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PREBOARD EXAMINATION
2010-11
Std:- VIII

Sub: - Mathematics   **Time:- 3 Hours**
Date:- 08.02.2012   **Marks:- 80**

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General Instructions:-

1. All questions are compulsory.
2. The question paper consists of 34 questions divided into 4 sections – A, B, C and D.
   i)   Section A comprises 10 questions of 1 mark each.
   ii) Section B comprises 8 questions of 2 marks each.
   iii) Section C comprises 10 questions of 3 marks each.
   iv) Section D comprises 6 questions of 4 marks each.
3. In questions on construction, the drawing should be neat and exactly as per the given measurements. Use ruler and compass only.
4. Internal choice has been provided in some questions. You have to attempt only one of the alternatives in all such questions.

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SECTION – A

1) $2 \times \left(\dfrac{1}{27}\right)^{\frac{2}{3}}$ is equal to

   a) $\dfrac{9}{2}$ b) $\dfrac{2}{9}$ c) $2\dfrac{1}{9}$ d) $\dfrac{2}{27}$

2) Exponential form of $\sqrt[3]{(2)^{-6}}$ is

   a) $(2)^{-\frac{2}{3}}$ b) $(2)^{-\frac{3}{6}}$ c) $(2)^{-2}$ d) $(2)^{-6}$

3) The value of x for $2^{2x+2} = 4^{2x-1}$ is

   a) 1   b) -2   c) 2   d) -1

4) P is the principal R% is the rate of interest is per annum .If interest is compounded quarterly, then amount after n years is equal to

   a) $P\left[1+\dfrac{R}{100}\right]^{4n}$ b) $P\left[1+\dfrac{R}{400}\right]^{n}$ c) $P\left[1+\dfrac{R/4}{100}\right]^{4n}$

   d) none of these

5) Degree of polynomial $2x - 6x^3 + 5x^5 - 3x^2 + 5$ is

   a) 1   b) 3   c) 5   d) 2

6) The ratio of ages of Hina and Kanika is 4:3. The sum of their ages is 28 years. The age of Hina is

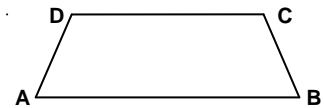a) 15 years   b) 12 years   c) 18 years   d) 16 years

7) ABCD is a parallelogram. If AB = 10cm and CD=(5x-5). The value of x is

a) 2 cm   b) 3 cm

c) 4 cm   d) 6 cm
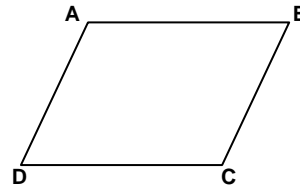
8) The sum of exterior angles of a quadrilateral is

a) 180° b) 270° c) 360° d) 480°

9) In the given figure, ABCD is a trapezium in which ABIICD. If $\angle A = 50^\circ$ then $\angle D$ is equal to

a) 130° b) 100° c) 50° d) 120°

10) Which of the following alphabets have rotational symmetry of order 2?

a) M   b) H   c) A   d) V

SECTION – B

11) Find the value : $64^{\frac{1}{2}} (64^{\frac{1}{2}} + 1)$

12) Find the value of x: $\left(-\dfrac{5}{6}\right)^{\frac{3}{4}} \div \left(-\dfrac{5}{6}\right)^{\frac{7}{6}} = \left(-\dfrac{5}{6}\right)^{7-x}$

13) Find the amount on Rs. 15,000 at 8% per annum compounded annually for 2 years.

14) On what sum will the compound interest at 5% per annum for 2 years compounded annually be Rs 164?

15) One side of a parallelogram is $\dfrac{3}{4}$ times its adjacent side. If the perimeter of parallelogram is 70 cm. Find the sides of the parallelogram.

16) The dimensions of a box are 60cm x 54cm x 30cm. How many small cubes of sides can be placed in the box?

17) The circumference of a base of cylinder is 176cm and its height is 65cm.Find its lateral surface area.

18) Give an example of each:

  (i) A geometrical figure which has neither a line of symmetry nor a rotational symmetry.

  (ii) English alphabet which has no line of symmetry and rotational symmetry of order 2.

SECTION – C

19) Simplify and express the answer with positive index: $\left[\sqrt[4]{\left(\dfrac{1}{x}\right)^{-6}}\right]^{\frac{2}{3}}$

  OR

  $\dfrac{5^{-2} \times 3^{-3} \times (125)^{\frac{2}{3}}}{(27)^{-\frac{2}{3}} \times (32)^{-\frac{1}{5}}}$

20) In what time will Rs 1,000 amount to Rs 1,331 at 10% per annum compound interest?

21) The population of a town is 56,000. If the population increases at the rate of 5% per annum in the first year and 7% per annum in the second year, find the population after 2 years.

22) Divide : $2\sqrt{2}\,q^4 + 4\sqrt{2}\,q^3 + q^2$ by $(-2\sqrt{2}\,q^2)$

  OR

  Divide : $z^2 - 10z + 16$ by z-2 using factor method.

23) The sum of three consecutive multiples of 8 is 888. Find these multiples.

  OR

  The sum of digits of a two digit number is 15, if the number formed by reversing the digits is less than the original number by 27, find the original numbers.

24) Solve : $\dfrac{17(2-x) - 5(x+12)}{1-7x} = 8$

25) The diagonals of a rhombus are in the ratio 5:12. If its perimeter is 104cm, find the lengths of the sides and diagonals of the rhombus.

26) ABC and ADC are two equilateral triangles on a common base AC. Find the angles of the resulting quadrilateral. Show that it is a rhombus.
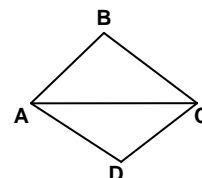
27)   Construct a quadrilateral PQRS with sides PQ=5.5 cm, QR=6 cm, RS=6.5 cm and diagonals PR=8 cm and SQ=7.5 cm.

28)   Write the order of rotational symmetry of a square and equilateral triangle with the help of sketches.

SECTION – D

29)   The difference between compound interest and simple interest on a certain sum of money at 10% per annum for 2 years is Rs. 500. Find the sum when the interest is compounded annually.

30)   Using long division method , show that $3y^2 + 5$ is a factor of
$6y^5 + 15y^4 + 16y^3 + 4y^2 + 10y - 35$

OR

Find out whether or not the first polynomial is a factor of the second polynomial. $P^2 + 9$, $p^4 + 13p^2 + 36$.

31)   A motor boat goes downstream in a river and covers the distance between two points in 4 hrs. It covers this distance upstream in 6 hrs. If the speed of the stream is 4 km/hr, find the speed of the boat in still water.

32)   Construct a quadrilateral ABCD where AB = 5 cm BC = 6.5 cm, $\angle A = 75^o$, $\angle C = 120^o$, $\angle B = 105^o$.

33)   Find the area of a trapezium whose parallel sides are 25 cm and 13 cm. The non parallel sides are 10 cm in each.

34)   A rectangular sheet of paper 44cm x 18cm is rolled along its length and cylinder is formed. Find the volume of the cylinder.

OR

The top surface of a raised platform is in the shape of a regular octagon.
Find the area of the octagonal surface.