RAMAKRISHNA MISSION VIDYAMANDIRA

Belur Math, Howrah – 711 202

ADMISSION TEST – 2014

COMPUTER SCIENCE (Honours)

Date : 23-06-2014 **Full Marks : 50** Time : 12.30 p.m. – 01.30 p.m.

Instructions for the candidate

Answer all questions by selecting the correct choice. Each wrong answer will deduct (−1) from the resulted score. Calculator is not allowed. No additional page will be provided for rough work.

Candidates have to select the correct choice by black/blue ball pen only in OMR to be provided during the written test. Marking should be dark and should completely fill one blank box against corresponding question number. Incomplete filling or multiple filling of boxes will reject the answer to that question. Once an answer is marked in OMR, there is no scope to alter the choice. Doing rough work or using erasers, blades, whiteners etc. on the OMR is strictly prohibited.

1. If $a^2 + b^2 = 2$ and $c^2 + d^2 = 1$, then the value of $(ad-bc)^2 + (ac+bd)^2$ is
   a) 4/9   b) ½   c) 1   d) 2

2. The expression $x^2-y^2+x+y-z^2+2yz-z$ has one factor which is
   a) x+y-z+1   b) x-y-z+1   c) x-y +z+1   d) y-x+z

3. A sphere has a diameter $50\sqrt{3}$ cm. The surface area of the largest possible cube that would fit in the sphere is
   a) 15000 cm^2 b) 12000 cm^2 c) 16000cm^2 d) 18000 cm^2

4. 'Buy three, get one free'. What is the percentage of discount being offered here?
   a) 25%   b) 20%   c) 28.56%   d) 33.33%

5. A dice is thrown. What is the probability that the number showing on the dice is a prime number?
   a) 2/3   b) 1/3   c) 4/5   d) ½

6. A function f(x) is defined as:
   f(x) = x   when x>0
        = 0   when x=0
        = -x   when x<0
   a) 1   b) 0   c) ∞   d) None of these

7. Find the point of discontinuity of the function:
   $$\frac{x^2+2x+5}{x^2-8x+12}$$
   a) 6   b) 2   c) 4   d) 3

8. When the number 3^{98} is divided by 5, the remainder is
   a) 5   b) 3   c) 4   d) 1

9. A shopkeeper claims to sell all of his articles at discount of 10%; but marks his articles by increasing the cost price of each article by 20%. His gain on each article is
   a) 6%   b) 8%   c) 10%   d) 12%

10. Bineet drove from home to another city at the speed of 50km/hr. and on his returning journey; he drove at a speed of 45km/hr and also took an hour longer to reach home. What is the distance between the home and the city?

    a) 450 km   b) 225 km   c) 900 km   d) 500 km

11. In an examination a candidate has to pass in each of the 6 subjects. In how many ways can he fail?

    a) 6   b) 6^6 c) 36   d) 63

12. How many natural numbers (starting from 1) must be taken to give 703 as the sum?

    a) 31   b) 37   c) 26   d) 43

13. In how many ways can 10 books on mathematics and 8 books of physics be placed in a row on a shelf so that two books on physics may not be together?

    a) $^{10}C_8$ b) $^{9}C_2$ c) $^{11}C_8$ d) $^{11}C_9$

14. Three friends divided some bullets equally. After all of them shot 4 bullets the total number of bullets remaining is equal to the bullets each had after division. Find the original number divided?

    a) 18   b) 21   c) 54   d) 27

15. Five racing drivers, Alan, Bob, Chris, Don, and Eugene, enter into a contest that consists of 6 races. The results of all six races are listed below: Bob always finishes ahead of Chris. Alan finishes either first or last. Eugene finishes either first or last. There are no ties in any race. Every driver finishes each race. In each race, two points are awarded for a fifth place finish, four points for fourth, six points for third, eight points for second, and ten points for first. If Frank enters the third race and finishes behind Chris and Don, which of the following must be true of that race?

    a) Eugene finishes first   b) Alan finishes sixth

    c) Don finishes second   d) Frank finishes fifth

16. A three digit number consists of 9, 5 and one more number. When these digits are reversed and then subtracted from the original number the answer yielded will be consisting of the same digits arranged yet in a different order. What is the other digit?

    a) 1   b) 2   c) 3   d) 4

17. If the radius of a circle is diminished by 10%, then its area is diminished by:

    a) 10%   b) 19%   c) 20%   d) 36%

18. $a / b = c$; $c > d$ then

    a) a is always greater than d   b) c is always greater than d

    c) b is always less than d   d) None

19. If every alternative letter starting from B of the English alphabet is written in small letter, rest all are written in capital letters, how the month "September" be written.

    a) SeptEMbEr   b) SEpTeMBEr   c) SepteMber   d) None of these

20. If the value of x lies between 0 & 1 which of the following is the largest?

    a) x   b) x^2 c) $-x$ d) $1/x$

21. A clock is set right at 8 a.m. The clock gains 10 minutes in 24 hours. What will be the true time when the clock indicates 1 p.m. on the following day?

    a) 48 min. past 12   b) 38 min. past 12   c) 28 min. past 12   d) 25 min. past 12

22. The average age of a couple is 25 years. The average age of the family just after the birth of the first child was 18 years. The average of the family just after the second child was born was 15 years. The average age of the family after the third and fourth children (Who are twins) were born was 12 years. If the present average age of the family of six persons is 16 years, how old is the eldest child?

    a) 6 years   b) 7 years   c) 8 years   d) 9 years

23. A fish tank contains a number of fish, including 5 Fantails. If two fish were selected from the tank at random , what is the probability that both will be Fantails?

1. The probability that the first fish chosen will be a Fantail is ½.

2. The probability that second fish chosen will be a Fantail is 4/9.

a) Statement 1 is ALONE sufficient , but Statement 2 ALONE is not sufficient

b) Statement 1 is ALONE sufficient , but Statement 2 ALONE is not sufficient

c) BOTH statements TOGETHER are sufficient but NEITHER statement alone is sufficient

d) EACH statement ALONE is sufficient

24. Out of all the 2-digit integers between 1 and 100, a 2-digit number has to be selected at random. What is the probability that the selected number is not divisible by 7?

a) 13/90   b) 12/90   c) 78/90   d) 77/90

25. The current erection cost of a structure is Rs. 13,200. If the labour wages per day increase by 1/5 of the current wages and the working hours decrease by 1/24 of the current period, then the new cost of erection in Rs. is

a) 16,500   b) 15,180   c) 11,000   d) 10,120

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FOR ROUGH WORK