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རྒྱལ་གཞུང་ཞི་གཡོག་ལྷན་ཚོགས།

ROYAL GOVERNMENT OF BHUTAN
ROYAL CIVIL SERVICE COMMISSION

BHUTAN CIVIL SERVICE EXAMINATION 2013 MAIN EXAMINATION (OCTOBER 13, 2013)

EXAMINATION CATEGORY : TECHNICAL

PAPER II: GENERAL SUBJECT KNOWLEDGE for ICT GROUP

ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2013
EXAMINATION CATEGORY: TECHNICAL

PAPER II: GENERAL SUBJECT KNOWLEDGE for *ICT* GROUP

Date   : 13 October 2013
Total Marks   : 100
Examination Time   : 90 minutes (1.5 hours)
Reading Time   : 15 minutes (prior to examination time)

GENERAL INSTRUCTIONS

1. Write your Registration Number clearly and correctly in the Answer Booklet.

2. The first 15 minutes are to check the number of pages, printing errors, clarify doubts and to read the instructions in Question Paper. You are NOT permitted to write during this time.

3. This paper consists of **TWO Parts, namely Part I and 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 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 Booklet if required.

6. All answers should be written with correct numbering of Part, Section and Question Number in the Answer Booklet provided to you. Note that any answer written without indicating any or correct Part, Section and Question Number will NOT be evaluated and no marks would 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. You are required to hand over the Answer Booklet to the Invigilator before leaving the examination hall.

10. This paper has **14** printed pages in all, including this Instruction Page.

GOOD LUCK!

PART I : MULTIPLE CHOICE QUESTIONS

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

1. What destination port does telnet run?

    a. 23
    b. 80
    c. 25
    d. 1443

2. SATA interface of a hard disk stands for:

    a. Series Advanced Technology Attachment
    b. Small Advanced Technology Attachment
    c. Serial Advanced Technology Attachment
    d. Standard Advanced Technology Attachment

3. UPS stands for:

    a. Undisturbed Power Supply
    b. Uninterrupted Power Surge
    c. Uninterruptible Power Supply
    d. Undisturbed Power Surge

4. A CPU specification reads 4GHz. 4GHz is equivalent to how many kilohertz?

    a. 4,024,000
    b. 4,000,000
    c. 1,000,000
    d. 2,000,000

5. What does 'S' stands in internet protocol HTTPS?

    a. Site
    b. Socket
    c. Secure
    d. Service

6. Where is router placed in the OSI Model?
    a. Layer 3-Network
    b. Layer 4-Transport

      c. Layer 2-Data

      d. Layer 1-Physical

7. All of the following are C Programming keywords EXCEPT
   a. auto
   b. go
   c. goto
   d. while

8. The storage size (in bits) for a long double is:

   a. 64
   b. 84
   c. 74
   d. 80

9. Binary representation of 102_{10} is:

   a. 1100100
   b. 1100110
   c. 1110110
   d. 0110110

10. Attenuation is very high in twisted pair cable compared to that of an optical fiber. Attenuation means:
    a. Loss or decrease of signal power
    b. Suppressing light rays
    c. Data loss rate
    d. Slow data transfer

11. These switches have one or more interfaces such as a serial console or common line interface accessed via telnet to modify the operation of the switch- which type of switch is described here.

    a. Unmanaged switch
    b. Managed switch
    c. Circuit switch
    d. Packet switch

12. Media Access Control (MAC) address is a unique value associated with a network adapter. It is also known as physical address or hardware address. The length of the MAC address are:

    a. 24 bits
    b. 68 bits
    c. 48 bits
    d. 124 bits

13. The scheduling in which CPU is allocated to the process with least CPU-burst time is called:

    a. Priority Scheduling
    b. Shortest job first Scheduling
    c. Round Robin Scheduling
    d. Multilevel Queue Scheduling

14. Which of the following are language processors?

    a. Assembler
    b. Compiler
    c. Interpreter
    d. All of the above

15. A public encryption system:

    a. Allows only one decode the transmission
    b. Allows only the correct sender to decode the transmission
    c. Allows only the correct receiver to decode the transmission
    d. Does not encode the data before transmitting it.

16. A set of techniques that allow execution of a program which is not entirely in memory is called:

    a. Demand paging
    b. Virtual memory
    c. Auxiliary memory
    d. Physical memory

17. How many Flip-Flops are required for mod-16 counter?

    a. 4
    b. 3
    c. 5
    d. 6

18. The digital logic family which has the lowest power dissipation is:

    a. TTL
    b. CMOS
    c. RTL
    d. DTL

19. The output of a logic gate is 1 when all its inputs are at logic 0.The gate is either:

    a. a NAND or EX-OR
    b. an OR or an EX-NOR
    c. a NOR or an EX-NOR
    d. an AND or an EX-OR

20. The gates required to build a half adder are:

    a. EX-OR gate and NOR gate
    b. EX-OR gate and OR gate
    c. EX-OR gate and AND gate
    d. Four NAND gates

21. The device which changes from serial data to parallel data is:

    a. FLIP-FLOP
    b. COUNTER
    c. MULTPLEXER
    d. DEMULTIPLEXER

22. Words having 8-bits are stored into computer memory. The number of lines required for writing into memory are:

    a. 4
    b. 8
    c. 16
    d. 24

23. Which of the following cannot be accessed randomly:

    a. RAM
    b. ROM
    c. SRAM
    d. Magnetic tape

24. How many address bits are required to represent 4K memory?

    a. 4 bits
    b. 8 bits
    c. 12 bits
    d. 5 bits

25. When accessing a structure member, the identifier to the left of the dot operator is the name of :
    a. a structure member
    b. a structure tag
    c. a structure variable
    d. the key word *struct*

26. If you wanted to sort many large objects or structures it would be most efficient to:

    a. place pointers to them in an array and sort
    b. place them in an array and sort the array

    c. place them in a linked list and sort the linked list
    d. place references to them in an array and sort the array

27. What is the meaning of the following declaration?

    int(*ptr[5]) ();

    a. ptr is pointer to a function
    b. ptr is array of pointer to a function
    c. ptr is pointer to such function which return type is array.
    d. ptr is pointer to array of function.

28. What is the size of generic pointer in C?

    a. 0
    b. null
    c. 1
    d. 2

29. Which of the following is NOT TRUE about the *final* class in Java:

    a. *final* class cannot be extended
    b. *final* class cannot be overridden when the class in inherited
    c. *final* class variable cannot be changed
    d. *final* class cannot be mapped

30. Using the SQL GROUP BY phrase with a SELECT statement can help detect which of the following problems:

    a. the inconsistent values problems
    b. the multi value , multi column problem
    c. the general-purpose remarks column problem
    d. the missing value problem

31. Most of the time, modification anomalies are serious enough that tables should be normalized into :
    a. BCNF
    b. 3NF
    c. 2NF
    d. 1NF

32. Two students A and B appeared for the exam. The probability of selection of A is 1/7 and that of B is 2/9. The probability that both of them are selected is:

    a. 1/63
    b. 2/25
    c. 2/63
    d. 1/25

33. In a class, there are 15 boys and 10 girls. Three students are selected at random. The probability that 1 girl and 2 boys are selected, is:

    a. 21/46
    b. 3/25
    c. 1/150
    d. 25/118

34. In a class of 78 students 41 are taking Dzongkha, 22 are taking English. Of the students taking Dzongkha or English, 9 are taking both courses. How many students are not enrolled in either course?

    a. 6
    b. 15
    c. 24
    d. 33

35. Which of the following is a scalar quantity?

    a. pressure
    b. force
    c. velocity
    d. acceleration

36. Light year is a unit of :

    a. light
    b. time
    c. intensity of light
    d. distance

37. The most important feature of spiral model is:

    a. requirement analysis
    b. quality management
    c. risk management
    d. time management

38. CASE tool is:

    a. Computer Analysis Software Engineering
    b. Computer Aided Software Engineering
    c. Component Aided Software Engineering
    d. Constructive Aided Software Engineering

39. Which of the following network topologies require the least amount of cabling?

    a. Tree
    b. Ring
    c. Star
    d. Graph

40. Which of the following is NOT a level of data abstraction?

    a. Physical level
    b. External level
    c. Conceptual Level
    d. View Level

41. A shop sells two items: pens at Nu.5 each and pencils at Nu.4 each. If Dorji buys a total of 10 items for Nu.44, how many pens did he buy?

    a. 3
    b. 4
    c. 5
    d. 6

42. Initially, the men and women in a room were in the ratio 4 : 3. Five women leave the room. If there are 28 men in the room, how many women are left in the room?

    a. 16
    b. 17
    c. 18
    d. 19

43. The price of an object increased by 25% and becomes Nu. 100. What was the original price?
    a. Nu. 70
    b. Nu. 75
    c. Nu. 80
    d. Nu. 85

44. Numeric difference between the perimeter and area of a square is 4. What could be the side of the square?
    a. 1
    b. 2
    c. 3
    d. 4

45. A bus travels between city 'A' and 'B', a distance of 50 miles, at a speed of 40 mph while going and 60 mph while returning via the same route. What would be the average speed of the bus for the entire journey?

    a. 48 mph
    b. 49 mph
    c. 50 mph
    d. 51 mph

46. In how many ways can 6 people (A, B, C, D, E and F) be seated in a circle so that A and B are always together?

    a. 24
    b. 48
    c. 120
    d. 240

47. Which of the following sets has the greatest standard deviation?

    a. {-8, -6, -4, -2}
    b. {12, 13, 14, 15}
    c. {1, 4, 7, 10}
    d. {20, 30, 40, 50}

48. The probability that a randomly picked number from the set {1, 2, 3, 4, 5, 6} is NOT a multiple of 3, is:
    a. 1/3
    b. 1/4
    c. 1/2
    d. 2/3

49. An unbiased die is rolled twice. The probability of getting an even number in the first roll and an odd number in the second roll is:

    a. 0.20
    b. 0.25
    c. 0.45
    d. 0.50

50. At how many points does the curve: $y = x^2$ intersect the line: $y = x$?

    a. 0
    b. 1
    c. 2
    d. 3

51. The simple parallel circuit represents the following operator:

    a. NOT
    b. AND
    c. OR
    d. NOR

52. A malware that makes victims send data by pretending to be from a genuine source is called:

    a. phishing
    b. worm
    c. key logger
    d. trojan

53. Restarting a device through software command is usually know as:

    a. Cold booting
    b. Warm booting
    c. Default booting
    d. Internal booting

54. A modern Personal Computer's (PC) CPU is typically of the following speed:

    a. 100 to 1000 KHz
    b. 100 to 500 MHz
    c. 500 to 1000 MHz
    d. 1 to 10 GHz

55. Information on where different data are stored on the disks are found in:

    a. The Operating System (OS)
    b. File Allocation Table (FAT)
    c. Basic Input-Output System (BIOS)
    d. Dynamic Data Exchange (DDE)

56. RAM can be upgraded by inserting or replacing SIMMs. SIMM which stand for:

    a. Single Inline Memory Module
    b. Simple Index Memory Management
    c. Standard Inline Modulated Memory
    d. Singular Incremental Managed Memory

57. Which of the following is a list comprising of input devices only?

    a. Touch-screen, mouse, keyboard, scanner, speaker
    b. Joystick, stylus, microphone, scanner, trackball
    c. Keyboard, light-pen, printer, mouse, screen
    d. Microphone, video camera, scanner, projector, mouse

58. USB is slowly becoming the standard for connection of devices. USB stands for:

    a. Uniform System Bridge
    b. Universal Serial Binding
    c. United Standard Bus
    d. Universal Serial Bus

59. Data are stored inside a CD-ROM in the following form:
    a. charged capacitors
    b. photo-sensitive surface
    c. magnetic particles
    d. transistors

60. Which of the following routing supports variable length subnet mask, VLSM?
    a. Classful routing
    b. RIP version 1.0 routing
    c. Classless inter domain routing
    d. Exterior gateway routing protocols

61. According to the code: *double value = -200.54; double absvalue; absvalue = fabs (value);* The value of variable *absvalue* is :

    a. 200
    b. -200
    c. 201
    d. 200.54

62. Which of the following is NOT a part of the routing table?

    a. Routing updates
    b. Network numbers
    c. Static routes
    d. Gateway of last resort

63. Which of the following is NOT used to measure performance of software?

    a. Processing speed
    b. Resource consumption
    c. Compatibility
    d. Efficiency

64. DFDs are generally used in system analysis and design for which of the following:

    a. Logic modeling
    b. Process modeling
    c. Data modeling
    d. Functional modeling

65. Which of the following is NOT included in the schedule of a software project plan?

    a. Project work breakdown structure
    b. Management reporting
    c. Task network
    d. Timeline chart (Gantt chart)

66. Which of the following takes care of the contingency plans while handling project risks:

    a. Risk table
    b. Risk mitigation
    c. Risk monitoring
    d. Risk management

67. Which of the following may NOT be introduced in a lower level DFD that was not present at a higher level DFD:

    a. Process
    b. Data store
    c. Internal process data flow
    d. External entity

68. Which of the following supply chain characteristics discourage *Reverse Auctions* in B2B?

    a. Suppliers are highly competitive
    b. Product features can be easily specified
    c. Product has customized features
    d. Suppliers are willing to reduce profit margins

69. Keeping track of multiple web sites in use by an electronic commerce project is the responsibility of:

    a. Project manager
    b. Account manager
    c. Content manager
    d. Systems administrator

70. Which of the following is NOT a basic function of electronic commerce software?

    a. Catalog display
    b. Shopping cart capability
    c. Application integration
    d. Transaction processing

PART II : SHORT ANSWER QUESTIONS

Write short answers corresponding to the questions in the Answer Booklet against the question number. Each question carries total of THREE marks.

1. In a physical wiring that carry signals such as 100BASE-T4,100BASE-TX and 100BASE-FX ,explain what does "100","BASE" and "T4-TX-FX" mean.

2. Non-pre-emptive algorithm is one category of CPU scheduling algorithm. List down three types of non-pre-emptive algorithm.

3. In which clauses of SELECT statement can you include a sub query? Name any three.

4. List down the three types of system testing and specify who does the testing?

5.   An electric motor on a carpet sweeper is rated at 250 V, 150 W. Compute the following:

(1x3=3 marks)

   i.   How much current does it take?
   ii.   What is its resistance?
   iii.   How much does it cost to run it for 7 days for an average of 2 hours each day? (1 kWh costs 50 Chhetrums)

6.   What is the argument type of a program's *main ( )* method in Java? Which Java operator is right associative? Can a double value be cast to a byte?

7.   Find the mean, median and mode for the following data.

(Data Value) x	(Frequency) F
1	6
2	4
5	8
6	10
9	3
12	1

8.   What kinds of problems would determine whether to use Structured English, Decision Table or Decision Tree while logic modeling. State examples.

9.   What is the function of Operating System of a digital device? Name two digital devices and their operating systems.

10.   What do you understand by the term social engineering? State two examples of how social engineering is currently being deployed.