Agyat gupta (TARGET MATHEMATICS)
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PREMIER INSTITUTE for X , XI & XII .

SET 'P' CLASS X _ 2011-2012 (SA-1)

Time : 3 Hours 15 Minutes **Maximum Marks : 80**

SECTION A

Q.1 If least prime factor of a is 3 and least prime factor of b is 7, the least prime factor of (a + b) is :
(a) 2 (b) 3 (c) 5 (d) 11

Q.2 If a, b are coprime, then a^2, b^2 are :
(a) Coprime (B)Not coprime
© Odd numbers (d) Even numbers

Q.3 The zeroes of the quadratic polynomial $x^2+99x+127$ are :
(a) both positive (b) both negative
© one positive and one negative (d) both equal

Q.4 The pair of linear equations $kx+2y=5$ and $3x+y=1$ has unique solution if :
(a) $k=6$ (b) $k\neq 6$ (c) $k=0$ (d) k has any value

Q.5 In an isosceles ΔABC, if $AC=BC$ and $AB^2=2AC^2$, then $\angle C$ is equal to :

(a) 45^0 (b) 60^0 (c) 30^0 (d) 90^0

Q.6 If $\sin\alpha=\frac{1}{2}$ and α is acute, then $(3\cos\alpha-4\cos^3\alpha)$ is equal to :

(a) 0 (b) $\frac{1}{2}$ (c) $\frac{1}{6}$ (d) -1

Q.7 If $\cot A+\frac{1}{\cot A}=1$, the value of $\cot^2 A+\frac{1}{\cot^2 A}$ is :

(a) 1 (b) 2 (c) -1 (d) -2

Q.8 If $\sec\theta+\tan\theta=x$, then $\tan\theta$ is

(a) $\frac{x^2+1}{x}$ (b) $\frac{x^2-1}{x}$ (c) $\frac{x^2+1}{2x}$ (d) $\frac{x^2-1}{x}$

Q.9 If $2\sin 2\theta=\sqrt{3}$, then the value of θ is

(a) 90^0 (b) 30^0 (c) 45^0 (d) 60^0

Q.10 For the following distribution.

Marks	Below 10	Below 20	Below 30	Below 40	Below 50	Below 60
No. of students	3	12	27	57	75	80

The modal class is :
(A) 10 - 20 (B) 20 - 30 (C) 30 - 40 (D) 50 - 60

SECTION B

Q.11 Find the mode of the given data :

Class Interval	0 - 20	20 - 40	40 - 60	60 - 80
Frequency	15	6	18	10

Q.12 If the areas of two similar triangles are equal, prove that they are congruent.

Q.13 Find the zeroes of the quadratic polynomial $2x^2-25$.

Q.14 Find the LCM (306, 1314), if HCF (306, 1314) = 18.

Q.15 Find the median of following given data :

x	6	7	5	2	10	9	3
f	9	12	8	13	11	14	7

Q.16 Solve for *x* and *y* :
$47x+31y=63; 31x+47y=15$

Q.17 Prove that the line joining the mid points of any two sides of triangle is parallel to third side.

Q.18 Find the value of the expression $\frac{\cos 30^0+\sin 60^0}{1+\cos 60^0+\sin 30^0}$

OR

If $\angle A$ and $\angle B$ are acute angles such that $\cos A=\cos B$. Show that $\angle A=\angle B$.

SECTION C

Q.19 Find values of a and b for which the system of linear equations has infinite number of

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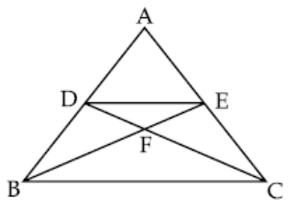
	solutions : $(a+b)x-2by=5a+2b+1;3x-y=14$
Q.20	Prove that $3\sqrt{5}-2$ is an irrational number.
Q.21	In fig.2 $DE\|\|BC$ and AD : DB = 5:4. Find $\frac{ar(\Delta DFE)}{ar(\Delta CFB)}$  Fig. 2 **OR** Two Isosceles triangles have equal vertical angles and their areas are in the ratio 16 : 25. Find ratio of their corresponding heights.
Q.22	Compute the median for the following data : Class Interval: Less than 20 | Less than 30 | Less than 40 | Less than 50 | Less than 60 | Less than 70 | Less than 80 | Less than 90 | Less than 100 Cumulative Frequency: 0 | 4 | 16 | 30 | 46 | 66 | 82 | 92 | 100
Q.23	If A,B, C are interior angles of ΔABC, Prove that $\cos ec\left(\frac{A+B}{2}\right)=\sec\frac{C}{2}$. **OR** IF $\sin(2A+45^0)=\cos(30^0-A)$, Find A
Q.24	. Prove that the square of any positive integer is of the form 3m or $3m+1$ for some integer m.
Q.25	Compute f_1 and f_2 if mean of the following distribution is 62.8. Class Interval: 0 - 20 | 20 - 40 | 40 - 60 | 60 - 80 | 80 - 100 | 100 - 120 | Total Frequency: 5 | f_1 | 10 | f_2 | 7 | 8 | 50

Q.26	Check whether the polynomial $g(x)=x^3-3x+1$ is the factor of polynomial $p(x)=x^5-4x^3+x^2+3x+1$ OR Solve for x and y : $mx-ny=m^2+n^2;x-y=2n$
Q.27	In an equilateral triangle ABC, D is point on side BC such that $BD=\frac{1}{3}BC$. Prove that $9AD^2=7AB^2$
Q.28	If $x=a\sec\theta+b\tan\theta$ & $y=a\tan\theta+b\sec\theta$ Prove that $x^2-y^2=a^2-b^2$.
	SECTION D
Q.29	State and prove Pythagoras theorem.
Q.30	In ΔABC, $\angle B=90^0$ AB=3 cm and BC = 4cm. Find (i) sin C (ii) cos C © sec A (d) cosec A OR If $\tan A=\frac{1}{\sqrt{3}}$, ΔABC is right angled at B. Find the value of $\sin A\cos C+\cos A\sin C$.
Q.31	Prove that : $2(\sin^6\theta+\cos^6\theta)-3(\sin^4\theta+\cos^4\theta)+1=0$.
Q.32	The sum of a 2 digit number and number obtained by reversing the order of digits is 99. If the digits of the number differ by 3. Find the number. **OR** A sailor goes 8 km downstream in 40 minutes and returns in 1 hour. Find the speed of sailor in still water and the speed of current.
Q.33	Solve the following system of linear equations graphically : $x+2y=5$ and $2x-3y=-4$ .Also find the points where the lines meet the x-axis
Q.34	Draw less than and more than ogive for the following distribution and hence obtain the median. Marks: 30 - 40 | 40 - 50 | 50 - 60 | 60 - 70 | 70 - 80 | 80 - 90 | 90 - 100 No. of students: 14 | 6 | 10 | 20 | 30 | 8 | 12
	"But sooner or later , the man who wins Is the man who thinks he can ."

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