of the given figure below?

- a) 125 cm<sup>3</sup>
- b) 875 cm<sup>3</sup>
- c) 1000 cm<sup>3</sup>
- d) 500 cm<sup>3</sup>



16. DHCP is the abbreviation of

- a) Dynamic Host Control Protocol
- b) Dynamic Host Configuration Protocol
- c) Dynamic Hyper Control Protocol
- d) Dynamic Hyper Configuration Protocol

17. fe80::aede:48ff:fe00:1122 is

- a) Global IPv6 Address
- b) Loopback IPv6 Address
- c) Link-local IPv6 Address
- d) Multicast IPv6 Address

18. What is the process of writing down computer instructions known as?
- a) Assembling
  - b) Coding
  - c) Executing
  - d) Compiling
19. What is the additional feature in classes that was not in structures?
- a) Data members
  - b) Member functions
  - c) Static data allowed
  - d) Public access specifier
20. Which IEEE Identifier does Stateless Address autoconfiguration use in generating an IPv6 address in a node?
- a) MAC Address
  - b) Multicast IPv6 Address
  - c) Loopback Address
  - d) IEEE 802.15.1
21. Which of the following WiFi 802.11 standard has the highest data transmission rates in 5GHz channel?
- a) IEEE 802.11a
  - b) IEEE 802.11ac
  - c) IEEE 802.11n
  - d) IEEE 802.11g
22. Exclusive-OR (XOR) logic gates can be constructed from what other logic gates?
- a) OR gates only
  - b) AND gates and NOT gates
  - c) AND gates, OR gates, and NOT gates
  - d) OR gates and NOT gates
23. Which one of the following is not an output device?
- a) Scanner
  - b) Printer
  - c) Plotter
  - d) Monitor
24. Which **join** is SQL server default?
- a) Outer
  - b) Inner
  - c) Equi
  - d) None of the above

25. Considering the following action:

```
TRANSACTION.....  
Commit;  
ROLLBACK;
```

What does the ROLLBACK action do?

- a) Undo the transactions before commit.
  - b) Clears all transactions.
  - c) Redo the transactions before commit.
  - d) No action.
26. What will be the total minimum bandwidth of the channel required for 7 channels of 400 kHz bandwidth multiplexed together with each guard band of 20 kHz?
- a) 2800 khz
  - b) 2600 khz
  - c) 3600 khz
  - d) 2920 khz
27. Microprocessors can be used to make
- a) Computer
  - b) Digital system
  - c) Both (a) and (b)
  - d) Neither (a) nor (b)
28. What is software?
- a) Software is a set of programs.
  - b) Software is documentation and configuration of data.
  - c) Software is a set of programs, documentations and configuration of data.
  - d) None of the above.
29. Which is the process of encoding information from a message source in suitable manner for transmission?
- a) Modulation
  - b) Demodulation
  - c) Encryption
  - d) Decryption
30. Advanced Encryption Standard (AES) is based on
- a) Asymmetric key algorithm
  - b) Symmetric key algorithm
  - c) Public key algorithm
  - d) Key exchange

31. A problem encountered in multitasking when a process is perpetually denied necessary resources is called
- a) Deadlock
  - b) Starvation
  - c) Inversion
  - d) Aging
32. How many prime numbers are there between 1 to 20?
- a) 5
  - b) 6
  - c) 7
  - d) 8
33. Which of the following is NOT a type of IPv6 communication?
- a) Loopback
  - b) Global
  - c) Multicast
  - d) Broadcast
34. The Layer 3 of the Internet protocol suite is concerned with \_\_\_\_\_ of data.
- a) bits
  - b) packets
  - c) frames
  - d) bytes
35. What is the Highest Common Factor of 26 and 91?
- a) 15
  - b) 13
  - c) 19
  - d) 1
36. The average score in a class of 15 is 86%. If one additional student scores 100%, what is the new average score?
- a) 93%
  - b) 86.875%
  - c) 87.4%
  - d) 85.275%
37. Which organization is responsible for developing Long-Term Evolution (LTE) standards?
- a) UMTS
  - b) 3GPP
  - c) 4GPP
  - d) ISO

38. If a 3-inout NOR gate has eight input possibilities, how many of these possibilities will result in a HIGH output?
- a) 1
  - b) 2
  - c) 7
  - d) 8
39. Which of the following is the binary number for 132 in decimal?
- a) 10000000
  - b) 10000110
  - c) 10000100
  - d) 10000101
40. Which type of system can learn and adjust to new circumstances by themselves?
- a) Database management system
  - b) Expert systems
  - c) Geographical systems
  - d) Neural networks
41. What is the size of MAC Address?
- a) 16-bits
  - b) 32-bits
  - c) 48-bits
  - d) 64-bits
42. When a positive charge is released in an electric field, it moves
- a) in a straight line.
  - b) from a higher to lower point of potential.
  - c) from a lower to higher point of potential.
  - d) None of the above
43. The number of values a function can return at a time is
- a) 1
  - b) 0
  - c) 2
  - d) More than 2
44. Specialized programs that allow particular input or output devices to communicate with the rest of the computer system are called
- a) Operating systems
  - b) Utilities
  - c) Device drivers
  - d) Connectors

45. An attribute A of datatype varchar(20) has the value "Bhutan". The attribute B of datatype char(20) also has value "Bhutan". How many spaces does attribute A and B have?
- a) A has 20 and B has 20
  - b) A has 6 and B has 6
  - c) A has 6 and B has 20
  - d) A has 20 and B has 6

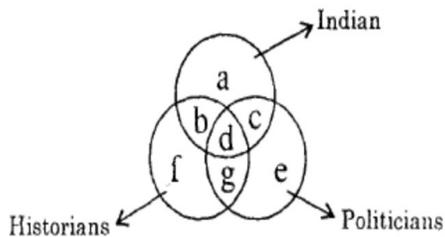
46. In the given query below, which of the following keyword has to be inserted?

**INSERT INTO** employee \_\_\_\_\_ (1002, Sonam, 2020);

- a) Table
  - b) Values
  - c) Relation
  - d) Field
47. Which one of the following is the number of bits available for the host address if it is on a 16-bit network?
- a) 16
  - b) 216
  - c) 32
  - d)  $2(16-2)$
48. When  $a = 9$ ,  $b = 12$ ,  $c = 3$  then output of  $x = a - b/3 + c*2 - 1$  is
- a) 8
  - b) 10
  - c) 12
  - d) 15
49. With reference to computers, which one of the following best describes phishing?
- a) A malicious program installed on a system that stays concealed to avoid detection.
  - b) A method of bypassing normal authentication procedures over a connection to a network.
  - c) A type of unsolicited bulk email of identical message sent to numerous recipients.
  - d) An attempt to acquire sensitive information for malicious reason, by masquerading as a trustworthy entity.
50. In a top secret message, if LIVING is coded as QNANSL. How will BHUTAN be coded?
- a) GNYXFS
  - b) GMZYFS
  - c) WCPOVI
  - d) FMZYFS
51. System Requirement Studies (SRS) consists of
- a) Problem statement
  - b) Product design
  - c) Problem statement and product design
  - d) None of the above

52. Dechen prefers Economics to Maths, English to Social Studies, and Computer to History. If she prefers Maths to History, and Social Studies to Maths, which is her least preferred subject?
- History
  - Maths
  - Social Studies
  - Computer
53. In Pokemon Go app, people wander around the places to collect pokemon to score points which confine the game by interacting with the characters, and then making progress in virtual environments by going to real-life places. What type of technology was related to the game?
- Artificial Intelligence
  - Sleeker
  - Virtual Reality
  - Augmented Reality
54. What can be considered as basic building blocks of a digital circuit?
- Logic Gate
  - Diode
  - Semi Conductor
  - CMOS
55. If CPU executes multiple programs simultaneously, it will be known as
- Multiprocessing
  - Multitasking
  - Timesharing
  - Multiprogramming
56. Which one of the following statements is FALSE?
- HTTP runs over TCP
  - HTTP describes the structure of web pages
  - HTTP allows information to be stored in a URL
  - HTTP can be used to test the validity of a hypertext link
57. The percentage of times a page number is found in the Translation Lookaside Buffer (TLB) is called
- Miss ratio
  - Hit ratio
  - Miss percent
  - None of the above
58. A bag has 3 red balls and 5 green balls. If we take a ball from the bag, then what is the probability of getting red balls only?
- 3
  - 8
  - $\frac{3}{8}$
  - $\frac{1}{8}$

59. IPv4 address is made up of 32 bits. IPv6 address is
- a) 4 bytes
  - b) 126 bits
  - c) 64 bits
  - d) 16 bytes
60. If TOUR is written as 1234, CLEAR is written as 56784 and SPARE is written as 90847, what is the code for CARE?
- a) 1247
  - b) 4847
  - c) 5247
  - d) 5847
61. 1024 bit is equal to how many byte?
- a) 1 Byte
  - b) 128 Byte
  - c) 32 Byte
  - d) 64 Byte
62. In excel application, =Sum (D4:D10) is an example of
- a) Cell address
  - b) Formula
  - c) Function
  - d) Value
63. If  $x = 5$ ;  $y = x++$  then the value of  $y$  and  $x$  would be?
- a)  $y = 5$  and  $x = 6$
  - b)  $y = 6$  and  $x = 6$
  - c)  $y = 5$  and  $x = 5$
  - d) compile error
64. Point out the letter which represents Indians and Historians but not Politicians on the basis of these three circles?



- a) b
- b) f
- c) b and f
- d) d and b

65. The set of instructions and rules to design and use information system are called

- a) Software
- b) Data
- c) Hardware
- d) Procedures

66. Which of the following transport layer protocols is used to support electronic mail?

- a) SMTP
- b) IP
- c) TCP
- d) UDP

67. Which term of the Arithmetic Progression (AP) 3,8,13,18,... is 78?

[Hint: AP;  $a_n = a + (n-1)d$  ]

- a) 12<sup>th</sup>
- b) 13<sup>th</sup>
- c) 15<sup>th</sup>
- d) 16<sup>th</sup>

68. The ratio of 2 km to 600 m is

- a) 2 : 6
- b) 1 : 300
- c) 10 : 3
- d) 100 : 3

69. Below is the sql statement to create table and insert data:

```
CREATE TABLE employee (id INTEGER,name VARCHAR(20),salary NOT NULL);
INSERT INTO employee VALUES (1005,Rach,0);
INSERT INTO employee VALUES (1007,Ross, );
INSERT INTO employee VALUES (1002,Joey,335);
```

Identify the statement which will produce an error:

- a) INSERT INTO employee VALUES (1005, Rach, 0);
- b) INSERT INTO employees VALUES (1007, Ross, );
- c) INSERT INTO employees VALUES (1002, Joey, 335);
- d) None of the above.

70. Why is BCC: used in an email?

- a) BCC: allows the recipient to identify all the other recipients in the list when in a group email address is used.
- b) BCC: allows the sender to indicate who the email is for if there is more than one recipient.
- c) BCC: allows the sender of a message to conceal the recipient entered in the BCC: field from the other recipients.
- d) BCC: allows recipients to be visible to all other recipients of the message.

PART II

Short Answer Questions [30 marks]

Answer ALL 10 short answer questions. Each question carries 3 marks.

1. Write a function to calculate and print an area of rectangle with the side 2 m by 5 m.

```
class calcArea() {  
    .....  
    .....  
    .....  
    System.out.println(.....);  
}
```

2. What are differences between Single Mode Fiber and Multimode Fiber? Mention three differences.
3. Write the output of the following C code.

```
1.  #include <stdio.h>  
2.  void main()  
3.  {  
4.      int i = 0, j = 0;  
5.      for (i = 0; i < 5; i++)  
6.      {  
7.          for (j = 0; j < 4; j++)  
8.          {  
9.              if (i > 1)  
10.                 break;  
11.          }  
12.          printf("Hi \n");  
13.      }  
14. }
```

4. There are seven layers of OSI model starting with the Physical Layer. Write six other layers.
5. What is Cryptojacking? Explain how it works.

6. Write html code to generate following output. Put table border as 1.

Monthly Savings		
Month	Savings	Savings for holiday!
January	\$100	\$50
February	\$80	

7. Explain TCP 3-Way Handshake Process.
8. What are the key differences between TCP and UDP?
9. Car A starts driving at the speed 50 km/hr. Second car B starts after 30 minutes and catches the first car A after 30 minutes. What is the speed of the car B?
10. What do you mean by Hypervisor? What is the main difference between Type 1 and Type 2 hypervisors? Give one example each.

**TASHI DELEK**