

INTERNATIONAL INDIAN SCHOOL BURAI DAHTERM- EXAMINATION (2019-2020)

SUBJECT: MATHEMATICS

SET-A

CLASS : X

DATE: 13/6/2019

DURATION: 3 HOURS

MAX. MARKS : 80

GENERAL INSTRUCTIONS:

- This question paper contains 30 questions, divided into four A, B, C and D
- Section A comprise 6 questions of 1 mark each, section-B comprises of 6 questions of 2 marks each, section-C comprises of 10 questions of 3 marks each, section-D comprises of 8 questions of 4 marks each.
- Use of calculator is not permitted

SEC-A (1 MARK EACH)

1. Find the product of the zeroes of the quadratic equation $6x^2 + 7x + 2$
2. What is the HCF of the smallest composite number and the smallest prime number?
3. If $\triangle ABC \sim \triangle DEF$, $\angle A = 47^\circ$, $\angle E = 83^\circ$, Find the value of $\angle C$.
4. If the product of two numbers is 1080 and their HCF is 30, find their LCM
5. Write the relation connecting the three measures mean, median and mode of central tendency.
6. Evaluate $\sin 60^\circ \cos 30^\circ + \sin 30^\circ \cos 60^\circ$

SEC - B (2 MARKS EACH)

7. Find the HCF of 867 and 225 using Euclid's division algorithm
8. If $\tan A = \frac{24}{7}$, Find the value of $\sin A + \cos A$
9. Solve the following pair of equations by substitution method
 $7x - 15y = 2$; $x + 2y = 3$
10. If the mean of the following data is 15. Find P

x	5	10	15	20	25
f	6	p	6	10	5

11. If the mean of $x+2$, $2x+3$, $3x+4$, $4x+5$ is $x+2$, find x

12. If $\sec A = 2$, where A is acute, then find the value of $\tan A + \cot A$

SEC-C (3 MARKS EACH)

13. Solve the following pairs of equation by reducing them to a pair of linear equations $\frac{10}{x+y} + \frac{2}{x-y} = 4$; $\frac{15}{x+y} - \frac{5}{x-y} = -2$

14. Find all the zeroes of $2x^4 - 3x^3 - 3x^2 + 6x - 2$, if you know that two of its zeroes are $\sqrt{2}$, $-\sqrt{2}$

15. Find the zeroes of the quadratic polynomial $4x^2 - 4x + 1$ and verify the relationship between the zeroes and the coefficient

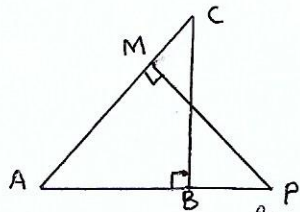
16. If $\sin(A-B) = \frac{1}{2}$, $\cos(A+B) = \frac{1}{2}$, $0 < A+B \leq 90$, Find A and B

17. In ΔPQR , right angled at Q , $PR + QR = 25\text{cm}$ and $PQ = 5\text{cm}$. Determine the values of $\tan P$

18. Show that any positive odd integers is of the form $6q + 1$, or $6q + 3$ or $6q + 5$, where q is some integers

19. Solve the following system of linear equations graphically $2x + 3y = 4$, $3x - y = -5$. Shade the region bounded by the above lines and x -axis

20. In fig 1 ABC and AMP are two right triangles, right angled at B and M respectively prove that (i) $\Delta ABC \sim \Delta AMP$ (ii) $\frac{CA}{PA} = \frac{BC}{MP}$



21. If $\cot A = \frac{1}{\sqrt{3}}$ show that $\frac{1 - \cos^2 A}{2 - \sin^2 A} = \frac{3}{5}$

22. Half the perimeter of a rectangular garden, whose length is 4 more than its breadth is 36 m. find the dimensions of the garden

SEC- D(4 MARKS EACH)

23. The perpendicular from A on side BC of a triangle ABC intersect BC at D such that $DB = 3CD$. Prove that $2 AB^2 = 2 AC^2 + BC^2$

24. If we add 1 to the numerator and subtract 1 from denominator a fraction reduces to 1. It becomes $\frac{1}{2}$ if we only add 1 to the denominator. What is the fraction

25. When polynomial $6x^4 + 8x^3 + 27x^2 + 21x + 7$ is divided by another polynomial $3x^2 + 4x + 1$, the remainder is of the form $ax + b$. Find a and b

26. Prove that in a right triangle the square of hypotenuse is equal to the sum of the square of the other two sides.

27. Find mean of the given data by step deviation method:

Class interval	0-10	10-20	20-30	30-40	40-50
frequency	7	10	15	8	10

28. Find the mode of the following frequency distribution

CLASS	25-30	30-35	35-40	40-45	45-50	50-55
FREQUENCY	25	34	50	42	38	14

29. Prove that $3 - \sqrt{5}$ is irrational number

30. The following distribution gives the daily income of 50 workers of a factory. Convert the distribution above to a less than type cumulative frequency distribution and draw its ogive. Also find the median on the graph

DAILY INCOME	100-120	120-140	140-160	160-180	180-200
NO. OF WORKERS	12	14	8	6	10