GLOBAL SCHOOL OF SCIENCE

Second Weekly Exam – [Shrawan 25, 2082]

PHYSICAL GROUP

Class: XI **Full Marks: 70**

Time: 80 min + 80 min

Attempt all questions

Mathematics

Group A

Multiple Choice Questions **[4 × 1 = 4]**

Rewrite the best option in your answer sheet.

1. Which of the following sentences is the statement?

   a) What is your name? b) $x > 2$

   c) May God bless you. d) 2 is a prime.

2. Which of the following is **NOT** a logical connective?

   a) and b) but c) or d) iff

3. The value of $\sqrt{-9} \times \sqrt{-4}$ is

   a) 6 b) $6i$ c) $-6i$ d) -6

4. The symbolic form for "$f(x) \to 4$ as $x \to 2$" is

   a) $\lim\limits_{x \to 2} f(x) = 4$ b) $\lim\limits_{f(x) \to 4} x = 2$

   c) $\lim\limits_{x = 2} f(x) = 4$ d) $\lim\limits_{x = 2} f(x) \to 4$

Group B

Short Answer Questions. **[3 × 5 = 15]**

5. a. Define statement with any two examples. Differentiate simple and compound statement. [2+1]

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b. Write the truth value of the correct statement. Also, write the negation of the statement "All rational numbers are real numbers". [1+1]

6. a. If $z_1 = (3, -4)$ and $z_2 = (8, 6)$, find $z_1 + z_2$, $z_1 \cdot z_2$ and $\frac{z_1}{z_2}$. [1+1+1]

b. Find the values of x and y if $(x + 2) + (3 - y)i = (-1 + i)(3 + 2i)$. [2]

7. a. Define limit of a function $f(x)$ at a point $x = a$. Express "x tends to 2" in symbolic form and hence write it's meaning. [1+1+1]

b. If $\lim_{x \to a} f(x) = 2a + 3$ and $\lim_{x \to a} g(x) = 3a - 2$, then find

i. $\lim_{x \to a} [f(x) + g(x)]$

ii. $\lim_{x \to a} [f(x) \cdot g(x)]$ [1+1]

Group C

Long Answer Questions. **[2 × 8 = 16]**

8. a. Define conjunction and disjunction. Write the conjunction and disjunction of two simple statements, p : 3 is an odd number and $q : 3 + 2 = 6$ along with their truth values respectively. [2+1+1]

b. For any two simple statements p and q, construct the truth table for $p \wedge q$. [2]

c. Prove that: $i^{-1} + i^{-2} + i^{-3} + i^{-4} = 0$ [2]

9. a. Find the real and imaginary parts of the complex number $z \times w$ if $z = 2 + \sqrt{-9}$ and $w = 4 - \sqrt{-25}$. Also, find the value of $(i)^{4n+3}$, where n is any integer. [1+1+1]

b. Let $f(x) = \frac{ax + b}{x - 1}$ be a function. If $f(0) = -1$ and $f(2) = 3$, find the values of a and b. And hence evaluate $f(3)$ and $\lim_{x \to 3} \frac{ax + b}{x - 1}$. [3+1+1]

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Computer Science

Group A

Multiple Choice Questions [4 × 1 = 4]

Rewrite the best option in your answer sheet.

1. The smallest unit of data in computer is called .....

   a) Bytes b) Nibble

   c) Bits d) Kilobyte

2. Which is not an output device?

   a) Printer b) Plotter

   c) Projector d) Scanner

3. What is the full form of CAM?

   a) Computer Adding Machine

   b) Computer Aided Manufacture

   c) Computer Aided Manufacturing

   d) Computer Adding Manufacturing

4. 1024 TB (Terabyte) equals to .....?

   a) 1 EB b) 1 GB

   c) 1 ZB d) 1 PB

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Group B

Short Answer Questions. **[3 × 5 = 15]**

5. What is computer? Explain the merits and demerits of using computer.
6. "Computers have no intelligence of their own-they only follow instruction" justify this statement.
7. Explain Input Unit, Processing Unit and Output Unit of computer.

Group C

Long Answer Questions. **[2 × 8 = 16]**

8. Explain the characteristics of computer in detail.
9. Explain any eight application areas of computer.

The End

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