ROLL NUMBER				

SET A

INDIAN SCHOOL MUSCAT

FIRST PERIODIC TEST

APPLIED MATHEMATICS

CLASS: XI Sub.Code: 241 Time Allotted: 50mins.

23.05.2023 Max .Marks: 20

GENERAL INSTRUCTIONS:

- This question paper has three sections.
- Section A contains 3 MCQ and 1 Assertion Reasoning Question, each of 1 mark.
- Section B contains 3 questions of 2 marks each.
- Section C contains 2 questions of 3 marks each.
- Section D contains 1 Case Based Question of 4 marks.
- All questions are compulsory.

SECTION A

1. Find x and y, if (4x + 3, y) = (-1, 3x + 5) 1

   (a) x = 1, y = 2 (b) x = -1, y = -2 (c) x = -1, y = 2 (d) x = 1, y = -2

2. Assertion(A): Number of non-empty subsets of the set {2,3,5,7,11} is 31 1
   Reason(R): Number of proper subsets of the set A with n(A) = k is $2^k - 1$

   (a) Both A and R are true and R is the correct explanation of A.
   (b) Both A and R are true but R is not the correct explanation of A.
   (c) A is true but R is false.
   (d) A is false but R is true.

3. Set builder form of the interval [2, 7) is 1

   (a) $\{ x: x \in R \text{ and } 2 \leq x \leq 7\}$ (b) $\{ x: x \in R \text{ and } x \leq 7\}$
   (c) $\{ x: x \in Z \text{ and } 2 \leq x < 7\}$ (d) $\{ x: x \in R \text{ and } 2 \leq x < 7\}$

4. Which of the following statements is correct? 1

   (a) $0 \subset \{0, 1, 2\}$ (b) $0 \in \{\{0\}, 1, 2\}$ (c) $\{0\} \in \{\{0\}, 1, 2\}$ (d) $2 \subset \{\{0\}, 1,2\}$

SECTION B

5. The Cartesian product $A \times A$ has 9 elements among which are found (-2, 0) and (1,0). Find the set A and the remaining elements of $A \times A$ 2

6. Verify De Morgan's law $(A \cap B)' = A' \cup B'$ by using Venn diagrams. 2

7. In a class, 56% of the students like to play football and 48% of the students like to play cricket and 18% of the students like to play both the games. Find the percentage of the students do not like to play both the games. 2

SECTION C

8. If R={ (x, y): x, y$\in W, 2x + y = 10$} then find the domain and range of R. Also, write R in roster form. 3

9. If U ={1, 2, 3, 4, 5, 6, 7, 8, 9,10}, A = {1, 2, 3, 5}, B = {2, 4, 6, 9} and C = {2, 3, 6, 8}, then find 3
(a) $A \cap (B \cup C)$ (b) $(C - A)'$ (c) $n[A \times (B \cap C)]$

SECTION D

10. **CASE BASED QUESTION:**
In a library, out of 25 students, 15 students read mathematics book, 12 students read physics book while 11 students read chemistry book. 5 students read both mathematics and chemistry, 9 students read both physics and mathematics. 4 students read both physics and chemistry and 3 students read all three subject books. By drawing a Venn Diagram, find the number of students who read

(i) exactly one of the books. 1

(ii) Mathematics but not Physics 1

(iii) at least one of the books 2
(OR)
(iii) none of the books

ROLL NUMBER				

SET B

INDIAN SCHOOL MUSCAT

FIRST PERIODIC TEST

APPLIED MATHEMATICS

CLASS: XI Sub. Code: 241 Time Allotted: 50mins.

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- Section D contains 1 Case Based Question of 4 marks.
- All questions are compulsory.

SECTION A

1. Which of the following statements is correct? 1

   (a) $0 \subset \{0, 1, 2\}$ (b) $0 \in \{\{0\}, 1, 2\}$ (c) $\{0\} \in \{\{0\}, 1, 2\}$ (d) $2 \subset \{\{0\}, 1,2\}$

2. Set builder form of the interval (2, 7] is 1

   (a) $\{x: x \in R \text{ and } 2 < x \leq 7\}$ (b) $\{x: x \in R \text{ and } 2 \leq x < 7\}$

   (c) $\{x: x \in Z \text{ and } 2 \leq x < 7\}$ (d) $\{x: x \in R \text{ and } x \leq 7\}$

3. Find x and y, if $(x^2 - 4x, y+ 3) = (-4, 5)$ 1

   (a) x = -1, y = 2 (b) x = 2, y = -2 (c) x = 4, y = -2 (d) x = 2, y = 2

4. Assertion(A): Number of non-empty subsets of the set {2,3,5,7,11} is 31 1

   Reason(R): Number of proper subsets of the set A with n(A) = k is 2^k

   (a) Both A and R are true and R is the correct explanation of A.
   (b) Both A and R are true but R is not the correct explanation of A.
   (c) A is true but R is false.
   (d) A is false but R is true.

SECTION B

5. Verify De Morgan's law $(A \cup B)' = A' \cap B'$ by using Venn diagrams. 2

6. In a class, 56% of the students like to play football and 48% of the students like to play cricket and 18% of the students like to play both the games. Find the percentage of the students do not like to play both the games. 2

7. If (-2,1), (2,5), (0,3), (1,1) are some of the elements of $A \times B$, then find sets A and B. Also, find the remaining elements of $A \times B$ 2

SECTION C

8. If U ={1, 2, 3, 4, 5, 6, 7, 8, 9,10}, A = {1, 2, 3, 5}, B = {2, 4, 6, 9} and C = {2, 3, 6, 8}, then find 3
   (a) $A \cup (B \cap C)$ (b) $(C - B)'$ (c) $n[A \times (B \cup C)]$

9. If R={ (x, y): x, y $\in W, 2x + y = 10$} then find the domain and range of R. Also, write R in roster form. 3

SECTION D

10. **CASE BASED QUESTION:**
In a library, out of 25 students, 15 students read mathematics book, 12 students read physics book while 11 students read chemistry book. 5 students read both mathematics and chemistry, 9 students read both physics and mathematics. 4 students read both physics and chemistry and 3 students read all three subject books. By drawing a Venn Diagram, find the number of students who read

(i) exactly one of the books. 1

(ii) Mathematics but not Chemistry 1

(iii) at least one of the books 2

(OR)

(iii) none of the books

ROLL NUMBER				

SET C

INDIAN SCHOOL MUSCAT

FIRST PERIODIC TEST

APPLIED MATHEMATICS

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- Section D contains 1 Case Based Question of 4 marks.
- All questions are compulsory.

SECTION A

1. Find x and y, if (x -1, y+3) = (2, x +4) 1

   (a) x = 1, y = 2 (b) x = -1, y = -2 (c) x = 3, y = 4 (d) x = 2, y = 6

2. Which of the following statements is correct? 1

   (a) $\{0\} \in \{\{0\}, 1, 2\}$ (b) $0 \in \{\{0\}, 1, 2\}$ (c) $0 \subset \{0, 1, 2\}$ (d) $2 \subset \{\{0\}, 1,2\}$

3. Assertion(A): Number of non-empty subsets of the set {2,3,5,7,11} is 32 1
   Reason(R): Number of proper subsets of the set A with n(A) = k is $2^k - 1$

   (a) Both A and R are true and R is the correct explanation of A.
   (b) Both A and R are true but R is not the correct explanation of A.
   (c) A is true but R is false.
   (d) A is false but R is true.

4. Set builder form of the interval [2, 7] is 1
   (a) $\{x: x \in Z \text{ and } 2 \leq x < 7\}$ (b) $\{x: x \in R \text{ and } 2 \leq x < 7\}$
   (c) $\{x: x \in R \text{ and } 2 \leq x \leq 7\}$ (d) $\{x: x \in R \text{ and } x \leq 7\}$

SECTION B

5. The Cartesian product $A \times A$ has 9 elements among which are found (-2, 0) and (1,1). Find the set A and the remaining elements of $A \times A$ 2

6. In a class, 56% of the students like to play football and 48% of the students like to play cricket and 18% of the students like to play both the games. Find the percentage of the students do not like to play both the games. 2

7. Verify De Morgan's law $(A \cap B)' = A' \cup B'$ by using Venn diagrams. 2

SECTION C

8. If U ={1, 2, 3, 4, 5, 6, 7, 8, 9,10}, A = {1, 2, 3, 5}, B = {2, 4, 6, 9} and C = {2, 3, 6, 8}, then find 3
(a) $A \cap (B \cup C)$ (b) $(B - A)'$ (c) $n[A \times (A \cap C)]$

9. If R={ (x, y): x, y $\in W, 2x + y = 10$} then find the domain and range of R. Also, write R in roster form. 3

SECTION D

10. **CASE BASED QUESTION:**
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(i) exactly one of the books. 1

(ii) Chemistry but not Physics 1

(iii) at least one of the books 2
(OR)
(iii) none of the books