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རྒྱལ་གཞུང་གི་གཞི་གཞུག་ལྷན་ཚོགས།



ROYAL GOVERNMENT OF BHUTAN
ROYAL CIVIL SERVICE COMMISSION

BHUTAN CIVIL SERVICE EXAMINATION 2012
MAIN EXAMINATION
(OCTOBER 13, 2012)

EXAMINATION CATEGORY : TECHNICAL
PAPER II : GENERAL SUBJECT KNOWLEDGE
for ICT GROUP

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**ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2012
EXAMINATION CATEGORY: TECHNICAL**

PAPER II: GENERAL SUBJECT KNOWLEDGE for ICT GROUP

| | |
|-------------------------|--|
| Date | : 13 October 2012 |
| Total Marks | : 100 |
| Examination Time | : 90 minutes (1.5 hours) |
| Reading Time | : 15 minutes (prior to examination time) |

READ THE FOLLOWING INSTRUCTIONS CAREFULLY:

- You have 15 minutes (prior to writing time) to read the instructions, clarify doubts, make sure that you have all the pages, and check for any printing errors. DO NOT write during this time.
- This paper consists of **TWO Parts – Part I and Part II. All questions are compulsory.**
 - ✓ **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.
- While answering the multiple choice questions, write only the letter of the correct answer chosen against the question number, clearly and legibly. E.g. 71(c). Any double writing or smudgy answers shall not be evaluated.
- All answers must be written in the answer booklet provided to you. You will not be given any marks for answers written other than in the answer booklet. Ask for additional answer booklets if required.
- Ensure that you write your roll number in the space provided in the answer booklet. In case you take additional answer booklet, make sure that you write your roll number in the additional answer booklet as well.
- This paper has 16 (sixteen) printed pages including this cover page.

PART-I: MULTIPLE CHOICE QUESTIONS

Choose the correct answer and write down the letter of the correct answer chosen in the Answer Sheet against the question number. E.g. 71(c). Each question carries ONE mark.

1. The time required for the fetching and execution of one simple machine instruction is
 - a. Delay Time
 - b. CPU Cycle
 - c. Seek Time
 - d. Loading Time

2. Which of the following is not a specification of a CPU?
 - a. 2.8GHz Clock speed
 - b. 2MB Cache memory
 - c. 4.2ms Rotation latency
 - d. 32-bit word size

3. QWERTY is used with reference to
 - a. screen layout
 - b. mouse button layout
 - c. keyboard layout
 - d. word processing software

4. Logically dividing hard disk into segments to organize and store data and efficiently use hard disk space is known as
 - a. Disk Partitioning
 - b. Disk Defragmentation
 - c. Disk Storage
 - d. Disk Cleanup

5. The section of the CPU that selects, interprets and sees to the execution of program instructions
 - a. ALU
 - b. Registers
 - c. Address Bus
 - d. Control Unit

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6. In the specification of a CPU, 3.0 GHz, indicates _____
- the computational power
 - the data transfer rate
 - the storage capacity
 - the maximum I/O speed
7. The Hexadecimal equivalent of 1101 1011 1111 is
- AE7.
 - B2F
 - C2F
 - DBF
8. Binary representation of 156_{10} is
- 00111001
 - 10011100
 - 01100011
 - 11001001
9. The following are all logic gates EXCEPT
- CMOS
 - OR
 - AND
 - NAND
10. Mnemonics have to be converted to _____ by an assembler before microprocessors can execute any instruction.
- Hexadecimal form machine code
 - Compiler Language
 - Binary form machine code
 - Assembly language
11. The result of any arithmetic or logic operation by a microprocessor is kept in
- Instruction Pointer
 - Program Counter
 - Control Unit
 - Accumulator

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12. Which of the following is NOT an advantage of digital technology?
- a. Information storage is easy
 - b. The operation can be programmed
 - c. The circuits are less affected by noise.
 - d. The values may vary over a continuous range
13. The output will be a LOW for any case when one or more inputs are zero in a(n)
- a. AND Gate
 - b. NOT Gate
 - c. OR Gate
 - d. XOR Gate
14. How many truth table entries are necessary for a 3-input circuit?
- a. 6
 - b. 12
 - c. 8
 - d. 27
15. The primary logic gate whose output is the complement of the input is the
- a. XOR
 - b. NOT
 - c. AND
 - d. OR
16. Computers cannot communicate with each other directly over telephone lines because they use digital pulses whereas telephone lines use analog sound frequencies. What is the name of the device which permits digital to analog conversion at the start of a long distance transmission?
- a. Interface
 - b. Modem
 - c. Attenuation
 - d. Teleprocessor
17. Which of these four does NOT comprise a part of the system bus?
- a. Data bus
 - b. Arithmetic bus

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- c. Control bus
- d. Address bus

18. Ohm's law describes the mathematical relationship between

- a. resistance, voltage, and current
- b. Ohms and watt
- c. Digital and analog
- d. Bytes and bits

19. If the voltage across a fixed value of resistance is increased five times, how does the current change?

- a. It increases by a factor of five.
- b. It decreases by a factor of five
- c. Nothing happens
- d. None of the above

20. A network router joins two _____ together.

- a. Computers
- b. Switches
- c. Network
- d. None of above

21. Which of the following transmission media has the lowest speed

- a. Twisted-pair wire
- b. Coaxial cable
- c. Fiber-optic cable
- d. microwaves

22. Which of the following below is a loop back IP address?

- a. 127.0.0.0
- b. 127.0.1.1
- c. 127.0.1.0
- d. 127.0.0.1

23. Ping command works on which protocol

- a. POP3
- b. IP
- c. ICMP
- d. HTTP

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24. The default port number for HTTP is
- 25
 - 80
 - 21
 - 65
25. The size of an IP address in an IPv4 is
- 64 bit
 - 128 bit
 - 32 bit
 - 16 bit
26. The default subnet mask for a class C network
- 127.0.0.1
 - 255.0.0.0
 - 255.255.0.0
 - 255.255.255.0
27. _____ force makes it possible for motor vehicles to brake on the roads
- Mechanical
 - Electrostatic
 - Kinetic
 - Frictional
28. Web services use
- Telnet
 - POP3
 - SMTP
 - SOAP
29. Which of the following is a protocol used for email retrieval?
- POP3
 - ICMP
 - FTP
 - Both a and b
30. Token Ring is a data link technology for _____
- WAN
 - LAN

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- c. MAN
- d. TWAN

31. In 10base2 and 10base5 - 2 and 5 stand for

- a. Speed in mbps
- b. Number of segments
- c. Length of segment
- d. Size of segment

32. The term " **Process**" when used in conjunction with Operating Systems means

- a. A C #program stored on a disk
- b. Contents of main memory
- c. A program in execution
- d. An algorithm with a flowchart

33. The term " **Fork**" in Operating Systems means

- a. Fetching the next instruction
- b. Controlling an I/O device
- c. Increasing the priority of a task
- d. Creation of a new process

34. The term " **Page Fault**" in Operating Systems means

- a. There is a logical error in the loaded program
- b. A program accesses a page of memory
- c. Accessing a memory page which is not currently in memory
- d. None of the above

35. 64-bit versions of Windows

- a. have large amounts of hard drive storage than a 32-bit system
- b. handles small amounts of random access memory (RAM) less effectively than a 32-bit system
- c. is a bigger computer than a 32-bit system
- d. handles large amounts of random access memory (RAM) more effectively than a 32-bit system

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36. The technique of executing several programs concurrently by switching back and forth between them is called
- a. Windowing
 - b. Paging
 - c. Multitasking
 - d. Forking
37. The Linux Operating System Kernel was first developed by
- a. Bill Gates
 - b. Linus Torvalds
 - c. Dennis Ritchie
 - d. Ken Thompson
38. The following are all different distribution of the Linux operating system **EXCEPT**
- a. Debian
 - b. Fedora
 - c. OpenSUSE
 - d. FreeBSD
39. The command to create a symbolic link in LINUX is
- a. `ln -s target_path link_path`
 - b. `create slink target_path`
 - c. `cat file1.txt file2.txt > file3.txt`
 - d. none of above
40. The following is TRUE when using Round- Robin Scheduling algorithm for process scheduling by an operating system.
- a. Allows interactive tasks faster access to the CPU
 - b. Gives each process CPU time slices in equal proportion in circular order without assigning priority.
 - c. Gives each process different CPU time slices depending on process priority
 - d. It is a very complicated algorithm
41. A Terabyte represents
- a. 1 million kilobytes
 - b. 1000 kilobytes

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- c. Tens of thousands of bytes
- d. 1024 gigabytes

42. Basic Input-Output System (BIOS) is stored on

- a. Non volatile ROM on the Motherboard
- b. RAM
- c. Hard disk
- d. Registers

43. The 4-bit binary number 0111 represents the decimal number _____

- a. 3
- b. 5
- c. 7
- d. 9

44. Radio Broadcast by the Bhutan Broadcasting Service Corporation is an example of _____ mode of communication

- a. Duplex
- b. Bi-directional
- c. Half duplex
- d. Simplex

45. A fixed line telephone is an example of a _____ mode communication

- a. Half duplex
- b. Multiplex
- c. Full duplex
- d. Simplex

46. IP, IPSec, ICMP are examples of protocols that work at _____ layer in the OSI model

- a. Application
- b. Transport
- c. Data Link
- d. Network

47. All of the following are examples of RDBMS **Except**

- a. Oracle
- b. MSSQL
- c. MySQL
- d. ArchView

48. Which of the following is not a Data Manipulation Language operation key word

- a. CREATE TABLE
- b. DELETE
- c. UPDATE
- d. SELECT

49. Normalization on a relational database has all the following advantages **EXCEPT**

- a. Minimize update anomaly
- b. Minimize deletion anomaly
- c. Minimize redesign when extending the database structure
- d. Minimize querying time

50. OLTP in the subject of Database stands for _____

- a. Order Line Time Period
- b. Online Transaction Processing
- c. Online Tweaking Processor
- d. None of the above

51. In the 3, 4, 7, 8, 11, 12, What should be the next number in the series?

- a. 7
- b. 10
- c. 13
- d. 15

52. The value of $\log_2 32$ is

- a. 1/8
- b. 16

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- c. 5
- d. 1024

53. A 240 m long train passes a pole in 24 seconds. How long will the same train take to pass a stadium which is 660 m long?

- a. 66 secs
- b. 100 secs
- c. 200 secs
- d. 90 secs

54. Sangay and Choki are working on an assignment. Sangay takes 6 hours to type 32 pages on a computer, while Choki takes 5 hours to type 40 pages. How much time will they take, working together on two different computers to type an assignment of 110 pages?

- a. 8 hours 15 minutes
- b. 7 hour 20 minutes
- c. 9 hours
- d. 6 hours 45 minutes

55. In how many different ways can the letters of the word 'POCKETS' be arranged so that the vowels always come together?

- a. 720
- b. 1440
- c. 2520
- d. 800

56. In a lucky draw, there are 10 **YES** and 25 **NO**. If a draw is made randomly, what is the probability of getting a **YES**?

- a. 1/10
- b. 2/5
- c. 5/7
- d. 2/7

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57. By selling 17 balls at Nu. 840, there is a loss equal to the cost price of 5 balls. The cost price of a ball is

- a. 78
- b. 108
- c. 70
- d. 72

58. Which amongst the following is not a prime number?

- a. 31
- b. 61
- c. 91
- d. 71

59. A 3 meters long and 2 meters wide boat floats in a lake. The boat sinks 2 centimeters when two men get on it. What is the total mass of the men? (Density of water is 1000Kg/m^3)

- a. 145 Kgs
- b. 60Kgs
- c. 120 Kgs
- d. 200 Kgs

60. _____ testing is a method of software testing that test the functionality of an application as opposed to its internal structures or logic

- a. Equivalence partitioning
- b. Black Box testing
- c. White box testing
- d. Boundary value testing

61. Which of the following is not a data structure?

- a. Arrays
- b. Stack
- c. Linked Lists
- d. Function

62. HTTP stands for

- a. Hyper Terminal Transmission Protocol
- b. Hypertext Transfer Protocol
- c. Hidden Type Text Processing
- d. None of the above

63. By default HTTPS runs on port

- a. 8080
- b. 80
- c. 443
- d. 110

64. Which of the following is a C language pre-processor directive

- a. Malloc()
- b. Sizeof()
- c. Char()
- d. #include<>

65. Gannt and PERT charts are

- a. Networking standards
- b. C programming keywords
- c. Project management tools
- d. Software development models

66. The website for Bhutan Government to Citizen Service Delivery System (Zhung Ley Meseer Zhabtog) is

- a. <http://www.citizenservices.gov.bt>
- b. <http://www.kuzuzangpo.com>
- c. <http://www.bhutan.gov.bt>
- d. <http://www.g2c.gov.bt>

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67. Lhamo tells her friends, Pelki (pelki@hotmail.com), Karma (karma2001@gmail.com) and Dechen (dechen@gmail.com), the date of her birthday party through an email as shown below. Which of the following statements is **NOT TRUE**?

| | |
|----------|-----------------------------------|
| TO: | pelki@hotmail.com |
| CC: | karma2001@gmail.com |
| BCC: | dechen@gmail.com |
| SUBJECT: | My Birthday party on Oct 2 |

Hi,
Call me if you can come.
Lhamo

- a. Pelki knows that the birthday party is held on Oct 2.
 - b. Pelki knows that Karma receives the email.
 - c. Karma knows that Dechen receives the email.
 - d. Dechen knows that Pelki and Karma receive the email.
68. Which of the following is not an access modifier in the Java programming language?
- a. Void
 - b. Public
 - c. Private
 - d. Protected

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69. Referring the following C code snippet, which of the following statements is **NOT TRUE**

```
switch( c )
{
    case 'A':
        capa++;
    case 'a':
        lettera++;
    default :
        total++;
}
```

- a. if c='A', the variables *capa*, *lettera* and *total* get incremented
- b. if c='a', the variables *lettera* and *total* get incremented
- c. if c='Z', the variable *total* gets incremented
- d. if c='A', only the variable *capa* gets incremented

70. What does the following C code snippet do?

```
int number = 5;
int *ptr = NULL;

ptr = &number;
```

- a. Checks if pointer variable *ptr* is equal to the value of the integer variable *number* or not
- b. Integer variable *number* is assigned the value NULL
- c. The integer pointer variable *ptr* is assigned a NULL value
- d. The integer pointer variable *ptr* points to the address of *number*

PART II : SHORT ANSWER QUESTIONS

Answer all questions. Each question carries THREE marks.

1. What is a web service? What does WSDL stand for in web service?
2. State 3 difference between LINUX OS and WINDOWS OS.
3. Explain agile software development method with an example of a method that uses agile processes.
4. What is a primary key? Can a primary key have a NULL value? Justify your answer.
5. State 3 differences between Blu-ray disc and DVD.
6. Compare and Contrast OSI model with TCP/IP model.
7. Convert the decimal 425 into equivalent values for the following number systems:
 - i) **binary**
 - ii) **hexadecimal**
 - iii) **octal**
8. What do you mean by inheritance in Java programming? Explain briefly with the help of an example.
9. State at least three differences between a router and a modem.
10. Write a pseudo code to generate Fibonacci series.