THE WINNING EDGE DEFENCE ACADEMY (WEDA)

RIMC – MOCK PAPER SERIES – 1

SUBJECT: MATHEMATICS

MM: 200   **TIME: 1Hr 30 Min**

Instructions:

1. Attempt all 20 questions. Write answers separately on the answersheet provided at the exam centre.

2. Part 'A' contains 10 questions and each question in this part carries 'Eight marks'.

3. Part 'B' contains 10 questions and each question in this part carries 'Twelve marks'.

4. Use of calculator is prohibited. Complete written justification is required for each question. Marks will be awarded for correct stepsto reach the solution. Answers without justification will not have any credit.

5. Take the value of π as $\frac{22}{7}$

6. Use blue/black ball pen to answer the questions.

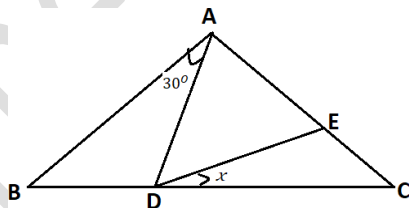7. The question paper can be retained by the candidates post examination.

PART A (10 X 8 = 80 MARKS) (EACH QUESTION CARRIES 8 MARKS)

1. $\frac{20092008^2}{20092007^2 + 20092009^2 - 2} = \ldots\ldots\ldots\ldots\ldots\ldots$

2. For any real numbers a, b and c, find the smallest possible values thatthe following expression can take:

$3a^2 + 27b^2 + 5c^2 - 18ab - 30c + 237$

3. In the figure below AB = AC, $\angle$BAD = 30^0, and AE = AD. Then, $\angle$CDE equals:

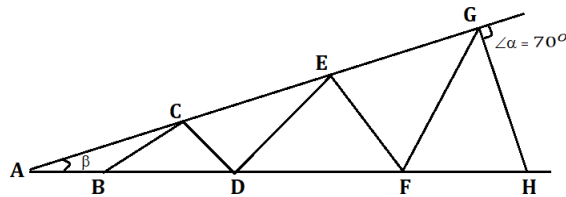**4. How many of the five numbers are multiples of 10?**

a) $2^{100} + 2^{102}$ b) $3^{100} + 3^{102}$ c) $5^{100} - 5^{99}$ d) $6^{100} + 4$ e) $9^{101} + 1$

5. As shown in the figure, AB = BC = CD = DE = EF = FG = GH,

$\angle\alpha = 70^O$. **Find the Size of $\angle\beta$ in degrees**

6. There are four statements about the natural number A:

a) A is divisible by 5

b) A is divisible by 11

c) A is divisible by 55

d) A is less than 10

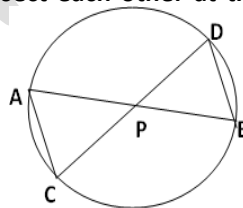It is known that two of these statements are true and the other two are false. Then A is equal to:

7. A triathlon consists of running swimming and biking. Biking is half oftotal distance another one third is swimming and the rest 5 miles is running. Find the total distance?

8. Each day a man meets his wife at the railway station after work, and then she drives him home. She always arrives exactly on time to pick himup. One day he catches an earlier train and arrives at the station an hour early. He immediately begins walking home along the same route the wifedrives. Eventually his wife sees him on her way to the station and drives him the rest of the way home. When they arrive home the man notice thatthey arrived 20 minutes earlier than usual. How much time did the man spend walking?

9. Andy, Betty, Cathie, Dannie and Eddy were born on 20/ 02/ 2001, 12/03/ 2000, 20/ 03/ 2001, 12/ 04/ 2000 and 23/ 04/ 2001 (day/ month/ year). Andy and Eddy were born in the same month. Also, Betty and Cathiewere born in the same month. Andy and Cathie were born on the same dayof different months. Also, Dannie and Eddy were born on the same day of different months. Which of these children is the youngest?

10. In Fig., two chords AB and CD intersect each other at the point P. Prove that:

i) Δ APC ~ Δ DPB

ii) AP. PB = CP. DP

PART B (10 × 12 = 120 MARKS) (EACH QUESTION CARRIES 12 MARKS)

1. Two Kangaroos Jum and Per start to jump at the same time, from thesame point, in the same direction. After that, they make one jump per second. Each of Jum's jumps is 6 m in length. Per's first jump is 1 m in length, the second is 2 m, the third is 3 m, the third is 3 m and so on. Afterhow many jumps does Per catch jump?

2. Three persons A, B and C gave these statements:

A said, either Freedom Party or Green Party won the elections.

B said, Freedom Party won.

C said, neither Freedom Party nor Green Party won the elections.

Of these persons, only one person is wrong. Who won the elections?
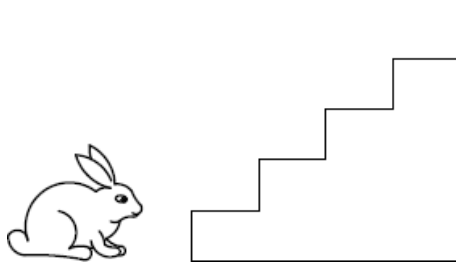
3. The number 27000001 has exactly four prime factors. Find their sum.

4. Rohan keeps a total of 90 guppies in 4 fish tanks.

- **There is 1 more guppy in the 2nd tank than in the 1st tank.**

- **There are 2 more guppies in the 3rd tank than in the 2nd tank.**

- **There are 3 more guppies in the 4th tank than in the 3rd tank.**

How many guppies are in the 4th tank?

5. Buzz Bunny is hopping up and down a set of stairs, one step at a time. In how many ways can Buzz start on the ground, make a sequence of 6 hops, and end up back on the ground? (For example, one sequence of hopsis up-up-down-down-up-down.)
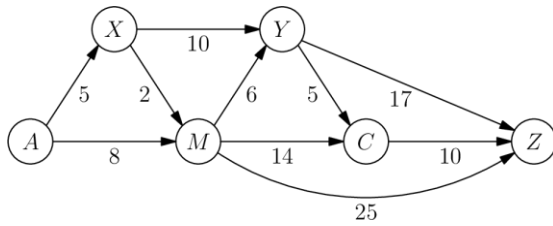

6. How many possible routes with the minimum number of moves arethere for a man to travel from A to B of the grid (man can move to any adjacent square, including diagonally)?

7. On Monday Taye has $2. Every day, he either gains $3 or doubles theamount of money he had on the previous day. How many different dollaramounts could Taye have on Thursday, 3 days later?

8. The year 2021 is such that the only common factor of 20 and 21 is 1. How many other years from 2001 to now have had this property?

9. The one-way routes connecting towns A, M, C, X, Y and Z are shownin the figure below (not drawn to scale). The distances in kilometres alongeach route are marked. Traveling along these routes, what is the shortest distance from A to Z in kilometres?

X
10
Y
5 2 6 5 17
A M C Z
8 14 10
25

Q10. Let the letters F, L, Y, B, U, G represent distinct digits. Suppose F L Y F L Y is the greatest number that satisfies the equation 8. F L Y F L Y = B U G B U G. What is the value of F L Y + B U G?

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