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INDIRA IDEAL SCHOOL
MID TERM EXAMINATION (2025-26)
CLASS - X

SUBJECT :MATHS M.M: 80

NAME: TIME : 3 HRS

General Instructions :

Read the following instructions carefully and follow them :

i. This question paper contains 38 questions. All questions are compulsory.
ii. This question paper is divided into five Sections - A, B, C, D and E.
iii. In Section A, question number 1 to 18 are Multiple Choice Questions (MCQs) and question number 19 and 20 are Assertion-Reason based questions of 1 mark each.
iv. In Section B, question number 21 to 25 are Very Short Answer (VSA) type questions carrying 2 marks each.
v. In Section C, question number 26 to 31 are Short Answer (SA) type questions carrying 3 marks each.
vi. In Section D, question number 32 to 35 are Long Answer (LA) type questions carrying 5 marks each.
vii. In Section E, question number 36 to 38 are Case Study Based Integrated questions carrying 4 marks each. Internal choice is provided in 2 marks question in each case study.
viii. There is no overall choice. However, an internal choice has been provided in 2 questions of Section B, 2 questions of Section C, 2 questions of Section D and 3 questions of 2 marks in Section E.
ix. Draw neat diagrams wherever required. Take $\pi = \frac{22}{7}$ wherever required, if not stated.
x. Use of calculators is not allowed.

SECTION -A

Q 1 Given HCF(2520,6600) = 120 ; LCM(2520,6600) = 252 X k ,then the value of k is

(a) 165 (b)550 (c)990 (d)1650

Q 2 The LCM of the smallest prime number and the smallest odd composite number is

(a) 10 (b) 6 (c) 9 (d) 18

Q 3 The zeroes of a polynomial $x^2 + px + q$ are twice the zeroes of the polynomial $4x^2 - 5x - 6$, then the value of p is

(a) $-5/2$ (b) $5/2$ (c) -5 (d) 10

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Q 4 If the sum and product of zeroes of a quadratic polynomial are $2\sqrt{3}$ and 3 respectively then the quadratic polynomial is

(a) $X^2 + 2\sqrt{3}x - 3$ (b) $(x-\sqrt{3})^2$ (c) $x^2 - 2\sqrt{3}x - 3$ (d) $x^2+2\sqrt{3}x + 3$

Q 5The pair of equation ax + 2y = 9 and 3x + by = 18 represents parallel lines, where a and b are integers,if

(a) a = b (b) 3a = 2b (c) 2a = 3b (d) ab = 6

Q 6 If 2x + 3y = 15 and 3x + 2y = 25 , then value of x – y is

(a) -10 (b) 8 (c) 10 (d) -8

Q 7 The nature of roots of the quadratic equation $9x^2 - 6x - 2 = 0$ is

(a) No real roots (b) 2 equal roots

(c) 2 distinct real roots (d) more than 2 real roots

Q 8 The next term of the A.P $\sqrt{18}, \sqrt{50}, \sqrt{98}$, ... is

(a) $\sqrt{128}$ (b) $\sqrt{140}$ (c) $\sqrt{162}$ (d) $\sqrt{200}$

Q 9 n^{th} term of the A.P. is 7n + 4 , the common difference is

(a) 7n (b) 4 (c) 7 (d) 1

Q 10 The centre of a circle whose diameter's endpoints are (-6,3) and (6,4) is

(a) (-8,1) (b) (4,7) (c)(0, 7/2) (d)(4, 7/2)

Q 11 If P(a/3, 4) is the midpoint of the line segment joining the points Q (-6,5) and R(-2,3) then the value of a is

(a)–4 (b)–12 (c) 12 (d) -6

Q 12 If A = 30° then the value of 3 tan A is

(a) 1 (b) tan 30^0 (c) tan 60^0 (d)not defined

Q 13 A card is drawn from a well shuffled deck of playing cards. The probability of getting red face card is

(a) 3/13 (b) ½ (c) 3/52 (d) 3/26

Q 14 Two dice are rolled simultaneously. What is the probability that 6 will come up at least once?

(a) 1/6 (b) 7/36 (c) 11/36 (d) 13/36

Q 15 If the difference of mode and median of a data is 24, then the difference of median and mean is

(a) 8 (b)12 (c) 24 (d)36

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Q 16 Consider the following frequency distribution :

Class	0 – 6	6 – 12	12 – 18	18 – 24	24 – 30
Frequency	12	10	15	8	11

The median class is

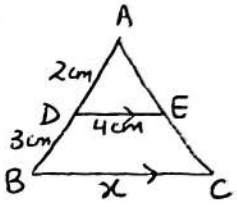
(a) 6 – 12 (b) 12 – 18 (c) 18 – 24 (d) 24 – 30

Q 17 If $\Delta ABC \sim \Delta PQR$, $\angle A = 80^0$, $\angle B = 60^0$, then value of $\angle P$ is

(a) 60^0 (b) 50^0 (c) 40^0 (d) None of these

Q 18 In the given figure, DE II BC , the value of x is

(a) 6 (b) 12.5 (c) 8 (d) 10



Directions: In question numbers 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option :

(a) Both, Assertion (A) and Reason (R) are true and Reason (R) is correct explanation of Assertion (A).

(b) Both, Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true, but Reason (R) is false.

(d) Assertion (A) is false, but Reason (R) is true.

Q 19 Assertion(A) : If $\cos A + \cos^2 A = 1$ then $\sin^2 A + \sin^4 A = 1$.

Reason (R) : $\sin^2 A + \cos^2 A = 1$

Q 20 Assertion(A) : $2x^2 - 4x + 3 = 0$ is a quadratic equation.

Reason (R) : All polynomials of degree n, where n is a whole number can be treated as quadratic equation.

SECTION – B

Q 21 Prove that $5 - 2\sqrt{3}$ is an irrational number.

Q 22A If $4k = \tan^2 60^0 - 2\ \text{cosec}^2 30^0 - 2 \tan^2 30^0$, then find the value of k.

OR

Q22B Find the value of x for which :

$(\sin A + \text{cosec } A)^2 + (\cos A + \sec A)^2 = x + \tan^2 A + \cot^2 A$.

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Q 23 The probability of guessing the correct answer of a certain test question is $\frac{x}{12}$. The probability of not guessing the correct answer is $\frac{5}{6}$, then find the value of x .

Q 24A . The cost of 2kg apples and 1kg of grapes on a day was found to be ₹320. The cost of 4kg apples and 2kg grapes was found to be ₹600. Represent the given situation algebraically as the system of equations and check whether the system so obtained is consistent or not .

OR

Q24B. Solve for x and y: $30x + 44y = 10$; $40x + 55y = 13$.

Q25 Find the coordinates of the point C which lies on the line AB produced such that

AC = 2BC , where coordinates of points A and B are (-1 , 7) and (4,-3) respectively.

SECTION - C

Q26 Find the zeroes of the polynomial $p(x) = 3x^2 - 4x - 4$. Hence , write a polynomial whose each of the zeroes is 2 more than zeroes of p(x) .

Q27A The sum of the areas of two squares is $640m^2$. If the difference of their perimeters is 64m , find the sides of the squares.

OR

Q27B In a class test the sum of Arun's marks in Hindi and English is 30. Had he got 2 marks more in Hindi and 3 marks less in English , the product of the marks would have been 210 . Find his marks in the two subjects.

Q28 Let 2A + B and A +2B be acute angles such that $\sin(2A + B) = \frac{\sqrt{3}}{2}$ and $\tan(A + 2B) = 1$. Find the value of cot (4A -7B).

Q29 If the sum of first 14 terms of an A.P. is 1050 and first term is 10 , then find the 20^{th} term and the n^{th} term.

OR

Find the sum of all 11 terms of an A.P. whose middle term is 30.

Q30. AD and PM are medians of triangle ABC and PQR respectively where $\Delta ABC \sim \Delta PQR$. Prove that $\frac{AB}{PQ} = \frac{AD}{PM}$.

Q31 How many positive 3 digit integers have the hundredth digit 8 and unit digit 5 ? Find the probability of selecting one such number out of all 3 digit numbers.

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SECTION – D

Q32. Prove that if a line drawn parallel to one side of a triangle intersecting the other two sides in distinct points then it divides the two sides in the same ratio. Also , state the converse of the above statement.

Q33A. Following distribution shows the marks of 230 students in a particular subject . If the median marks are 46 , then find the value of x and y .

Marks	10 – 20	20 – 30	30 – 40	40- 50	50 – 60	60 – 70	70 – 80
No. of students	12	30	X	65	Y	25	18

OR

Q33B . Find the mean and median of the following data :

Class	85-90	90-95	95-100	100-105	105-110	110-115
Frequency	15	22	20	18	20	25

Q34A. Solve the following system of linear equations graphically : $x+2y = 3$, $2x-3y+8 = 0$.

OR

Q34B. Places A and B are 180km apart on a highway. One car starts from A and another from B at the same time . If the car travels in the same direction at different speeds , they meet in 9 hours . If they travel towards each other with the same speed as before , they meet in an hour . What are the speeds of the two cars ?

Q35. Prove that : $\frac{\tan\theta}{1-\cot\theta} + \frac{\cot\theta}{1-\tan\theta} = 1 + \sec\theta \operatorname{cosec}\theta$.

SECTION -E

Q36. Teaching Mathematics through activities is a powerful approach that enhances student's understanding and engagement. Keeping this in mind, Ms. Mukta planned a prime number game for class 5 students. She announced the number 2 in her class and asked the first student to multiply it by a prime number and then pass it to second student. Second student also multiplied it by a prime number and passed it to third student. In this way by multiplying with a prime number, the last student got 173250.

Now, Mukta asked some questions as given below to the students:

(i) What is the least prime number used by students?

(ii) Which prime number has been used maximum times?

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(iii) (a) How many students are in the class?

OR

(b) What is the highest prime number used by students?

Q37 . Manpreet Kaur is the national record holder for women in the shot-put discipline. Her throw of 18.86 m at the Asian Grand Prix in 2017 is the biggest distance for an Indian female athlete .Keeping her as a role model, Sanjitha is determined to earn gold in Olympics one day. Initially her throw reached 7.56 m only. Being an athlete in school, she regularly practiced both in the mornings and in the evenings and was able to improve the distance by 9 cm every week. During the special camp for 15 days, she started with 40 throws and every day kept increasing the number of throws by 12 to achieve this remarkable progress .

Based on the above information, answer the following questions :

(i) How many throws Sanjitha practiced on 11th day of the camp?

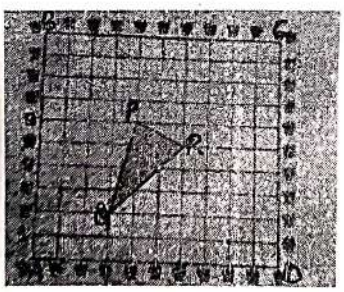
(ii) (A) What would be Sanjitha's throw distance at the end of 6 months?

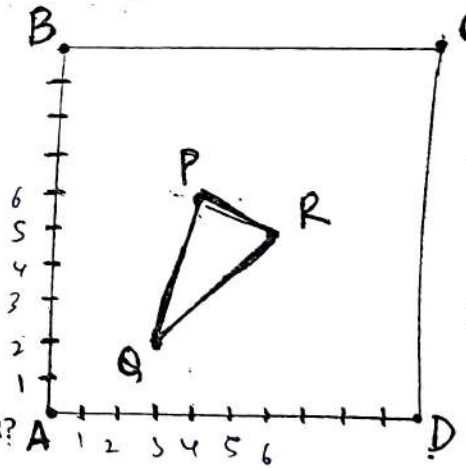
Or

(B) When will she be able to achieve a throw of 11.16 m?

(ii) How many throws did she do during the entire camp of 15 days?

Q38: A garden is in the shape of a square. The gardener grew saplings of Ashoka tree on the boundary of the garden at the distance of 1 m from each other He wants to decorate the garden with rose plants. He chose a triangular region inside the garden to grow rose plants. In the above situation, the gardener took help from the students of Class 10. They made a chart for it which looks like the given figure.





Based on the above, answer the following questions :

(i) If A is taken as origin, what are the coordinates of the vertices of ΔPQR?

(ii) (A) Find distances PQ and QR.

Or

(B) Find the coordinates of the point which divides the line segment joining points P and R in the ratio 2: 1 internally.

(ii) Find out if ΔPQR is an isosceles triangle.