CRPF PUBLIC SCHOOL, ROHINI

THIRD InTRa ScHool MaTHeMaTIcS ol yMplaD 2012

CLASS X

Max. Marks: 50   **Max. Time: 1 hour 30 minutes**

General Instructions:

1. Q1-15 (Section A) each MCQ carries 2 mark. Each question has five choices (A, B, C, D or E). Select the correct answer to each question and darken the corresponding circle in the Answer Sheet provided to you. **THERE IS NO NEGATIVE MARKING.** Marking of more than one circle for an answer shall be awarded zero mark.

2. Q16-20 (Section B) each question carries 4 mark. You are to give the complete solution. Marking will be done stepwise.

SECTION – A

Q1) The horizontal and vertical distance between adjacent points of the grid shown, is one unit. The area of triangle ABC is
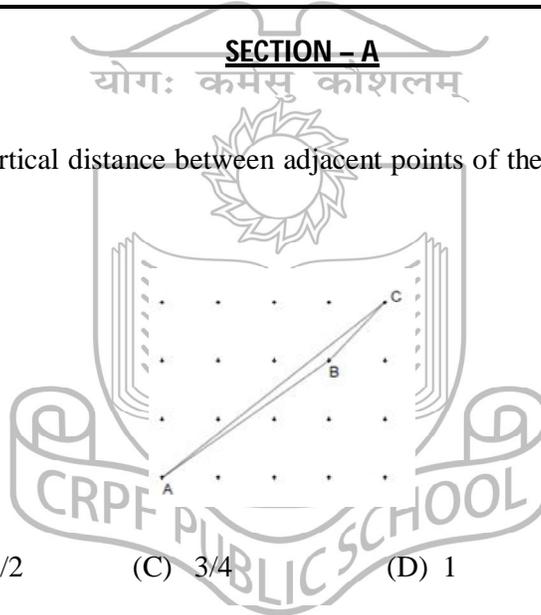
(A) 1/4   (B) 1/2   (C) 3/4   (D) 1   (E) 5/4

Q2) The sum of the digits of $10^{20} - 2$ when expressed as single number is:

(A) 180   (B) 3   (C) 171   (D) 170   (E) 179

Q3) Mr. And Mrs. Singh, working in shifts made an agreement with their employer that Mr. Singh will be off every 8th day and Mrs. Singh every 5th day. If they were both off on Thursday the 20th of January 2000, on what date they will be off together

(A) 25 December   (B) 5 December   (C) 10 December   (D) 26 November   (E) 26 October

Q4) If the following five numbers are arranged in increasing order, which number will be in the middle?

(A) 20012001   (B) 2001+——   (C) 2001 ÷——   (D) 2001 ×——   (E) 2001 -——

Q5) If n is any positive integer, how many different remainders are possible when 2^n is divided by 7?

(A) 5   (B) 3   (C) 2   (D) 4   (E) 1

Q6) In ABC, AC=BC=15; PM is parallel to BC and PQ is parallel to AC. The perimeter PQCM is:

(A) Cannot be determined   (B) 20   (C) 30   (D) 40   (E) 15

Q7) In the following questions, problems figures 1 & 2 are related in a particular manner. Establish the same relationship between problem figures 3 & 4 by choosing a figure from amongst the option, which would replace the question mark in fig 4:

(E) None of these

Q8) Find the minimum number of straight lines required to make the given figure.

(A) 16   (B) 17   (C) 18   (D) 19   (E) 23

Q9) 'A' walks 10 m towards East and then 10 m to his right. Then every time turning to his left, he walks 5, 15 and 15 m, respectively. How far is he now from his starting point?

(A) 5m   (B) 10m   (C) 15m   (D) 20m   (E) 25m

Q10) If A $ B means 'A is the father of B' , 'A * B' means 'A is mother of B', 'A @ B' means ' A is wife of B' , then which of the following means ' M is the grandmother of N'

(A) M * T $ N @ R   (B) M * T $ R @ S   (C) M * R $ T @ N

(D) M * R @ T @ N   (E) None of these

Q11) If p, q and r are positive integers and $p + \dfrac{\quad}{\quad} = \dfrac{\quad}{\quad}$, then q equals to:

(A) 1   (B) 2   (C) 3   (D) 4   (E) 5

Q12) The triangular numbers are the numbers 1,3,6,10,15,21,28 and so on. How many of the first 250 triangular numbers are divisible by 5?

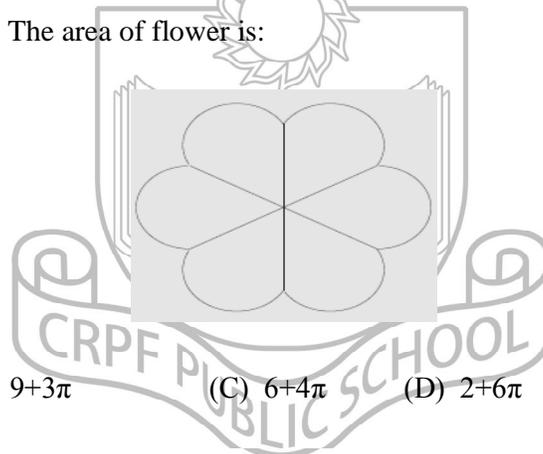(A) 100   (B) 150   (C) 125   (D) 75   (E) 50

Q13) Each side of the triangle ABC is divided into 3 equal parts. The ratio of the area of the hexagon UVWXYZ to the area of triangle ABC is:
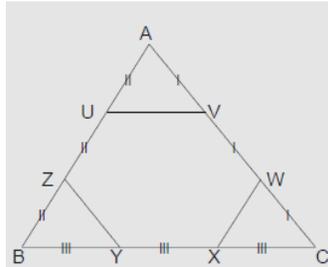
(A) –   (B) –   (C) –   (D) –   (E) –

Q14) A geometrical flower is made by drawing a semicircle on each side of a regular hexagon with sides of length 2, as shown. The area of flower is:

(A) $6\sqrt{3}+3\pi$ (B) $9+3\pi$ (C) $6+4\pi$ (D) $2+6\pi$ (E) $4\sqrt{3}+4\pi$

Q15) All twenty people in a business each have a direct phone line to every other person in the business. When two new people join the business how many more direct phone lines must be installed?

(A) 20   (B) 10   (C) 40   (D) 41   (E) 60

SECTION – B

Q16) A bricklayer would take 9 hours to build a certain wall on his own and another bricklayer would take 10 hours to build the same wall. If the two work together, they sometimes stop for a chat, so that they lay a total of 10 fewer bricks per hour. If it takes them 5 hours to build the wall together, then find the number of bricks in the wall.

Q17) An unknown polynomial yields a remainder of 2 upon division by x-1, and a remainder of 1 upon division by x-2. If this polynomial is divided by (x-1) (x-2), then find the remainder.

Q18) A circles touches the four sides of the square ABCD. BEFG is a square of side 1. Find the length of AB.
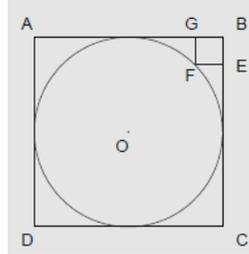
Q19) In the figure triangle ABC is formed by three tangents to the circle with center O. If ∠BAC=30°, then find the measure of ∠BOC.
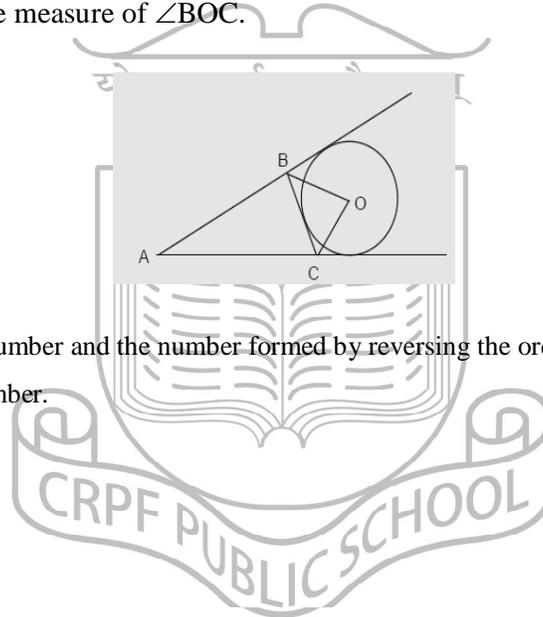
Q20) The sum of two-digit number and the number formed by reversing the order of digits is 154. If the two digits differ by 4, find the number.

*********************************END OF PAPER*********************************