Holy Child Ausuldern Vendam Bhelia

SUMMATIVE ASSESSMENT - I, 2013 MATHEMATICS Class - X

Time Allowed: 3 hours

Maximum Marks: 90

General Instructions:

All questions are compulsory.

The question paper consists of 34 questions divided into four sections A, B, C and D. Section-A comprises of 8 multiple choice 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 and Section-D comprises of 11 questions of 4 marks each.

There is no overall choice in this question paper

Use of calculator is not permitted.

			S	ECTIO	N - A	
	Ques	tion numbers 1 to 8 carry	1 mark eac	:h.		
1	The d	ecimal expansion of $\frac{33}{2^2 \times 5}$	will termin	ate after		
	(a)	One decimal place	(b)	Two d	ecimal places	
	(c)	Three decimal places	(d)	More	than three decimal places	
2	40 cm	, 42 cm and 45 cm respective	ely. The mi		the same direction and their steps measure istance each should walk so that each can cove	r
		me distance in complete ste	ps is:	Var	2400	
	(a) (c)	2600 cm 2520 cm		(d)	2400 cm 2500 cm	

If $ax+by=a^2-b^2$ and bx+ay=0, then the value of (x+y) is:

- (a) a -b
- (b) b-
- (c) , a-
- d) a^2+b

4	Which of the following polynomials has the sum and product as -3 and -9 respectively?	1				
	(A) x^2+3x-9 (B) x^2-3x-9					
	(A) x^2+3x-9 (B) x^2-3x-9 (C) x^2+3x+9 (D) x^2-3x+9					
5	The lengths of the diagonals of a rhombus are 24 cm and 32 cm. The length of the altitude of the rhombus is :	1				
	(a) 12 cm (b) 12.8 cm(c) 19 cm (d) 19.2 cm					
6	The value of (sin45° – cos45°) is :	1				
	(A) $\frac{1}{\sqrt{2}}$ (B) 0					
	(C) $\sqrt{2}$ (D) 1					
7	$(\sin^2\theta + \cos^2\theta + \cot^2\theta)$ is equal to :	1				
	(A), $\csc^2\theta$ (B) $\tan^2\theta$					
	(C) $\sec^2\theta$ (D) 1					
8		1				
	If the 'less than' type ogive and 'more than' type ogive intersect each other at (20.5, 15.5), then the median of the given data is:					
	(A) 36.0 (B) 20.5 (C) 15.5 (D) 5.5					
	SECTION - B					
	Question numbers 9 to 14 carry 2 marks each.					
9	Show that square of any positive odd integer is of the form 8k+1, where k is an integer.	2				
(10)	Find 'a' and 'b' such that $2x^3-6x^2+ax+b$ is exactly divisible by x^2-3x+2 .					
11	Find a quadratic polynomial whose zeroes are $\frac{3+\sqrt{5}}{5}$ and $\frac{3-\sqrt{5}}{5}$.	2				
12	Find the length of each altitude of an equilateral triangle of side 12 cm.	2				

2

Using the relationship connecting the three measures of central tendency, find the mean of the 2 data which has mode 35 and median 28.

SECTION - C

Question numbers 15 to 24 carry 3 marks each.

- Find the LCM and HCF of 336 and 54 and verify that LCM× HCF= Product of the two 3 numbers.
- Two years ago, Ram was thrice as old as his daughter and six years later, he will be four years 3 older than twice her age. How old are they now?
- If one zero of the quadratic polynomial $2x^2-3x+p$ is 3, find its other zero. Also, find the value of p.
- If the polynomial $6x^4+8x^3-5x^2+ax-b$ is exactly divisible by the polynomial $2x^2-5$, then find the values of a and b.
 - 19 If AD and PM are altitudes of triangles ABC and PQR respectively where 3 \triangle ABC ~ \triangle PQR. Prove that $\frac{AB}{PQ} = \frac{AD}{PM}$.
 - In a $\triangle PQR$, S and T are points on sides PQ and PR respectively such that $\frac{PS}{SQ} = \frac{PT}{TR}$ and $\frac{3}{2}$ $PST = \angle PRQ$. Prove that PQR is an isosceles triangle.
- Show that $\csc^2\theta \tan^2(90^\circ \theta) = \sin^2\theta + \sin^2(90^\circ \theta)$.
- Prove that $(\cos\theta + \sec\theta)^2 + (\sin\theta + \csc\theta)^2 = 7 + \tan^2\theta + \cot^2\theta$

-	ean for the following data
24.5-29.5	4
29.5-34.5	14
34.5-39.5	22
39.5-44.5	16
44.5-49.5	6
49.5-54.5	5
54.5-59.5	3

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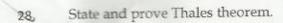
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SECTION - D

Question numbers 25 to 34 carry 4 marks each.

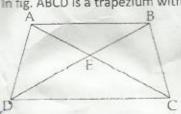
There are 104 students in class X and 96 students in class IX in a school. In a house 4 examination the students are to be evenly seated in parallel rows such that no two adjacent (b)

- Find the maximum number of parallel rows of each class for the seating arrangement. (c)
- Also find the number of students of class IX and also of class X in a row.
- What is the objective of the school administration behind such an arrangement.
- If the polynomial $p(x)=x^4-6x^3+16x^2-25x+10$ is divided by another polynomial x^2-2x+k , the remainder 4 26
- The sum of a 2 digit number and the number formed by interchanging its digits is 110. If 10 is 4 subtracted from the first number , the new number is 4 more than 5 times the sum of the digits of the





In fig. ABCD is a trapezium with AB||DC. If Δ AED is similar to Δ BEC. Prove that AD=BC







Prove that:
$$\frac{1 + \tan^2 \theta}{1 + \cot^2 \theta} = \left(\frac{1 - \tan \theta}{1 - \cot \theta}\right)^2$$

Evaluate: $\frac{4}{3} \cot^2 30^\circ + 3 \sin^2 60^\circ - 2 \csc^2 60^\circ - \frac{3}{4} \tan^2 30^\circ$.

If
$$\sin^2 \frac{c}{\sqrt{c^2 + d^2}}$$
 and $d > 0$, find the values of $\cos \theta$ and $\tan \theta$. \Rightarrow

$$tau = \frac{c}{\sqrt{c^2 + d^2}}$$

4

Calculate the average daily income (in Rs.) of the following data about men working in a

Daily income (in Rs.)	< 100	< 200	< 300	< 400	< 500
Number of men	12	28	34	41	50

34

ution of boights (in cm) of 96 children is given below:

Height (in cm)	124-128	128-132	132-136	136-140	140-144	144-148	148-152
No. of students	7	8	17	24	20	12	8

Draw a more than type cumulative curve for the above data and use it to compute median height of the children.