ROYAL CIVIL SERVICE COMMISSION

Civil Service Common Examination for Technical Graduates

Paper II: General Subject Knowledge – IT

19 December 2008

<u>**Instructions:**</u>

1. The writing time for this paper is **ONE AND HALF HOURS**

2. The paper is divided into two parts: Part I and Part II. All questions in both the parts are **COMPULSORY**

3. Correct Answers to all questions in Part I will be awarded equal marks of **ONE (1)** each.

4. Correct and complete answers to all questions in Part II will be awarded equal marks of **THREE (3)** each.

5. Please write all your answers in the answer sheets provided. Answers on the question paper will not be considered.

6. **This paper has <u>10</u> pages. Check that you have the complete set.**

Part I

1. What are the five main components of a computer system?

   (a) CPU, CD-rom, mouse, keyboard, sound card
   (b) Memory, Video Card, Monitor, Software, Hardware.
   (c) Modem, Keyboard, Word Processor, Printer, Screen.
   (d) CPU, memory, system bus, input, output

2. The most common output devices are _____.

   (a) a mouse and a keyboard
   (b) a keyboard and a screen
   (c) a printer and a monitor
   (d) a plotter and keyboard

3. In the equation $2x + 3 = 4$, solve for x.
   (a) 4   (b) 10   (c) 0.5   (d) 1.5

4. Database Management Systems (DBMS) are made up of tables that are made up of rows called _____ and columns called _____.

   (a) fields, records
   (b) records, fields
   (c) addresses, fields
   (d) ranges, sheets

5. Software used to interact between user programs and the computer is called _____.

   (a) application software   (b) system software
   (c) custom made software   (d) operation software

6. In one year, the population of Thimphu City increased by 20%. The next year, it decreased by 10%. What is the percentage increase in the population over the two years?

   (a) 8%   (b) 10%   (c) 15%   (d) 30%

7. In the area of physical science, which one of the following definitions describes the term "polarization"?

   (a) The separation of electric charges by friction.
   (b) The ionization of atoms by high temperatures.
   (c) The interference of sound waves in a closed chamber.
   (d) The vibration of transverse waves in a single plane.

8. What is the effect of releasing a ball in positive gravity?

(a) It will fall down.
(b) It will retain its mass.
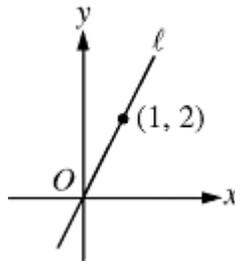(c) It will rise.
(d) Its shape will change.

9. A special lottery is to be held to select the student who will live in the only deluxe room in a dormitory. There are 100 seniors, 150 juniors, and 200 sophomores who applied. Each senior's name is placed in the lottery 3 times; each junior's name, 2 times; and each sophomore's name, 1 time. What is the probability that a senior's name will be chosen?

(a) 1/8   (b) 2/9   (c) 2/7   (d) 3/8

10. The projected sales volume of a video game cartridge is given by the function $s(p) = \dfrac{3000}{2p + a}$, where s is the number of cartridges sold, in thousands; p is the price per cartridge, in Ngultrum; and a is a constant. If according to the projections, 100,000 cartridges are sold at Nu. 10 per cartridge, how many cartridges will be sold at Nu. 20 per cartridge?
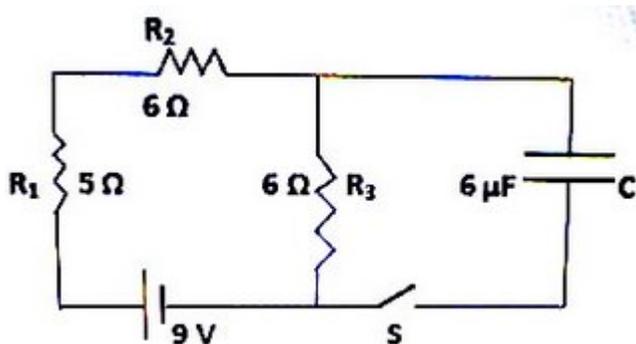
(a) 20,000   (b) 50,000   (c) 60,000   (d) 150,000

11. In the xy-coordinate plane above, line ℓ contains the points (0,0) and (1,2). If line m (not shown) contains the point (0,0) and is perpendicular to ℓ, what is an equation of m?

(a) $y = -\dfrac{1}{2}x$ (b) $y = -\dfrac{1}{2}x + 1$ (c) $y = -x$ (d) $y = -x + 2$

12. The switch S has been closed for a long time and the capacitor C has been fully charged. If the voltage across the capacitor is found to be 3 V, what is the current flowing through the resistor R1?

(a) Zero   (b) 0.2 A   (c) 0.5 A   (d) 0.6 A

13. The value of the binary number 1101 in decimal system is:
    (a) 14   (b) 16   (c) 13   (d) 17

14. The acceleration due to gravity on the Earth is 10 m/s2. What is the acceleration due to gravity on a planet whose mass and radius are 6 times that of the Earth?

    (a) 1.67 m/s^2. (b) 1.82 m/s^2. (c) 1.56 m/s^2. (d) 1.71 m/s^2.

15. A hardware device that stores data and programs, executes program instructions, and performs arithmetic/logic operations is known as the:

    (a) CPU (central processing unit)
    (b) Integrated circuits
    (c) Main storage
    (d) Memory.

16. Wangchuk saves Nu.2 in January, Nu.6 in February, Nu.18 in March and so on. The total savings in one year is:

    (a) Nu.32320 (b) Nu.83490 (c) Nu.531440 (d) Nu.642240

17. What type of computer is the largest, fastest, and most expensive in existence?

    (a) Laptop
    (b) Mainframe
    (c) Special purpose
    (d) Supercomputers

18. The H.C.F of two numbers is 15 and their L.C.M is 180. If one the numbers is 45, the other number is:
    (a) 50   (b) 60   (c) 70   (d) 80

19. What is the main purpose for an external storage device?

(a) To print hard copies in readable form
(b) To save time while working on the computer
(c) To store programs and data until they are needed
(d) To sort information for later use

20. In a school, there are fifteen boys at the age of 12 years, sixteen at 15 and eighteen at 14. The average age of the boys is:
    (a) 16 yrs (b) 15 yrs (c) 13 yrs (d) 14 yrs (e) None of these

21. 270 candidates appeared for an examination, of which 252 passed. The percentage is:
    (a) 80% (b) 83.5% (c) 90$1/3$% (d) 93$1/3$%

22. The value of decimal number 23 in binary is:
    (a) 11101　　　　　(b) 01101　　(c) 10110　　　　　(d) 11101

23. Two persons Wangmo and Dema start running a certain distance at 8 and 10 km per hour respectively. Dema reaches the destination 6 minutes earlier. The distance is:
    (a) 7 km　　(b) 6 km　　(c) 5 Km　　(d) 4 km

24. What is the value of x if $7x + 3 = 10$
    (a) 5　　　　(b) 4
    (c) 7　　　　(d) 1

Study the table given below and answer the questions through 25 to 29.
A school has four sections A, B, C, and D of class XII students. The results of half-yearly and annual examinations are shown in the table given below.

Result	Number of Students			
	Section A	Section B	Section C	Section D
Students failed in both exams	28	23	17	27
Students failed in half-yearly but passed in Annual exams	14	12	8	13
Students passed in half-yearly but failed in Annual exams	6	17	9	15
Students passed in both exams	64	55	46	76

25. How many students are there in Class XII in the school?
    (a) 336　　(b) 189　　(c) 335　　(d) 286　　(e) 430

26. Which section has the minimum failures rate in half-yearly examination?
    (a) A　　　(b) B　　　(c) C　　　(d) D
    (e) cannot be determined

27. Which section has the maximum success rate in annual examinations?
    (a) A　　　(b) B　　　(c) C　　　(d) D
    (e) cannot be determined

28. Which section has the maximum pass percentage in at least one of the two examinations?
    (a) A　　　(b) B　　　(c) C　　　(d) D　　　(e) cannot be determined

29. If the number of students passing an examination be considered a criteria for comparison of difficulty level of two examinations, which of the following statements is true in this context?
    (a)　Half-yearly examinations were more difficult
    (b)　Annual examinations were more difficult
    (c)　Both the examinations had almost the same difficulty level
    (d)　The two examinations cannot be compared for difficulty level
    (e)　For students of Section A and B, the annual examinations seem to be more difficult as compared to the half-yearly examinations

30. The difference between 8 times a number and 3 times the number is 165. Then the number is:
    (a) 32　　　(b) 33　　　(c) 34　　　(d) 38

31. The angle of elevation of the sun, when the length of the shadow of a tree is √3 times the height of the tree is:
    (a) 30 degrees   (b) 45 degrees   (c) 60 degrees   (d) 90 degrees

32. From a point P on a level ground, the angle of elevation of the top of a tower is 30 degrees. If the tower is 100 m high, the distance of point P from the foot of the tower is:
    (a) 149 m   (b) 156 m   (c) 173 m   (d) 200 m

33. How many classes of IP addresses are there?
    (a) 3   (b) 6   (c) 5   (d) 8   (e) 10

34. In a single throw of a die, what is the probability of getting a number greater than 4?
    (a) 1/2   (b) 1/3   (c) 2/3   (d) 3/4

35. Three parallel lines in a plane are intersected by a fourth line, forming twelve angles. If one of the angles has measure 28°, how many of the other eleven angles have measure 28°?

    (a) 3   (b) 6   (c) 5   (d) 8

36. _____is a software program that secretly collects information and monitors your actions without your knowledge.

    a) Adware   (b) Freeware   (c) Spyware   (d) Investigative-ware

37. (A ∩ B)' is equal to:
    (a) A ∩ B   (b) A' ∩ B   (c) A ∩ B'   (d) A' ∩ B' (c) None of these

38. Platinum is costlier than silver because it is:
    (a) Rarely found   (b) whiter than silver   (c) more in demand
    (d) Lighter than silver

39. Electricians wear rubber sole shoes because:
    (a) they keep their feet warm
    (b) they are bad conductors of electricity
    (c) they are cheaper than other shoes
    (d) it is fashionable for them to do so

40. A teacher could most effectively support at-home reading by:
    (a) Sending parents a regular newsletter describing classroom reading activities.
    (b) Sharing with parents important articles from professional reading journals.
    (c) Recommending books that parents would likely enjoy reading aloud to their children.
    (d) providing parents with periodic reports on their children's progress in reading.

41. _____ identifies a user's personal preferences and settings and allows the web site's server to retrieve your informations from its database.
    (a) Cookie   (b) file   (c) prototype   (d) Profile

42. If HEAT is encoded as GDZS then ZEAL is encoded as:

(a) YEAK   (b) ZKDY   (c) YFZK   (d) YDZK

43. If WOOD is encoded as VNNC, then MEET is encoded as:

(a) SEEZ   (b) BCCH   (c) LDDS   (d) LBBF

The series of letters given, through questions 44 to 45, follow a definite pattern. Study each series and supply the missing letter (?) from among the alternatives given

44. C   B   A   E   D   Z   G   F   ?

(a) X   (b) H   (c) Q   (d) Y   (e) None of these

45. W   T   P   M   I   ?

(a) G   (b) H   (c) F   (d) L   (e) N

46. The sum of three consecutive odd numbers is 38 more than the average of these numbers. What is the first of these numbers?
(a) 13   (b) 17   (c) 19   (d) Data inadequate   (e) none of these

47. The average of all odd numbers up to 100 is:
(a) 49   (b) 49.5   (c) 50   (d) 51

48. If the price of 6 toys is Nu.264.37, what will be the approximate price of 5 toys?
(a) Nu.140   (b) Nu.100   (c) Nu.200   (d) Nu.220   (e) Nu.240

49. A cistern 6 m long and 4 m wide contains water up to a depth of 1m 25 cm. The total area of the wet surface is:
(a) 49 sq.m   (b) 50 sq.m   (c) 53.5 sq.m   (d) 55 sq.m

50. The Internet began as an experimental network called:
(a) Intranet   (b) ARPANET   (c) ARPA   (d) Department of Defence

In the following questions through 51 to 55, five words have been given of which one is different and the others are alike in some way or the other. You have to choose the ODD one out

51. (a) School   (b) garden   (c) books   (d) library   (e) playground

52. (a) Iron   (b) Silver   (c) Copper   (d) Gold   (e) Wood

53. (a) Wall   (b) Roof   (c) Floor   (d) Monday   (e) Window

54. (a) Mercury   (b) Moon   (c) Venus   (d) Jupiter   (e) Saturn

55. (a) Donkey   (b) Mare   (c) Camel   (d) Yak   (e) Fox

In each of questions through 56 to 60 find the missing number (?) from the four alternatives given

56. 1, 4, 9, 16, 25, 36, ?

    (a) 49   (b) 38   (c) 50   (d) 67

57. 336, 210, 120, 60, ?, 6

    (a) 26   (b) 24   (c) 21   (d) 18

58. 18, 10, 6, 4, ?

    (a) 9   (b) 10   (c) 3   (d) 4

59. 2, 5, 11, 23, 47, ?

    (a) 49   (b) 95   (c) 90   (d) 106

60. 64, 8, 49, 36, 6, 25, ?

    (a) 20   (b) 18   (c) 5   (d) 21

Establish the relationship between the two words in questions through 61 to 64

61. Ladies is to purse as Gents is to _____
    (a) Bag   (b) Pocket   (c) Suitcase   (d) Wallet

62. Parrot is to birds as Lizard is to _____

    (a) Poison   (b) Reptiles   (c) Mammals (d) Cattle

63. Circle is to Circumference as Square is to _____

    (a) Volume   (b) Pressure   (c) Perimeter   (d) Area

64. The Koran is to Muslims as the Gita is to _____

    (a) Christians   (b) Parsis   (c) Sikhs   (d) Hindus

Each question through 65 to 66 contains six statements followed by four sets of combination of three. Choose the set in which the statements are logically related

65. a. All young people are happy
    b. No young people achieve great ends
    c. Some young people are happy
    d. All who achieve great ends are happy
    e. No young people are happy
    f. All young people achieve great ends

(a) bde   (b) dfa   (c). cbf   (d). ceb

66. a. Some women are of artistic genius
    b. Some men are men of scientific ability
    c. Some women of artistic genius are women of scientific ability
    d. Some women are women of scientific ability
    e. Some men of artistic genius are men of scientific ability
    f. Some men are of artistic genius

    (a). bfe   (b) bfa   (c) eac   (d) fdc

67. The average of a non-zero number and its square is 5 times the number. The number is:
    (a) 9   (b) 17   (c) 29   (d) 295

68. When a body is charged by induction, then the charging body
    (a) becomes neutral   (b) does not loose any charge
    (c) looses whole of its charge
    (d) looses part of its charge

69. The average of 7 consecutive numbers is 20. The largest of these numbers is:
    (a) 20   (b) 22   (c) 23   (d) 24

70. The average of five consecutive odd numbers is 61. What is the difference between the highest
    and lowest numbers?
    (a) 2   (b) 5   (c) 8   (d) cannot be determined   (e) None of these

Part II

Short answer ICT questions

(Marks 10 x 3)

Answer briefly the following question 1 through 10

1. What is the difference between E-business and E-commerce?

2. What is the difference between Internet and Intranet?

3. What is the difference between Data mining and computational statistics?

4. Assume you are a System Analyst hired by an organization to study the current existing system and that you had been asked to improve the system. Explain briefly what are the steps and processes that you would take to analyze the system.

5. Write a simple program in C/C++ to calculate the area of a Circle.

6. Briefly elucidate the importance of a Local Area Network (LAN).

7. What are the main environmental factors that will degrade WIRELESS communications?

8. We've all heard of hackers. Many of us have even suffered the consequences of hacker actions. So who are these hackers? Why is it important to know about them?

9. What is the distinction between DATA and INFORMATION?

10. What would be the output **Q** of the logical circuit given in the figure below