CLASS X
GUESS PAPER
MATHS

Max.Marks: 80

Note: (i) This question paper consists of 40 questions divided into 4 sections A,B,C &D.

(ii) Questions in Section A carry 1 mark each, Section B carry 2 marks each, Section C carry 3 marks each and Section D carry 4 marks each.

(iii) There is no overall choice. However, internal choices are provided in 2 questions of Section A, 2 questions of Section B, 3 questions of Section C and 3 questions of Section D.

(iv) Use of calculators prohibited.

Section –A

1. If $a = p^2q^3r$ and $b = p^3q^2r^2$, where p,q and r are primes then H.C.F(a,b) is __
   a) P^2qr^2 b) p^3qr^2 c) p^2qr d) $p^2q^2r^2$

2. L.C.M of two numbers is 132 and their H.C.F is 22, hence their product is __
   a) 132   b)1320   c) 2904   d) 2408

3. Smallest 4-digit number that leaves remainder 7 when divided by 12,15 and 18 is _
   a) 1000   b)1007   c) 1085   d) 1087

4. 6th term of an A.P is 15 and 9th term is 21. Hence the common difference is __
   a) 6   b) 2   c) 4   d) -2

5. Sum of the ages of a father and a son is 55 years. Twice their difference is 50. Hence age of the son is __
   a) 15 years   b) 20 years   c) 10 years   d) 25 years.

6. ABC is a triangle right angled at B, BD ⊥ AC. If AC = 10 cm, AD = 6 cm then BD = ___
   a) $2\sqrt{2}$ cm   b) $2\sqrt{6}$ cm   c) $2\sqrt{3}$ cm   d) $3\sqrt{2}$ cm

7. Distance of point P(3.5, 12) from the origin is ___
   a) 12.5 cm   b) 10.5 cm   c) 11.5 cm   d) 13.5 cm

8. The co-ordinates of one end of the diameter of a circle are (4,-1) and co-ordinates of the centre are (2,-3). Hence oc-ordinates of other end are__
   a) (1,-3)   b) (-2,3)   c) (-2,-5)   d) (3,-2)

9. The intersection of 'more than' and 'less than' ogive curves gives ___
   a) Mean   b) Mode   c) Median   d) Frequency
10. Probability of an event occurring is 0.96. Hence its probability of not occurring is ___
    a) 0.4   b) 4   c) 0.004   d)0.04

Questions 11- 15 Fill in the blanks:

11. A toy is in the form of a cone mounted on a hemisphere of radius 'r'. If the slant height of coneis is 'l' then the total surface area of the toy is ____

If the roots of the equation $(k+2)x^2$ -26x +5=0 are reciprocals of each other, then k = ___

OR

An A.P. has 12 terms. If the first and last terms are 7 and 40, then the S_n = ____

12. Mode is a score that _____in a data.
                    OR

A die is tossed once. Probability of getting a prime number score is _____

13. In a ΔABC, right angled at A, AD � BC. Then $A\overset{2}{D}$= ____
14. Sum of two numbers is 60. Their difference is 20. Hence the larger number is ____.
    Questions 16-20.short answer questions.
15. Find the smallest number that becomes divisible by 20, 25and 30 when increased by 18.
16. If 3 is a zero of the polynomial x^2 –kx +15, find 'k'.
17. ΔABC is similar to ΔDEF. If AB = 7 cm, DE = 3 cm and area of ΔABC is 49 cm^2, find area of ΔDEF.
18. Find length of the tangent drawn to a circle of radius 5 cm from a point 13 cm away from the centre.
19. If 6th term of an A.P. is 17 and 15th term is 35, find an expression for the nth term.

Section-B
20. Solve for 'x' and 'y': x+ 2y = 4 ; 3x -2y = 4
                              OR
    For what value of 'k' the system of equations 2x = 3y – 5= 0 and kx – 6y – 8 =0 will have unique solution.
21. Prove that tangents drawn to a circle from an exterior point are equal.
                              OR
    In an equilateral ΔABC AD ⊡ BC. Prove that $4A\overset{2}{D}$= 3 AB^2.
22. If sinθ + sin^2θ = 1, show that cos^2θ + cos^4θ = 1.

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23. Inner and outer radii of a circular track are 28 m and 35 m respectively. Find the cost of leveling the track at Rs.3/m^2.
24. From a pack of well shuffled cards one card is drawn at random. Find the probability that it is a face card.
25. In the following data what is the lower and upper limit of the median class.

Class Int	15-25	25-35	35-45	45-55	55-65
Freq	4	5	10	12	15

Section-C

26. Show that n^2 – 1 is divisible by 8 if 'n' is odd.

OR

In a seminar there are 48 English teachers, 80 Science teachers and 112 Mathematics teachers. Find the number of room required to accommadate them if each room should contain the teachers of same subject.

27. If the zeroes of the polynomial x^3 – 12x^2 +39x + k are in A.P. find value of 'k'.
28. If α,β are the zeroes of the polynomial ax^2 + bx + c, then find the value of $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$

29. Prove that areas of two similar triangles are proportional to the squares of the corresponding sides.
30. PA and PB are tangents to a circle with centre 'O'. AB is a chord. Prove that
∟APB =2∟OAB
31. Determine that ratio in which the point P(m, 6) divedes the line joining A(- 4, 3) and B(2, 8). Also find value of 'm'.

OR

Find the area of the quadrilateral whose vertices are A(-3, 2), B(5, 4), C(7, -6) and D(-5,-4)
32. Prove : $\frac{sin\theta}{1-cos\theta} + \frac{tan\theta}{1+cos\theta} = sec\theta cosec\theta + cot\theta$
33. The top and bottom radii of a metal bucket are 21 cm and 14 cm respectively. If the bucket is 24 cm high find the area of the metal used to make the bucket and also cost of the bucket at Rs.20/100m^2.

Section- D

34. A plane left 30 minutes late due to bad weather. In order to reach it destination 1500km away on time its speed was increased by 100km/h. Find the usual speed of the plane.

OR

A motor cycle is priced Rs.80,000. Ravi paid 25% as advance deposit and the rest in ten equal instalments. If the interest at 5% is charged on the outstanding balance find the cost of the motor cycle.

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35. Construct a ΔABC in which AB = 5 cm, BC = 4.5 cm and ∟B = 75⁰ and construct a triangle similar to it with scale factor $\frac{5}{4}$ (use only ruler and compass)

36. Solve for x: $\frac{x-1}{2x+1} + \frac{2x+1}{x-1} = \frac{5}{2}$ x≠1, x≠ - ½

37. From the deck of a ship 25 m above water level the angle of elevation of a cloud was found to be 30⁰ and the angle of depression of its reflection in water was 60⁰. Find the height of the cloud.

OR

From a cliff 300 m high the angles of depression of two cars approaching it were found to be 30⁰ and 60⁰ respectively. Find the distance between the cars.

38. If the median of the following data is 41.4 find the missing frequencies.

Cl.Int	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Freq	3	5	x	7	8	14	7

OR

Draw the 'less than' ogive curve for the following data and obtain the median from it.

Score	Below 10	Below 20	Below 30	Below 40	Below 50	Below 60
No.of stud	5	8	12	18	26	35