

HALL TICKET NO:



ST. ANTHONY'S COLLEGE, SHILLONG

**ENTRANCE TEST FOR ADMISSION INTO
GRADUATE PROFESSIONAL COURSES
2005**

COMPUTER SCIENCE

DATE : 12 May 2005
TIME : 11.30 am
DURATION : 2 hours

INSTRUCTIONS

- ◆ There are 40 questions in this test, divided into three parts. All the questions are to be answered on the question paper itself.
- ◆ The candidate is to answer as many questions as possible in the time that is allotted for this test.
- ◆ The required rough work may be done on the sheet that is provided for the purpose.
- ◆ Make sure that you have entered the hall ticket number and subject properly in the place provided in the answer sheet. Enter only the hall ticket number of Computer Science.
- ◆ Please preserve your hall tickets. They will be required at the time of admission.
- ◆ The hall ticket numbers of those shortlisted for admission on the basis of the entrance test will be published on the college notice boards and on the college web site on 16 May, 2005. 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.

Part A

Directions for questions in part A (questions 1 - 10) : Answer the following questions by writing the correct answer in the box provided after each question. Each correct answer carries one mark. For each wrong answer .25 mark will be deducted.

- 1) To obtain an n-type semiconductor germanium crystal, it must be doped with foreign atoms whose valency is
 - a) 2
 - b) 3
 - c) 4
 - d) 5
- 2) You are sitting in a room in which an uniform magnetic field is present in the vertically downward direction. When an electron is projected in horizontal direction, it will be moving in a circular path with constant speed
 - a) clockwise in the vertical plane
 - b) clockwise in the horizontal plane
 - c) anti-clockwise in the horizontal plane
 - d) anti-clockwise in the vertical plane
- 3) A prism of refractive index $\sqrt{2}$ has a refracting angle of 60° . At what angle must a ray be incident on it so that it suffers a minimum deviation?
 - a) 30°
 - b) 45°
 - c) 60°
 - d) 75°
- 4) A step-down transformer is employed to reduce the main supply of 220V to 11V. The primary draws 5A of current and the secondary 90A. What is the efficiency of the transformer?
 - a) 20%
 - b) 40%
 - c) 70%
 - d) 90%
- 5) The radius of the path of a body in a uniform circular motion is doubled. The centripetal force needed, if the speed is to remain same is
 - a) same as before
 - b) half as great as before
 - c) twice as great as before
 - d) four times as great as before
- 6) If the displacement of a particle is zero, then what can we say about its distance covered?
 - a) It must be zero
 - b) It cannot be zero
 - c) It is negative
 - d) It may or may not be zero
- 7) A graph is drawn with force along Y-axis and time along X-axis. The area under the graph represents
 - a) momentum
 - b) couple
 - c) moment of the force
 - d) impulse of the force
- 8) How does proper inflation of tyres save fuel?
 - a) Normal reaction decreases
 - b) Sliding contact with the road increases
 - c) Normal reaction increases
 - d) Sliding contact with the road decreases
- 9) The kinetic energy of a body of mass 1 kg is $12.5 \text{ kJ m}^2 \text{ s}^{-2}$. Its momentum in units of kg m s^{-1} is
 - a) 25
 - b) 5
 - c) 0
 - d) 12.5
- 10) It is difficult to write legibly with a fountain pen on newspaper, because of
 - a) surface tension
 - b) elasticity
 - c) capillary action
 - d) inertia

Part B

Directions for questions in part B (questions 11 - 20) : Answer the following questions in short. Each correct answer carries one mark.

11. Evaluate $1^1 + 99^0 + 9999^0 + 999999^0 + 99999999^0 + 9999999999^0$

12. If $a = 5$, $b = 10$, $c = 15$, $d = 20$, $e = 25$, what is the value of the following expression
 $(a \times 199-99) \times (b \times 299-199) \times (c \times 399-299) \times (d \times 499-399) \times (e \times 1-25)$
13. P is 30 km east of O and Q is 40 km North of O. R is exactly in the middle of Q and P. What is the distance between Q and R?
14. Write the last two terms of the following sequence, where n ranges from 4 to 8
 $a_n = n + 5$
 For example $a_{100} = 105$
15. Consider the following mathematical relationships.
 $M = J - 1$
 $N = J + 1$
 $J-1$ implies that J is decreased/decremented by 1; and
 $J+1$ implies that J is increased/incremented by 1.
- What is the value of M if $J = 1$?
 What is the value of N if $J = 0$?
16. Which fraction comes next in the sequence $\frac{1}{2}, \frac{3}{4}, \frac{5}{8}, \frac{7}{16}, \dots$?
17. In a group of 15 people, 7 read French, 8 read English while 3 of them read none of these two. How many of them read French and English both?
18. What should be the value of x and y that will complete the matrix?
- | | | | |
|---|---|---|---|
| 1 | 4 | 9 | x |
| 1 | 2 | 3 | 4 |
| 2 | 4 | 6 | y |
19. Five years ago, the total of the ages of a father and his son was 40 years. The ratio of their present age is 4:1. What is the present age of the father?

20. Which pair of operators need to be interchanged to make the equation $10+10 \div 10-10 \times 10 = 10$ correct?

Part C

Directions for questions in Part C (questions 21 - 30) : Write the steps to arrive at the correct answer to these questions. Each question carries 4 marks.

Instructions for questions 21-25: Read the following paragraph carefully.

There are four friends Anil, Sushil, Raju and Harish. One of them is a cricketer and studies Chemistry and Biology. Anil and Sushil play football. Anil studies Commerce. Both the football players study Mathematics. Harish is a boxer. One football player also studies Physics. The boxer studies Mathematics and Accountancy. All friends study two subjects and play one game each.

Create a table to show what each of these friends study and the games they play.

Use the table to answer the following questions.

21. Who is a cricketer?
22. Who does not study Mathematics?
23. Who studies Physics?
24. Who studies Commerce and plays football?
25. Name the person who is not a boxer, but studies both Chemistry and Biology?

Instruction for questions 26-29

Following are the criteria for admitting a student in a Medical course. The student must

- a) Have passed class XII Science with Biology and have secured at least 60% marks
- b) Be of 18 years of age as on 1st September, 1994
- c) Have obtained 70% marks in entrance test
- d) Be able to pay Rs.20,000 at the time of admission

In case of a candidate, who satisfies all other criteria except

- e) (c) above, but has obtained 90% marks in class XII Science examination should be referred to the Principal
- f) (d) above, but can pay Rs. 10,000 at the time of admission, can be provisionally admitted.

Answers to the following questions will be one of the following – Admitted, Not Admitted, Provisionally Admitted, Referred to the Principal, and Data insufficient to arrive at the answer. Give answer for the following situations with proper reasons (showing the rule(s) violated/fulfilled).

26. Ashok Garg was born on 3rd October, 1973. He has secured 90% marks in class XII Science examination with biology and 60% marks in the entrance test. He can pay the admission fees of Rs. 20,000.

27. Vinay Kumar secured 60% marks in class XII Science with Biology. He secured 75% marks in the entrance test and can pay admission fees of Rs. 15,000 at the time of admission.
28. Rakesh Guha was born on 4th July, 1976. He has secured 80% marks in the entrance test. He has secured 85% marks in the XII class Science with Biology. He can pay the admission fees of Rs. 15,000.
29. Meeta Chandra has secured 70% marks in the entrance test and 60% marks in the class XII Science examination with Biology. She can pay Rs.20,000 and was born on 7th November 1978.

Instructions for questions 30 – 32: Read the following information carefully.

$A+B$ means A is the father of B ; $A-B$ means A is the wife of B ; $A \times B$ means A is the brother of B ; A / B means A is the daughter of B .

Make a diagrammatic representation of the family tree for each of the situations to help you answer the question:

30. If $P / R + S + Q$, what is the relationship between P and Q ?

31. If $P - R + Q$, what is the relationship between P and Q ?

32. If $P \times R / Q$, what is the relationship between P and Q ?

Directions for questions 33- 37: Study the following sequence carefully and answer the questions given below, giving reason wherever required:

M I E ♦ R B 3 A K 7 ☆ # 9 \$ U D I N 4 6 % F H 2 @ 8 W

33. List the consonants in the above sequence, each of which is immediately followed by a number and immediately preceded by a vowel?

34. Which set of three characters should come in place of the question mark (?) in the following series based on the above arrangement and why?
EBM A★B 9D★ ? H8%
- a) 16D
b) NFD
c) N%D
d) 4FD
e) None of these
35. List the vowels in the above arrangement, each of which is immediately preceded by a symbol and immediately followed by a consonant?
36. Four of the following five are alike in a certain way and so form a group based on the above arrangement. Which is the one that does not belong to that group and why?
- a) ◆BM
b) 14\$
c) 9D★
d) 3K◆
e) %HN
37. If the order of the first fifteen elements in the above arrangement is reversed, which character will be the eighth to the left of the twelfth from the right end?

Directions (Questions 38-40) : Read the following information carefully and answer the questions given below it:

- i) A, B, C, D, E, F and G are sitting on a wall and all of them are facing east.
ii) C is on the immediate right of D.
iii) B is at an extreme end and has E as his neighbour.
iv) G has E and F as immediate neighbours.
v) D is sitting third from the south end.

Represent in a diagram the direction East and the position of ABCDEFG as they face East.

Using the diagram, answer the following questions.

38. Who is sitting to the right of E?
39. Which of the following pairs of people are sitting at the extreme ends?
40. Name the person who should change places with C such that he gets the third place from the North end.