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SAMPLE PAPER TEST 08 (BASIC) (2019-20)

SUBJECT: MATHEMATICS **MAX. MARKS : 80**

CLASS : X **DURATION : 3 HRS**

General Instruction:

(i) All the questions are compulsory.

(ii) The question paper consists of 40 questions divided into 4 sections A, B, C, and D.

(iii) **Section A** comprises of 20 questions of **1 mark** each. **Section B** comprises of 6 questions of **2 marks** each. **Section C** comprises of 8 questions of **3 marks** each. **Section D** comprises of 6 questions of **4 marks** each.

(iv) There is no overall choice. However, an internal choice has been provided in two questions of 1 mark each, two questions of 2 marks each, three questions of 3 marks each, and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.

(v) Use of calculators is not permitted.

SECTION – A

Questions 1 to 20 carry 1 mark each.

1. The HCF of two numbers is 2 and their LCM is 27. The product of the two numbers is :
(a) 54 (b) 29 (c) 13.5 (d) None of these

2. For some integer m, every even integer is of the form :
(a) m (b) m + 1 (c) 2m (d) 2m + 1

3. A quadratic polynomial, whose zeroes are – 3 and 4, is :
(a) $x^2 - x + 12$ (b) $x^2 + x + 12$ (c) $x^2 - x - 12$ (d) $2x^2 + 2x - 9$

4. For some integers p and 5, there exist unique integers q and r such that p = 5q + r. Possible values of r are
(a) 0 or 1 (b) 0, 1 or 2 (c) 0, 1, 2 or 3 (d) 0, 1, 2, 3 or 4

5. If α and β are zeroes of the polynomial $x^2 + 5x + 8$, then α + β =
(a) 8 (b) -8 (c) 5 (d) -5

6. Midpoint of a line segment AB where A (2, 5) and B (-5, 5) is at:
(a) (-1, 5) (b) (1, 5) (c) (- 1.5, -5) (d) (-1.5, 5)

7. The distance of the point P(–3, –4) from the origin is
(a) 12 (b) 5 (c) 7 (d) none of these

8. The probability of an event that is certain to happen is
(a) –1 (b) 1 (c) 0 (d) none of these

9. The angle between tangent at a point on a circle and the radius through the point of contact is :
(a) 30° (b) 45° (c) 60° (d) 90°

10. If $\sum f_i = 15, \sum f_i x_i = 3p + 36$ and mean = 3 then
(a) p = 3 (b) p = 5 (c) p = 6 (d) p = 9

11. The distance between the points (0, 5) and (-5, 0) is _____

12. If sin A = $\frac{3}{4}$, the value of sec A is _____

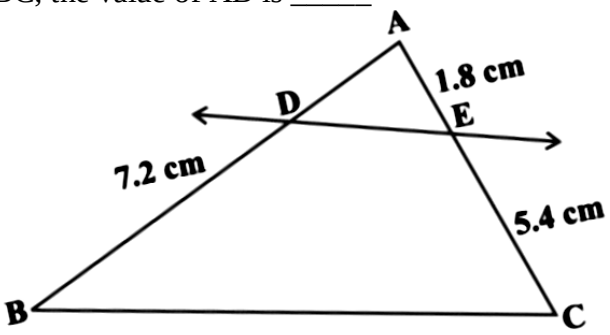
13. The value of 2 $\tan^2 60° + \cos^2 60° - \sin^2 30°$ is _____

14. The value of k so that the system of equations has no solution: kx + 3y = 1, 12x + ky = 2 is _____.

OR

If one root of the quadratic equation $6x^2 - x - k = 0$ is 2/3, then the value of k is _____

15. In below figure, DE || BC, the value of AB is _____



16. A lot of 40 bulbs contain 12 defective ones. One bulb is drawn at random from the lot. What is the probability that this bulb is good?

17. Find the value of 19 cosec^2 A – 19 $\cot^2$ A.

OR

Find the value of sin 35° cos 55° + cos 35° sin 55°

18. A ladder 13 m long reaches a window 12 m above the ground. Find the distance of the foot of the ladder from base of the wall.

19. A chord of a circle of radius 7 cm subtends a right angle at the centre. What is the area of the minor sector?

20. For what value of k will k + 9, 2k – 1 and 2k + 7 are the consecutive terms of an AP?

SECTION – B

Questions 21 to 26 carry 2 marks each.

21. A lot consists of 144 ball pens of which 20 are defective and the others are good. Nuri will buy a pen if it is good, but will not buy if it is defective. The shopkeeper draws one pen at random and gives it to her. What is the probability that (i) She will buy it? (ii) She will not buy it?

OR

One card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting (i) a face card (ii) the jack of hearts

22. A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears (i) a two-digit number (ii) a perfect square number.

23. If sin 3A = cos (A – 26°), where 3A is an acute angle, find the value of A.

OR

In Δ ABC, right-angled at B, AB = 5 cm and ∠ ACB = 30°. Determine the lengths of the sides BC and AC.

24. Divide $3x^3 + x^2 + 2x + 5$ by $1 + 2x + x^2$ and find the quotient and remainder

25. The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand in 5 minutes.

26. A quadrilateral ABCD is drawn to circumscribe a circle. Prove that AB + CD = AD + BC

SECTION – C

Questions 27 to 34 carry 3 marks each.

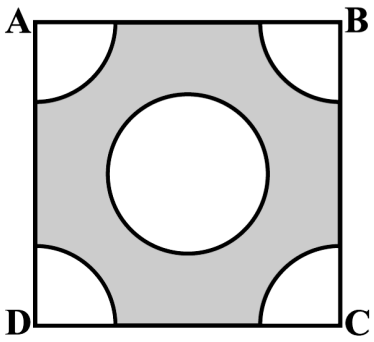
27. Prove that $\sqrt{2}$ is an irrational number.

OR

Find the HCF and LCM of 96 and 404 by the prime factorisation method and verify that LCM × HCF = product of the two numbers

28. Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that $\angle$ PTQ = 2 $\angle$ OPQ.

29. From each corner of a square of side 4 cm a quadrant of a circle of radius 1 cm is cut and also a circle of diameter 2 cm is cut as shown in below figure. Find the area of the remaining portion of the square.



30. Find the zeroes of the quadratic polynomial $3x^2 - x - 4$ and verify the relationship between the zeroes and the coefficients.

31. If A, B and C are interior angles of a triangle ABC, then show that $\tan\left(\frac{A+C}{2}\right) = \cot\frac{B}{2}$

OR

Prove that sec A (1 – sin A)(sec A + tan A) = 1.

32. A lending library has a fixed charge for the first three days and an additional charge for each day thereafter. Saritha paid Rs 27 for a book kept for seven days, while Susy paid Rs 21 for the book she kept for five days. Find the fixed charge and the charge for each extra day.

33. Draw a triangle ABC with side BC = 7 cm, $\angle$B = 45°, $\angle$A = 105°. Then, construct a triangle whose sides are $\frac{3}{5}$ times the corresponding sides of Δ ABC.

OR

Draw a line segment of length 9.6 cm and divide it in the ratio 3 : 4.

34. Four friends Aditya(A), Bunny(B), Chotu(C) and Dhanush(D) are sitting in a park and they are talking to each other using walkie-talkie. Aditya told his friends that their positions will form a quadrilateral in a park. All friends also agree with Aditya. They got the coordinates of their positions as A(–4, –2), B(–3, –5), C(3, –2) and D(2, 3) by taking the origin in the middle of the park. After obtaining the coordinates they have calculate the area of the quadrilateral formed. How much area they calculated?

SECTION – D

Questions 35 to 40 carry 4 marks each.

35. Two poles of equal heights are standing opposite each other on either side of the road, which is 80 m wide. From a point between them on the road, the angles of elevation of the top of the poles are 60° and 30°, respectively. Find the height of the poles and the distances of the point from the poles.

36. An express train takes 1 hour less than a passenger train to travel 132 km between Mysore and Bangalore (without taking into consideration the time they stop at intermediate stations). If the average speed of the express train is 11km/h more than that of the passenger train, find the average speed of the two trains.

37. Prove that "The ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides."

OR

State and prove Pythagoras theorem.

38. A sum of Rs 700 is to be used to give seven cash prizes to students of a school for their overall academic performance. If each prize is Rs 20 less than its preceding prize, find the value of each of the prizes.

OR

The first and the last terms of an AP are 17 and 350 respectively. If the common difference is 9, how many terms are there and what is their sum?

39. A tent is in the shape of a cylinder surmounted by a conical top. If the height and diameter of the cylindrical part are 2.1 m and 4 m respectively, and the slant height of the top is 2.8 m, find the area of the canvas used for making the tent. Also, find the cost of the canvas of the tent at the rate of Rs 500 per m^2. (Note that the base of the tent will not be covered with canvas.)

OR

A well of diameter 3 m is dug 14 m deep. The earth taken out of it has been spread evenly all around it in the shape of a circular ring of width 4 m to form an embankment. Find the height of the embankment.

40. The table given below shows the frequency distribution of the cores obtained by 200 candidates in a BCA examination.

Score	200-250	250-300	300-350	350-400	400-450	450-500	500-550	550-600
No. of students	30	15	45	20	25	40	10	15

Draw less than type ogive and hence find median from the graph.