

**ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2019
EXAMINATION CATEGORY: TECHNICAL**

PAPER II: GENERAL SUBJECT KNOWLEDGE PAPER FOR ICT

Date	: October 12, 2019
Total Marks	: 100
Writing Time	: 90 minutes (1.5 hours)
Reading Time	: 15 Minutes (prior to writing time)

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 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 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 are required to hand over the Answer Booklet to the Invigilator before leaving the examination hall.**
11. This paper has **13 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. In a data set, the most frequent occurring observation in data is named as
 - a) Mode
 - b) Mean
 - c) Median
 - d) Standard deviation

2. If $U = \{1,2,3,4,5\}$ and $X = \{2,4\}$ then X' should be
 - a) $\{2,4,5\}$
 - b) $\{1,2,3,4,5\}$
 - c) $\{2,4\}$
 - d) $\{1,3,5\}$

3. Which is not involved in debugging?
 - a) Identifying
 - b) Isolating
 - c) Test
 - d) Fixing

4. In which layer of OSI, does the circuit switching takes place?
 - a) Physical layer.
 - b) Session layer
 - c) Application layer
 - d) Data link layer

5. What would be the decimal form of 0.59×10^4 ?
 - a) 590
 - b) 5900
 - c) 59000
 - d) 590000

6. The matrices A and B can be subtracted if their
 - a) Elements are same.
 - b) Rows are same.
 - c) Columns are same.
 - d) Order is same.

7. The single logarithmic form of $\log 15 + \log 7$ is _____.
- $\log (15 - 7)$
 - $\log 22$
 - $\log(15 \times 7)$
 - $\log (15 + 7)$
8. Which of the following would be the three arithmetic means between 11 and 19?
- 13, 15, 17
 - 12, 14, 15
 - 13, 14, 15
 - 14, 15, 17
9. The following is the syntax for:
_____ (condition)
 action
- Else
 - Elif
 - If
 - Switch
10. If the perimeter of an equilateral triangle is 15cm. What would be the length of one side?
- 3cm
 - 45cm
 - 15cm
 - 5cm
11. The software _____ of a program or a computing system is the structure or structures of the system, which comprise software components, the externally visible properties of those components, and the relationships among them.
- Design
 - Architecture
 - Process
 - Requirement
12. Why there is a possibility of collision still exists in Carrier Sense Multiple Access (CSMA)?
- Because of sender-receiver delay.
 - Because of sense delay.
 - Because of propagation delay.
 - Because of transmit delay.

13. Where do we use Super High frequency (SHF) for?
- a) FM radio
 - b) Satellite communication
 - c) AM radio
 - d) Cellular phones
14. What term is used to increase speed of switches to handle data?
- a) Switching routes
 - b) Switching data
 - c) Switching frames
 - d) Switching fabric
15. _____ is a well-defined collection of objects.
- a) Set
 - b) Population
 - c) Fraction
 - d) Equation
16. How many bytes does IPv4 header of datagram has?
- a) 0 to 20 bytes
 - b) 20 to 40 bytes
 - c) 20 to 60 bytes
 - d) 20 to 80 bytes
17. What do we obtain by adding two successive class limits and dividing sum by 2?
- a) Arithmetic mean
 - b) Class boundary
 - c) Frequency
 - d) Range
18. How do we define a sine wave?
- a) Amplitude
 - b) Frequency
 - c) Phase
 - d) All of the above.
19. Which one of the following is used for creating and translating program?
- a) Software system
 - b) Hardware system
 - c) Compiler
 - d) Interpreter

20. What is known as a queue holding data while data are waiting to be written in memory?
- a) Read buffer
 - b) Queue buffer
 - c) Write buffer
 - d) Data buffer
21. What happens to the datagram when one machine is using some other version of IPv4 in version field of IPv4 header?
- a) Discarded
 - b) Accepted
 - c) Interpreted
 - d) Interpreted incorrectly
22. How many address spaces will be there in a system with 8-bit addresses?
- a) 32
 - b) 256
 - c) 720
 - d) 65535
23. How do you represent the distribution function $F(A)$?
- a) $P(A=a)$
 - b) $P(A)$
 - c) $P(A>a)$
 - d) $P(A\leq a)$
24. Which of the following scheduling algorithms is non-preemptive?
- a) Round Robin
 - b) First-In First-Out
 - c) Multilevel Queue Scheduling
 - d) Multilevel Queue Scheduling with Feedback
25. How does numbering starts in Transmission Control Protocol (TCP)?
- a) 1 always
 - b) Randomly assigned node
 - c) Randomly generated number
 - d) "0" Always
26. Which one of the following term is used to create Web Pages?
- a) TCP/IP
 - b) HTML
 - c) WWW
 - d) FTP

27. What is known as the terms that control flow and errors in full duplex switched Ethernet?
- a) LLC Sub layer
 - b) MAC Sub layer
 - c) LLC Control Layer
 - d) MAC Control Layer
28. In which testing strategy requirements established during requirements analysis are validated against developed software?
- a) Validation testing
 - b) Integration testing
 - c) Regression testing
 - d) System testing
29. Why do we use rectifiers?
- a) To convert high voltage to low voltage.
 - b) To convert low voltage to high voltage.
 - c) To convert alternating current to direct current.
 - d) To convert direct current to alternating current.
30. _____ sound has frequency below 20 Hz.
- a) Audio sounds
 - b) Infrasonic
 - c) Ultrasonic
 - d) Supersonics
31. What is the name of the unit used to express the nuclear size?
- a) Fermi
 - b) Angstrom
 - c) Newton
 - d) Tesla
32. Male or female, true or false are the examples of _____.
- a) Non-functional events
 - b) Non complementary events
 - c) Functional events
 - d) Complementary events

33. If value of interval X is 2.5 and value of interval Y is 3.5 then what would be the value of mean for uniform distribution?
- a) 0.5
 - b) 2.5
 - c) 3
 - d) 3.5
34. _____ is a BSS without an AP.
- a) Adhoc network
 - b) Infrastructure network
 - c) Connectionless network
 - d) Channelization network
35. Dorji throws a total of 5 on a toss of two dice, then what will be the probability that he will throw another 5 before he throws 7?
- a) $1/9$
 - b) $2/5$
 - c) $1/6$
 - d) $5/36$
36. Sangay covers a distance at a speed of 24 km/hr in 6 min. If he wants to take 8 minutes to cover the same distance, what should be his speed?
- a) 21 km/hr
 - b) 30 km/hr
 - c) 48 km/hr
 - d) 18 km/hr
37. Working software is not available until late in the process in
- a) Waterfall model
 - b) Prototyping model
 - c) Incremental model
 - d) Evolutionary Development model
38. The greatest fractions from the given $5/8$, $2/3$, $7/9$, $3/5$ is _____.
- a) $5/8$
 - b) $2/3$
 - c) $7/9$
 - d) $3/5$

39. Which of the following requires a device driver?
- a) Register
 - b) Cache
 - c) Main memory
 - d) Disk
40. What would be increase in area of circle when the radius of a circle is increased by 6%?
- a) 12%
 - b) 12.36%
 - c) 12.64%
 - d) 6%
41. A Logical address refers to the address that is generated by the_____.
- a) CPU
 - b) Memory Unit
 - c) Hard Drive
 - d) Graphics Card
42. What allows the user to run several applications at the same time?
- a) Multithreading
 - b) Multitasking
 - c) Multiprocessing
 - d) Multiprogramming
43. What is maximum length of 1000BaseSX?
- a) 25 m
 - b) 100 m
 - c) 550 m
 - d) 1000 m
44. What is NOS?
- a) Network Operating System
 - b) Novell Operating System
 - c) Network Operating Services
 - d) New Operating Services
45. While running DOS on a PC, which command would be used to duplicate the entire diskette?
- a) Hardcopy
 - b) Softcopy
 - c) Diskcopy
 - d) None

46. Approximately, how long does the light take to reach the earth surface?
- a) 5 minutes
 - b) 8 minutes
 - c) 15 minutes
 - d) 16 minutes
47. What is the correct syntax of for the given statement?
- a) For (initialization; condition; update)
 - b) For (initialization, condition, update)
 - c) For (condition; initialization; update)
 - d) For (initialization; condition;)
48. Which of the following operator is incorrect in c programming?
- a) > =
 - b) < =
 - c) < >
 - d) = =
49. The number of values a function can return at a time is
- a) 1
 - b) 0
 - c) 2
 - d) more than 2
50. A program that reads each of the instructions in mnemonic form and translates it into the machine-language equivalent is
- a) Machine language
 - b) Assembler
 - c) Interpreter
 - d) C program
51. Each byte of character is stored as its ASCII value in _____.
- a) Binary
 - b) Octal
 - c) Decimal
 - d) Hexadecimal
52. A program that can execute high-level language programs is
- a) Compiler
 - b) Interpreter
 - c) Sensor
 - d) Circuitry

53. Which of the following is a common testing conducted by the developers?
- a) Unit testing
 - b) Entry testing
 - c) Phrase testing
 - d) Code testing
54. A _____ is a set of instructions which is prepared to perform a specific assignment if executed by a computer.
- a) Browser
 - b) Internet
 - c) Program
 - d) Code
55. To get the result of 192, a number is multiplied by its one-third. What would be the number?
- a) 16
 - b) 20
 - c) 28
 - d) 24
56. A relational database consists of a collection of
- a) Tables
 - b) Fields
 - c) Records
 - d) Keys
57. The _____ operation allows the combining of two relations by merging pairs of tuples, one from each relation, into a single tuple.
- a) Select
 - b) Join
 - c) Union
 - d) Intersection
58. Address FE80::12 is a _____.
- a) Link local address
 - b) Site local address
 - c) Multicast address
 - d) Loop back address

59. An attribute A of datatype varchar(20) has the value "Avi". The attribute B of datatype char(20) has value "Reed". Here attribute A has ____ spaces and attribute B has ____ spaces.
- 3, 20
 - 20, 4
 - 20, 20
 - 3, 4
60. We can test for the nonexistence of tuples in a subquery by using the ____ construct.
- Not exist
 - Not exists
 - Exists
 - Exist
61. What is OTP?
- One-Time Passcode
 - On-Time Passcode
 - One-Time Password
 - On-Time Password
62. An attribute in a relation is a foreign key if the _____ key from one relation is used as an attribute in that relation.
- Candidate
 - Primary
 - Super
 - Sub
63. Testing of software with actual data and in actual environment is called
- Alpha testing
 - Regression testing
 - None of the above
 - Beta testing
64. The _____ of a program or computing system is the structure or structures of the system, which comprise software components, the externally visible properties of these components, and the relationship among them.
- E-R diagram
 - Data flow diagram
 - Software architecture
 - Software design

65. The organized process or set of steps that needs to be followed to develop an information system is known as
- a) Analytical cycle
 - b) Design cycle
 - c) Program specification
 - d) System development life cycle
66. When is the acceptance testing performed in Agile development?
- a) On request of customer.
 - b) At the end of each iteration.
 - c) After system is ready.
 - d) Daily.
67. Which of the following CSS property allows long words to be able to be broken and wrap onto the next line?
- a) Line-wrap
 - b) Break-word
 - c) Word-wrap
 - d) Word-break
68. The process mapping is a _____ diagram.
- a) Data flow
 - b) Workflow
 - c) Circular
 - d) Audit
69. What should a project manager do or follow to ensure clear boundaries for project completion?
- a) Scope verification
 - b) Scope definition
 - c) Risk management plan
 - d) Completing a scope statement
70. A pseudocode is _____.
- a) an easy way to communicate the logic of a program, in English-like statements
 - b) a protocol used in data communication
 - c) a computer generated random number
 - d) a machine code

PART II – Short Answer Questions (30 marks)

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

1. Outline any three prerequisites to configure a server. (3 marks)
2. Differentiate between Communication and Transmission. (3 marks)
3. Why do we need to implement a Fault Tolerance System? State some of its limitations. (3 marks)
4. In what ways fiber optics have more advantages over other media? (3 marks)
5. How does dynamic host configuration protocol help in network administration? (3 marks)
6. Briefly explain the terms Unicasting, Multicasting and Broadcasting? (3 marks)
7. Provide some advantages of IPv6 over IPv4. (3 marks)
8. What is the equivalent code of the following statement in WHILE LOOP format? Write the output of the program when executed (3 marks)

```
for (a=1; a<=10; a++)  
    printf( “%d\n”, a * a);
```
9. Name 3 relationships of database. (3 marks)
10. Write 6 stages of Software Development Life Cycle (SDLC). (3 marks)

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