



ST. ANTHONY'S COLLEGE SHILLONG

ENTRANCE TEST FOR ADMISSION INTO UNDER GRADUATE PROFESSIONAL COURSES 2011 COMPUTER SCIENCE

INSTRUCTIONS

- This test has two parts. Part A and Part B.
- All questions are to be answered on the question paper itself, in the space provided for each.
- **Part A** has a total of **16** questions spread over 3 Sections.
 - **Section I** has **9** questions, each worth 2 marks with a negative of 0.5 for a wrong answer.
 - **Section II** has **6** questions, each worth 3 marks with a negative of 0.75 for a wrong answer.
 - **Section III** has **1** question worth 4 marks with a negative of 1 marks for a wrong answer.
- **Part B** has a total of **15** questions. Each correct answer is worth 4 marks. There will be **NO NEGATIVE MARKING** for this part.
- Write your **Test Roll Number** given on your Admit Card in the space provided below.
- **Please preserve your Admit Card.** It will be required at the time of admission.
- The Admit Card numbers of those shortlisted for admission on the basis of this Entrance Test will be published on the College Notice Boards as well as on the College Web Site on Friday, 6th May, 2011.
- The final admission will be done on a first come, first served basis, after the marksheets of the Class XII examinations of the Meghalaya Board of School Education are available, provided the eligibility criteria as laid down in the prospectus are fulfilled. Shortlisted students from other boards and streams whose Class XII results are declared later will also be considered for admission provided they report not later than 2 days after the result declaration of their respective board examinations along with their marksheets (Original or Downloaded).

TEST ROLL NO. _____

Invigilators Signature: _____

Part A : Quantitative Aptitude and Numerical Ability
Module I

Questions 1 to 9 carry 2 marks each. There is a Negative marking of 0.5 marks for each wrong answer attempted.

1. The common difference of an A.P., whose 6th term is 25 and 18th term is -35 is:
a. -4 b. -3 c. -5 d. -6

2. If α, β are the roots of $px^2 + qx + r = 0$, then $\alpha\beta^2 + \alpha^2\beta + \alpha\beta$ equal to:
a. 0 b. $\frac{r(p-q)}{p^2}$ c. $\frac{-qr}{p^2}$ d. None of these

3. Let $A = \mathbb{N} \times \mathbb{N}$ and $*$ be the binary operation on A defined by $(a,b) * (c,d) = (a+c, b+d)$. Then $*$ is:
a. Commutative b. Idempotent
c. Distributive d. None of these

4. Given $3 \begin{bmatrix} x & y \\ z & w \end{bmatrix} = \begin{bmatrix} x & 6 \\ -1 & 2w \end{bmatrix} + \begin{bmatrix} 4 & x+y \\ z+w & 3 \end{bmatrix}$, Then the values of x, y are:
a. (3,4) b. (-1,2) c. (2,4) d. (-2,4)

5. If $x = 4t$, $y = 4/t$, then $\frac{dy}{dx}$ is equal to:
- a. $\frac{1}{t^2}$ b. $\frac{1}{t^3}$ c. $-\frac{1}{t^3}$ d. $-\frac{1}{t^2}$

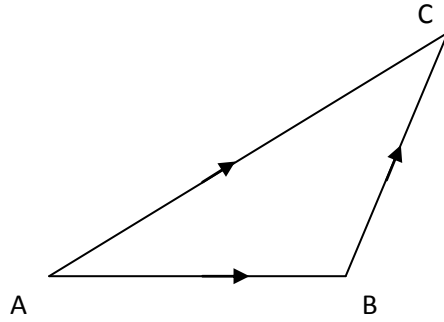
6. If $\frac{d}{dx}[f(x)] = 4x^3 - \frac{3}{x^4}$ and $f(2) = 0$. Then $f(x)$ is:
- a. $x^4 + \frac{1}{x^3} - \frac{129}{8}$ b. $x^3 + \frac{1}{x^4} + \frac{129}{8}$

7. The value of $\int_0^{\pi/2} \log\left(\frac{4+3\sin x}{4+3\cos x}\right) dx$ is:
- a. 2 b. $\frac{3}{4}$ c. 0 d. -2

8. The degree of the differential equation $\left(\frac{d^2y}{dx^2}\right)^3 + \left(\frac{dy}{dx}\right)^2 + \sin\left(\frac{dy}{dx}\right) + 1 = 0$ is:
- a. 3 b. 2 c. 1 d. Not defined

9. In the triangle ABC (figure), which of the following is not true?

- a. $\overline{AB} + \overline{BC} + \overline{CA} = \vec{0}$
- b. $\overline{AB} + \overline{BC} - \overline{CA} = \vec{0}$
- c. $\overline{AB} - \overline{BC} - \overline{CA} = \vec{0}$
- d. $\overline{AB} - \overline{CB} + \overline{CA} = \vec{0}$



Module II

Questions 10 to 15 carry 3 marks each. There is a Negative marking of 0.75 marks for each wrong answer attempted.

10. Area bounded by the curve $y = x^3$, the x-axis and the coordinates $x = -2$ and $x = 1$ is:

- a. -9
- b. $-\frac{15}{4}$
- c. $\frac{15}{4}$
- d. $\frac{17}{4}$

11. The integral $\int \frac{dx}{\sqrt{9x - 4x^2}}$ equals:

a. $\frac{1}{9} \sin^{-1} \left(\frac{9x - 8}{8} \right) + c$

b. $\frac{1}{2} \sin^{-1} \left(\frac{8x - 9}{9} \right) + c$

c. $\frac{1}{3} \sin^{-1} \left(\frac{9x - 8}{9} \right) + c$

d. $\frac{1}{2} \sin^{-1} \left(\frac{9x - 8}{9} \right) + c$

12. Distance between the two planes $2x + 3y + 4z = 4$ and $4x + 6y + 8z = 12$ is:

a. 2 units

b. 4 units

c. 8 units

d. $\frac{2}{\sqrt{29}}$ units

13. The possibility of obtaining an even prime number on each dice, when a pair of dice is rolled is:

a. 0

b. $\frac{1}{3}$

c. $\frac{1}{12}$

d. $\frac{1}{36}$

14. The rate of change of the area of a circle with respect to its radius r at $r = 6$ cm is:

- a. 10π b. 12π c. 8π d. 11π

15. If area of triangle is 35 sq. units with vertices $(2, -6)$, $(5, 4)$ and $(k, 4)$. Then k is:

- a. 12 b. -2 c. -12, -2 d. 12, -2

Module III

Question 16 carries 4 marks and a Negative marking of 1 mark for wrong answer.

16. The coordinates of the point where the line through the points A(3,4,1) and B(5,1,6) crosses the xy-plane are:

a. $\left(\frac{13}{5}, \frac{23}{5}, 1\right)$

b. $\left(\frac{13}{5}, \frac{23}{5}, 0\right)$

c. $\left(\frac{13}{4}, \frac{23}{4}, \frac{1}{4}\right)$

d. $\left(\frac{13}{5}, \frac{23}{4}, \frac{1}{5}\right)$

PART B: Logical Reasoning (60 marks)

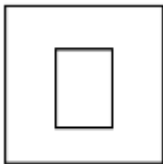
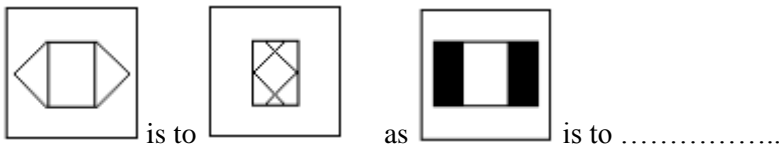
Write the steps to arrive at the correct answer to the following questions. The answer alone is not sufficient. Each correct complete answer will carry 4 marks. There is no **NEGATIVE MARKING** for this part.

1. In a certain code, RIPPLE is written as 613382 and LIFE is written as 8192. How is PILLER written in that code?
2. A man travels 7 kms towards East, then he turns left and travels 8 kms, again he turns left and travels 10 kms. Finally, he turns left and travels 2 kms. In which direction is he from his starting points?
3. If white is called blue, blue is called red, red is called yellow, yellow is called green, green is called black, black is called violet, and violet is called orange, what would be the colour of human blood?

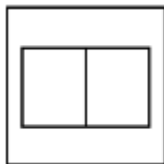
4. If $A : B = 5 : 7$ and $B : C = 6 : 11$, then find $A : B : C$

5. If 20 men working together can finish a job in 20 days, then how many days will be taken by 25 men of the same capacity to finish the job?

6. Which figure completes the statement?



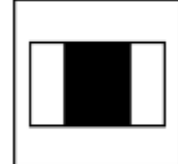
a



b



c



d

Questions 7-8 are based on the following statements. You must draw in the space provided to depict the arrangement e.g. W, X, A, K; marks will be awarded for this depiction of the arrangement.

In a march past, seven persons are standing in a row. Q is standing left to R but right to P. O is standing right to N and left to P. Similarly, S is standing right to R and left to T.

7. Who is standing in middle?

8. Who are the two immediate neighbors of S?

9. A father is older than his son by 32 years. 6 years ago the father was 17 times as old as his son. How old are they now?

Questions 10-11 are based on the following statements.

- i. Seeta, Rajinder and Surinder are children of Mr. and Mrs.Maudgil
- ii. Renu, Raja and Sunil are children of Mr. and Mrs.Bhaskar
- iii. Sunil and Seeta are married and Ashok and Sanjay are their children
- iv. Geeta and Rakesh are children of Mr. and Mrs.Jain
- v. Geeta is married to Surinder and has three children named Rita, Sonu and Raju.

10. How is Rajinder related to Raju?

11. How is Rajinder related to Ashok?

12. Find the missing term in the following series: 83, 66, 51, 38, ?

13. Five students participated in the scholarship examination. Sudha scored higher than Puja. Kavita scored lower than Suma but higher than Sudha. Mamta scored between Puja and Sudha. Who scored lowest in the examination?

14. A machine accepts 5 numbers in any order, and undertakes 5 steps to finally generate an output. For example, if the numbers given are 18, 21, 5, 69, 2; then the various steps undertaken are listed below:

STEP 1: 18, 21, 5, 69, 2
STEP 2: 2, 21, 5, 69, 18
STEP 3: 2, 5, 21, 69, 18
STEP 4: 2, 5, 18, 69, 21
STEP 5: 2, 5, 18, 21, 69
Step 5 is the output.

List out the 5 steps that will be undertaken when the numbers given to the machine are 56, 100, 32, 9, 91.

15. John is asked to add two given numbers. However, what he has to do is not just to add the two numbers, but has to continue the addition through a given number of steps. The process he has to undertake is as follows:

He has to add up the two numbers, say X and Y , in the first step. Then he needs to add up the sum of the first step with the second number (i.e., Y) and the number of step he is currently in (i.e., 2 in this case). In the third step, he has to add the sum he received from step 2, the second number originally given to him (i.e., Y), and the step number (3 in this case). He has to repeat this for a given number of steps, before he can give the result.

For example, if the two numbers given to John are 4 and 9, and he is told to repeat the process for 5 times, then the final result that John is supposed to get is 63.

What will be the result of his calculation, if the numbers given to him are 5 and 8, and he is told to repeat the process of 6 times? Show all the intermediate steps involved.