



ST. ANTHONY'S COLLEGE, SHILLONG

ENTRANCE TEST FOR ADMISSION TO MASTER OF COMPUTER APPLICATIONS (MCA) 2009

DATE : **17 JUNE 2009**
TIME : **1:00 – 3:00 PM**
DURATION : **2 HOURS**

OFFICE USE ONLY

Marks obtained in Module I

Marks obtained in Module II

Marks obtained in Module III/IV

Admit Card No.

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MODULE-I: Logical Reasoning

*(This module has 40 questions, carrying a total of 40 marks. This module has **NEGATIVE MARKING**. 0.25 marks will be deducted for every wrong answer)*

- 1) If the first and second letters of the English alphabet interchange their positions, also the third and fourth, fifth and sixth, and so on, which of the following letter will be the 17th letter from your right?
- a) F
 - b) I
 - c) D
 - d) E
- 2) If Z is written in place for B, X is written for A, W for D, U for C, T for F and son on, then how will BIGFACE be written?
- a) ZMOSXUR
 - b) ZLPTXUS
 - c) ZLOTXYR
 - d) ZLOTXUR
- 3) Which of the number given below is different from the rest?
- a) 13
 - b) 21
 - c) 17
 - d) 19
- 4) In the following series, how many 9's are preceded by 3 and followed by 6?
396939393963956956939639
- a) None
 - b) 3
 - c) 2
 - d) 4

SPACE FOR ROUGH WORK

- 5) If the third day of a month is Monday, then which day will be on the 5th day after 21st of the month?
- a) Wednesday
 - b) Tuesday
 - c) Monday
 - d) Thursday
- 6) If in a certain code MASTER is written as SAMRET, then how CARROT be written in the same code?
- a) ARMOTR
 - b) RCATRO
 - c) RACTOR
 - d) ARMTOR
- 7) In a code BOXER is written as AQWGQ, then how VISIT is written in the same code?
- a) UKRKU
 - b) UKRKS
 - c) WKRKU
 - d) WKRKS
- 8) In a certain code 345 means “Behari is good”, 579 means “Behari extremely important” and 126 means “Prime Minister Hardest Post”, then in that language what code is used for “good”?
- a) 3
 - b) 4
 - c) 5
 - d) Data Inadequate.

SPACE FOR ROUGH WORK

9) In a certain code 'ni tim si' means 'how are you'; 'ble ni si' means 'where are you', then which of the following word is used for 'where'?

a) ni

b) ble

c) si

d) tim

10) In a certain code '289' means 'Read from newspaper'; '276' means 'tea from field' and '85' means 'wall newspaper'. Which of the following words is used for 'tea'?

a) 2

b) 6

c) Either 6 or 7

d) Either 2 or 7

11) The next term of the sequence 1, 3, 7, 15, 31, is

a) 63

b) 62

c) 60

d) 59

12) The next term of the series 2, 12, 36, 80,..... is:

a) 140

b) 150

c) 145

d) 160

SPACE FOR ROUGH WORK

13) In the following series, which number should come in place of ‘?’
42, 13, 55, 15, 70, 17, ?, 19

- a) 81
- b) 53
- c) 87
- d) 90

Directions(14-17):In the following questions, you are required to select from the given alternative word/number pairs, the combination of which has a similar relationship to the key word/number pair given at the top of each question.

14) ISLAND: OCEAN

- a) Hill: Stream
- b) Forest: Valley
- c) Oasis: Desert
- d) Tree: Field

15) MYTH: STORY

- a) Bonnet: Hat
- b) Fiction: Reality
- c) Literature: Poetry
- d) Stencil: Paper

16) 25 : 125

- a) 5: 25
- b) 16: 64
- c) 16: 80
- d) 9: 16

SPACE FOR ROUGH WORK

17) LAKE: PEOI

- a) MEAT: OGCV
- b) MEAT: REXO
- c) MEAT: QEIX
- d) MEAT: QIEX

Directions(18-20) : In each of the following questions, two statements have been given followed by some conclusions. Mark your answers as:

- a) If only the first conclusion is true.
- b) If only the second conclusion is true.
- c) If either the first or the second conclusion is true.
- d) If either none of the conclusions is true, or both conclusions are true.

18) **Statements:** All pilots are brave. All astronauts are pilots.

Conclusions:

- i) All astronauts are brave.
- ii) Some pilots are astronauts.

- a)
- b)
- c)
- d)

19) **Statements:** All dogs are monkeys. No monkey is a cat.

Conclusions:

- i) No dog is a cat.
- ii) No cat is a dog.

- a)
- b)
- c)
- d)

SPACE FOR ROUGH WORK

- 20) **Statements:** All flats are books. Some books are pencils.
Conclusions:
 i) Some pencils are flats.
 ii) Some flats are not pencils.
- a)
- b)
- c)
- d)
- 21) Find the odd man
 $2/5, 4/10, 16/40, 20/50, 2/3, 6/15$
- a) $4/10$
- b) $2/3$
- c) $16/40$
- d) $20/50$
- 22) Find the group of letters different from the rest
- a) JSAFE
- b) ZGPKU
- c) ERMTL
- d) LANCP
- 23) Find the one which does not belong to the group
- a) Dictionary
- b) Magazine
- c) Newspaper
- d) Library

SPACE FOR ROUGH WORK

Directions(24-25) : Nine students A,B,C,D,E,F,G,H and I are sitting on a bench and are facing towards the sea. C is next to the right of A and second to the left of H. B is on any one end and second to the left of E. F is the neighbor of B and I is third to the right of D. G is the neighbor of D and E.

24) Which of the two students are on the two ends?

a) C and G

b) A and G

c) A and E

d) H and B

25) Who is in the middle?

a) H

b) F

c) D

d) B

26) Aruna started to move from P in the North and walked 30m. Then she turned to her left and moved 40 m to reach Q. What is the least distance of Q from P and in what direction is Q from P?

a) 50, North-East

b) 70, North-West

c) 50, North-West

d) 80, North

27) Harish goes 18 m from M in the South and then goes 25m after turning to his left. After this he goes 18m after turning to his left. Then reaches P after going 35m after turning to his left. How far is P from M and in which direction?

a) 10m East

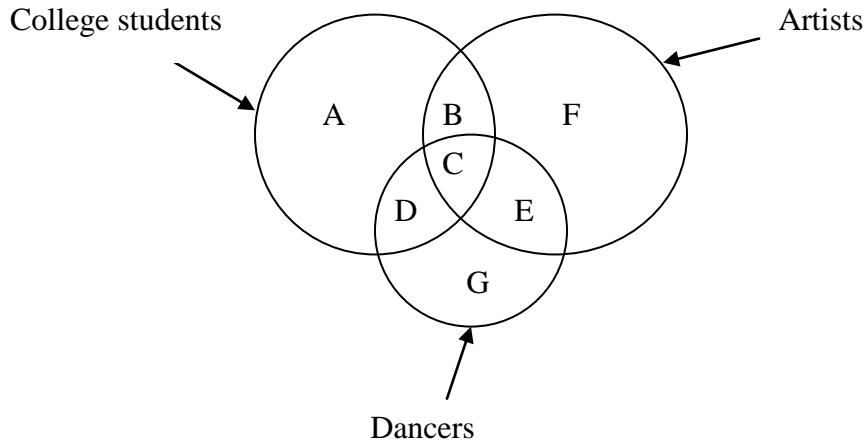
b) 10m West

c) 35m West

d) 25m East

SPACE FOR ROUGH WORK

Directions(28-29): In the figure given below, each circle represents a group of people.



28) College students who are artists but not dancers are represented by

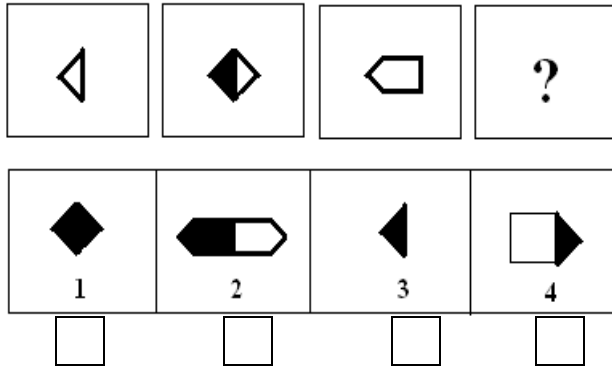
- a) A
- b) B
- c) C
- d) D

29) Artists who are dancers as well as college students are represented by

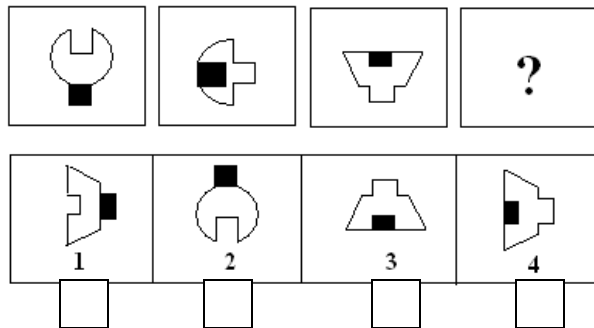
- a) A
- b) B
- c) C
- d) D

SPACE FOR ROUGH WORK

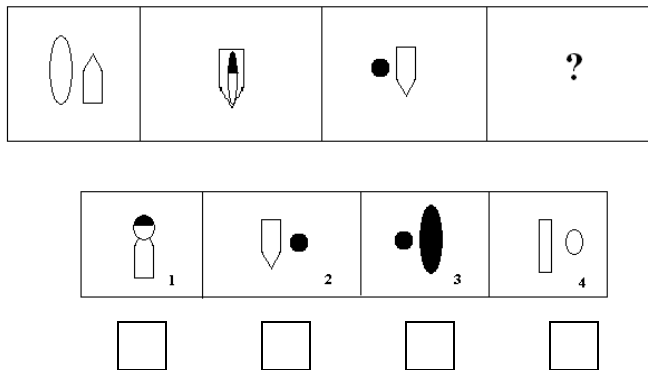
30) Find the missing one from the series given



31) Find the missing one

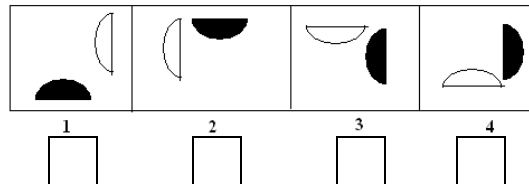
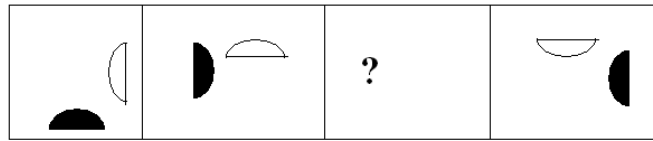


32) Find the missing one in the picture



SPACE FOR ROUGH WORK

33) Fill the missing one



34) The digits on the dial of a clock are replaced by alternate English alphabets beginning with D, such that D replaces, 1, F replaces 2 and so on. There where will be the hour hand at 19.45 O' clock?

- a) Between O and Q
- b) Between N and P
- c) Between P and R
- d) Between M and O

35) If the sixth day of a month is Tuesday, what is the day on the 5th day prior to the 28th of that Month?

- a) Thursday
- b) Wednesday
- c) Friday
- d) Saturday

SPACE FOR ROUGH WORK

- 36) One morning after sunrise Rina and Kaveri were talking to each other face to face at a City Square. If Kaveri's shadow was exactly to the right of Rina, which direction was Kaveri facing?
- a) East
 - b) North
 - c) South
 - d) West
- 37) Introducing Suresh, Subha said, "The father of his brother is the only son of my grandfather. How is Subha related to Suresh?"
- a) Mother
 - b) Cousin
 - c) Sister
 - d) Daughter
- 38) $P \times Q$ means P is the brother of Q. $P + Q$ means P is the father of Q. $P - Q$ means P is the sister of Q. Which of the following means A is the uncle of M?
- a) $A + D - M$
 - b) $A \times D + M$
 - c) $A + D \times M$
 - d) $A - D + M$
- 39) What is meant by Open Source Software?
- 40) What is meant by an IP address?

MODULE II: Numerical Aptitude

(Each question carries 2 marks. Answer any **TEN** questions)

- 41) If $A = \{1,2,3,4,5\}$ and $B = \{4,5,6,7\}$, show that $(A \cap B) \cup (A - B) = A$.
- 42) If f and g are mappings from \mathcal{R} to \mathcal{R} defined by $f: x \rightarrow x^2$ and $g: x \rightarrow (x-2)$, then show that $f \cdot g \neq g \cdot f$.
- 43) Do the points $(1,1)$, $(3,2)$ and $(4,7)$ lie in a straight line?
- 44) Use the Binomial theorem to evaluate $(999)^3$
- 45) If $A = \begin{bmatrix} 1 & 1 & -2 \\ 2 & 1 & -3 \\ 5 & 4 & -9 \end{bmatrix}$, find $|A|$.
- 46) Evaluate : $\lim_{x \rightarrow 2} \frac{3x^2 - x - 10}{x^2 - 4}$
- 47) Find $\frac{dy}{dx}$ when $y = (3x^2 - 9x + 5)(x + 5)$
- 48) Two balls are drawn at random with replacement from a box containing 10 black and 8 red balls. Find the probability that first ball is black and second is red.
- 49) A pencil, 3 pen and 2 marker pen cost Rs. 50. 3 pencil; 6 pen and 4 marker pen cost Rs. 105. Find the cost of a pen.
- 50) Find the point of intersection of the lines $2x - 3y - 4 = 0$ and $3x - 5y + 6 = 0$
- 51) Evaluate $\int_{-2}^3 |x| dx$
- 52) Find the value of k for which the line $(k-3)x - (4-k^2)y + (k^2 - 7k + 6) = 0$ is parallel to the X-axis.
- 53) If $P(A) = 3/5$ and $P(B) = 1/5$, find $P(A \cap B)$ if A and B are independent events.

Answer Module II here

Answer Module II here

Answer Module II here

Answer Module II here

MODULE III: Mathematics

(You can either answer this module or module IV. Each question carries 5 marks.
Answer any **EIGHT** questions)

- 54) Find the term independent of x in the expansion of $\left(\frac{x}{a} + \frac{b}{x}\right)^{12}$
- 55) If $f(x) = m\left(\frac{x-l}{m-l}\right) + l\left(\frac{x-m}{l-m}\right)$, prove that $f(l) + f(m) = f(l+m)$
- 56) Find the equation of the line passing through the intersection of the lines $x - 2y - 5 = 0$ and $x + 3y = 10$ and parallel to the line $2x + 3y = 0$.
- 57) Find the derivative of $\sqrt{x^2 + 4x + 9}$
- 58) Evaluate $\int_2^3 \frac{dx}{x^2 - 1}$
- 59) Find the slope of the tangent to the curve $y = \frac{x-1}{x-2}$, $x \neq 2$ at $x=8$.
- 60) Evaluate $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x^2 - 3x + 2}$
- 61) A coin is tossed 3 times and the outcomes are recorded. Find the number of all possible outcomes.
- 62) The radius of a circle is increasing uniformly at the rate of 3 cm/s. How fast is the area of the circle increasing when the radius is 10 cms?
- 63) Evaluate the integral $\int \frac{4x+1}{\sqrt{2x^2+x-3}} dx$
- 64) Let X be the set of all prime numbers less than 100. Then with how many zeroes does the product of all the elements of X end? Why?
- 65) Use Cramer's rule to solve the system of equations
- $$\begin{aligned}x - y + 2z &= 7 \\3x + 4y - 5z &= -5 \\2x - y + 3z &= 12\end{aligned}$$

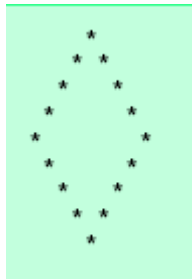
Module IV: Computer Science

(You can either answer Module III or this module.)

Each question in this module carries 8 marks. Answer any **FIVE** questions from this module.)

(The functions / programs may be written in *Pascal, C, C++ or Java*)

- 66) Write an application that displays in the command window a diamond using asterisks (*), as follows:



- 67) A palindrome is a number or a text phrase that reads the same backward as forward. For example, each of the following five-digit integers is a palindrome: 12321, 55555, 45554 and 11611. Write an application that reads in a five-digit integer and determines whether or not it is a palindrome
- 68) Write a recursive function **fibonacci(n)** that when invoked returns the n^{th} Fibonacci number where $n \geq 1$. For e.g fibonacci(3) returns 2 and fibonacci(5) returns 5 etc.
- 69) The *greatest common divisor* (GCD) of two integers is the largest integer that evenly divides each of the numbers. Write a function **gcd** that returns the greatest common divisor of two integers.
- 70) Write a program to multiply an $m \times n$ and an $n \times p$ matrix.
- 71) Twenty students were asked to rate the quality of the food in the student cafeteria on a scale of 1 to 10 (1 means awful and 10 means excellent). Place the 20 responses (entered through the keyboard) in an integer array and summarize the results of the poll. Sample poll result is shown below

| Scale | No of responses |
|-------|-----------------|
| 1 | 2 |
| 2 | 1 |
| 3 | 0 |
| 4 | 0 |
| 5 | 10 |
| 6 | 2 |
| 7 | 4 |
| 8 | 0 |
| 9 | 1 |
| 10 | 0 |

- 72) Write an application that reads several lines of text from the keyboard and prints a table indicating the number of occurrences of each letter of the alphabet in the text. For example, the phrase **“To be, or not to be: that is the question”** contains one “a,” two “b’s,” no “c’s,” etc.
- 73) Write a program, which will read a string and rewrite it in the alphabetical order. For example, the word **STRING** should be written as **GNIRST**.

Answer Module III or Module IV here

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