

# RAMAKRISHNA MISSION VIDYAMANDIRA

Belur Math, Howrah – 711 202

ADMISSION TEST – 2016

COMPUTER SCIENCE (Honours)

Date : 15-06-2016

Full Marks : 50

Time: 02:00 p.m – 3:00 pm

## Instructions for the candidate

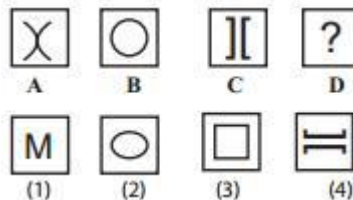
Answer all the questions given below. Tick (✓) the correct option. Each correct answer carries 2 marks. For every wrong answer 1 mark will be deducted. Calculator is not allowed. No additional page will be provided for rough work.

Name of the student : \_\_\_\_\_

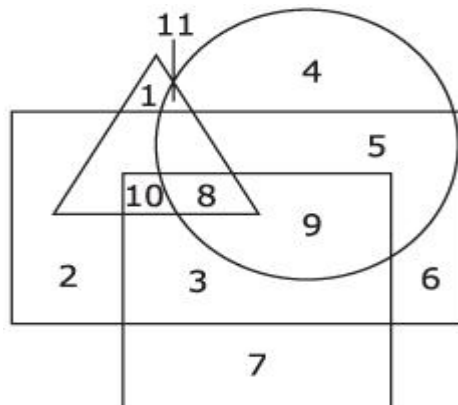
Application No. : \_\_\_\_\_

Signature of the invigilator : \_\_\_\_\_

1. There is some relationship between diagrams A & B. The same relationship persists between C & D. Find the right diagrams for D from the alternatives.



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



- The question is based on the figure given above in which (1) Rectangle represents Males, (2) Circle represents the urbans (3) Square represents the educated and (4) Triangle represents the civil servants. The number indicating the educated civil servants who are males but not urbans is
- a) 7                                      b) 8                                      c) 9                                      d) 10
3. There are five books A, B, C, D and E placed on a table. If A is placed below E, C is placed above D, B is placed below A and D is placed above E, then which of the following books touches the surface of the table?
- a) C                                      b) B                                      c) A                                      d) E
4. Pointing towards a person, a man said to a woman, “His mother is the only daughter of your father.” How is the woman related to that person?
- a) Sister                                      b) Daughter                                      c) Mother                                      d) Wife
5. If DIAMOND is coded as VQYMKLV, how is FEMALE coded?
- a) TVNYNV                                      b) UVNZOV                                      c) TUMZOU                                      d) TUMYNU

6. A, CD, GHI, ?, UVWXY  
 a) LMNO                                      b) LMON                                      c) MNOP                                      d) NOPQ

7. Find the missing letter in the following puzzle.

F	I	O
A	J	K
E	M	?

- a) R                                      b) B                                      c) P                                      d) T

8. Replace the question mark with correct time.



- a) 5:24                                      b) 8:35                                      c) 6:06                                      d) 4:34

9. Suppose  $n$  is an integer such that the sum of digits on  $n$  is 2, and  $10^{10} < n < 10^{11}$ . The number of different values of  $n$  is

- a) 11                                      b) 10                                      c) 9                                      d) 8

10. If there are 10 positive real numbers  $n_1 < n_2 < n_3 < \dots < n_{10}$ , How many triplets of these numbers  $(n_1, n_2, n_3), (n_2, n_3, n_4), \dots$  can be generated such that in each triplet the first number is always less than the second number, and the second number is always less than the third number?

- a) 45                                      b) 90                                      c) 120                                      d) 180

11. The remainder, when  $(15^{23} + 23^{23})$  is divided by 19 is

- a) 4                                      b) 15                                      c) 0                                      d) 18

12. If the sum of the first 11 terms of an arithmetic progression equals that of the first 19 terms, then what is the sum of the first 30 terms?

- a) 0                                      b) -1                                      c) 1                                      d) not unique

13. Let us express date in the DDMMYYYY, where DD represents day of the month, MM represents the month and YYYY represents the year. If the last possible date in the 20<sup>th</sup> century, with all the eight digits (in the date as expressed in the above format), being odd is a Sunday, then what day of the week will the first date of the 21<sup>st</sup> century be with all the eight digits being even?

- a) Monday                                      b) Saturday                                      c) Friday                                      d) Tuesday

14. The probability that a man will live 10 more years is  $\frac{1}{4}$  and the probability that his wife will live 10 more years is  $\frac{1}{3}$ . Then the probability that neither will be alive in 10 years is

- a)  $\frac{5}{12}$                                       b)  $\frac{7}{12}$                                       c)  $\frac{1}{2}$                                       d)  $\frac{11}{12}$

15. If  $f(x,y)=|x+y|$  and  $g(x,y)=|x-y|$ , how many ordered pairs of the form  $(x,y)$  would satisfy  $f(x,y)=g(x,y)$ ?

- a) 1                                      b) 2                                      c) 4                                      d) Infinitely many

16. A function  $f(x)$  is defined as follows :

$$\begin{aligned} f(x) &= x \text{ when } x > 0 \\ &= 0 \text{ when } x = 0 \\ &= -x \text{ when } x < 0 \end{aligned}$$

Find the value of  $\lim_{x \rightarrow 0} f(x)$ .

- a) 1                                      b) -1                                      c)  $\infty$                                       d) 0

17. Find the value of  $\lim_{x \rightarrow 0} \frac{\sin x^\circ}{x}$ .
- a)  $\pi$                       b)  $\frac{\pi}{180}$                       c)  $\frac{\pi}{90}$                       d) none of these
18. Evaluate :  $\lim_{x \rightarrow 0} \frac{1}{2 + e^{1/x}}$ .
- a) 0                      b) limit does not exist                      c) 1                      d)  $\infty$
19. Find  $\frac{dy}{dx}$  for  $x^p y^q = (x + y)^{p+q}$ .
- a)  $\frac{y}{x}$                       b)  $\frac{x}{y}$                       c) 1                      d) none of these
20. Evaluate  $\int \frac{x + \sin x}{1 + \cos x} dx$ .
- a)  $\tan x$                       b)  $\tan \frac{1}{2} x$                       c)  $x \tan \frac{1}{2} x$                       d)  $x \tan x$
21. Evaluate :  $\int_0^\pi x \sin x \cos^2 x dx$
- a)  $\frac{\pi}{3}$                       b)  $\frac{\pi}{2}$                       c)  $\pi$                       d)  $\sin \frac{\pi}{2}$
22. Let  $A = \{1, 2, 5, 8, 11\}$ . Which of the following does not hold?
- a)  $\{5, 1\} \subseteq A$                       b)  $\{8, 1\} \in A$                       c)  $\phi \subseteq A$                       d)  $\{1, 6\} \not\subseteq A$
23. Suppose that an urn contains 15 balls, of which eight are red and seven are black. In how many ways can five balls be chosen so that at least two are red?
- a) 1127                      b) 2702                      c) 2602                      d) 1126
24. Five coins are tossed and their results are recorded. How many different sequences of heads and tails are possible?
- a) 24                      b) 16                      c) 32                      d) 64
25. There are four candidates for president : A, B, C and D. Suppose that A is twice likely to be elected as B, B is thrice likely to be elected as C, and C and D are equally likely to be elected. What is the probability of being elected for each candidate?
- a)  $\frac{6}{11}, \frac{3}{11}, \frac{2}{11}, \frac{2}{11}$                       b)  $\frac{2}{11}, \frac{6}{11}, \frac{3}{11}, \frac{3}{11}$                       c)  $\frac{2}{11}, \frac{3}{11}, \frac{6}{11}, \frac{6}{11}$                       d)  $\frac{6}{11}, \frac{3}{11}, \frac{1}{11}, \frac{1}{11}$

**FOR ROUGH WORK**

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