RDM100% MATHS COACHING CENTRE PH:04612376724
9F,BRYANT NAGAR III ST (EAST)
TUTICORIN-8 TAMILNADU

GUESS PAPER-2014
CLASS-X
Mathematics

Time: 3 Hrs Max. Marks: 90

Section A (1 marks each)

1. HCF of 75 and 243 is
   (a) 12 (b) 3 (c) 9 (d) 5
2. Sum of zeros of polynomial $4x^2 - 5x - 1$ is
   (a) 4/5 (b) 1/5 (c) - 1/4 (d) 5/4
3. If $AB^2 = AC^2 + BC^2$ then right angle is
   (a) A (b) B (c) C (d) D
4. What is the value of $\cot^2\theta - \operatorname{cosec}^2\theta$?
   (a) 2 (b) 0 (c) - 1 (d) 1
5. If $\sin\theta = 1$ then θ is
   (a) 75°. (b) 90° (c) 30° (d) 45°
6. 4q + 1 or 4q + 3, are some integer represent
   (a) even (b) odd (c) prime (d) irrational
7. If $\cot\theta = \frac{8}{15}$ find value of $\text{Sin}^2\theta + \text{Cos}^2\theta$.
   (a) 2 (b) 3 (c) - 1 (d) 1
8. The value of 'k' for which the following system of linear equation has infinite solution: $x + (k + 1)y = 5$ and $(k + 1)x + 9y = 8k - 1$.
   (a) 2 (b) −23/8 (c) − 3 (d) − 4

Section B (2 marks each)

9. Explain why $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ is a composite number:
10. Prove that $6 - 5\sqrt{3}$ is irrational number.
11. Prove: $\sec^2\theta + \operatorname{cosec}^2\theta = \sec^2\theta \operatorname{cosec}^2\theta$

    Or

    If $\cos\alpha = \frac{3}{5}$ find the value of $\tan^2\alpha + 1$..
12. Find the mode of following data.

C. I.	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
frequency	8	10	9	12	11

13. find BC if ΔABC and ΔPQR have areas 64 cm^2 and 121 cm^2 respectively and ∠A = ∠P, ∠C = ∠R and QR = 15.4.

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14. The Marks of 50 students of class seventh are given below:

Marks	0 – 5	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35	35 – 40	total
frequency	5	11	5	9	10	3	2	5	50

Section C (3 marks each)

15. Find zero's of polynomial $x^2 + 7x + 10$

Or

Write a quadratic polynomial whose zeroes are 5 and – 5.

16. Prove that $\sqrt{3}$ is irrational number.

17. A train covered a certain distance at a uniform speed. If the train had been 6 Km/h faster, it would have taken 4 hours less than the scheduled time. And, if the train were slower by 6 km/h, the train would have taken 6 hours more than the scheduled time. Find the length of the journey.

18 A jeweler has bars of 18 carat gold and 12 carat gold. How much of each must be melted together to obtain a bar of 16 carat gold. Weighing 120 gm? It is given that pure gold is 24 carat. The daily expenditure of 100 families are given below (OR)
Calculate f_1 and f_2, if the mean daily expenditure is Rs.188.

Expenditure	140 – 160	160 – 180	180 – 200	200 – 220	220 – 240
No. of Families	5	25	f_1	f_2	5

19 (i) Show that any positive odd integer is of the form 6q + 1 or 6q + 3 or 6q + 5, where q is some integer.
(ii) If the polynomial $f(x) = x^4 - 6x^3 + 16x^2 - 25x + 10$ is divided by another polynomial $x^2 - 2x + k$, the remainder comes out be x + a, find k and a.

20 (i) There are some students in the two examination halls A and B. To make the number of students equal in each hall, 10 students are sent from A to B. But if 20 students are sent from B to A, the number of students in A becomes double the number of students in B. Find the number of students in the two halls.
(ii) In ΔPQR, PD⊥QR such that D lies on QR. If PQ=a, PR=b, QD=c and DR=d and a, b, c, d are positive units, prove that $(a + b)(a - b) = (c + d)(c - d)$.

21 (i) 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.
(ii) In a sports meet, the number of players of football, hockey and athletics are 48, 60 and 132 respectively. Find the minimum number of rooms required, if in each room the same number of players are to be seated and all of them being in the same sports.

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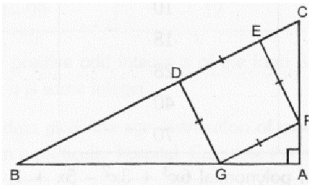

22 (i) In the given figure, DEFG is a square and ∠BAC = 90°, show that DE^2 = BD.EC.

(ii) If α, β, γ are zeroes of polynomial $6x^3 + 3x^2 - 5x + 1$, then find the value of $\alpha^{-1} + \beta^{-1} + \gamma^{-1}$

23 (i) If the median of the following data is 32.5. Find the value of x and y.

Class-Interval	Frequency
0 – 10	x
10 – 20	5
20 – 30	9
30 – 40	12
40 – 50	y
50 – 60	3
60 – 70	2
Total	40

(ii) Find the mean marks from the following data:

Marks	Number of Students
Below 10	4
Below 20	10
Below 30	18
Below 40	28
Below 50	40
Below 60	70

24 (i) State and prove Basic Proportionality theorem.

(ii) Use Euclid's Division Lemma to show that the square of the any positive integer is either of the form 3m or 3m + 1 for some integer m.

SECTION – D (4 marks each)

25 (i) Draw the graphs of the equations $4x - y - 8 = 0$ and $2x - 3y + 6 = 0$. Also, determine the coordinates of the vertices of the triangle formed by these lines and the x-axis.

(ii) PQR is a triangle right-angled at P and M is a point on QR, such that PM ⊥ QR. Show that PM^2 QM.MR.

26 In a right ∠ABC, right-angled at C, P and Q are the points on the sides CA and CB respectively which divide these sides in the ratio 2: 1. Prove that: (i) $9AQ^2 = 9AC^2 + 4BC^2$ (ii) $9BP^2 = 9BC^2 + 4AC^2$ and (iii) $9(AQ^2 + BP^2) = 13AB^2$

27 (i) Find all the zeroes of the polynomial $2x^4 + 7x^3 - 19x^2 - 14x + 30$, if two of its zeroes are $\sqrt{2}, -\sqrt{2}$

(ii) A person travels 600 km partly by train and partly by car. If he covers 400 km by train and the rest by car, it takes 6 hours 30 minutes. But if he travels 200 km by train and the rest by car, he takes half an hour longer. Find the speed of car and that of the train.

28 If α and β are the zeroes of $x^2 - 7x + 12$, Find the value of $\frac{1}{\alpha} + \frac{1}{\beta} - 2\alpha\beta$.

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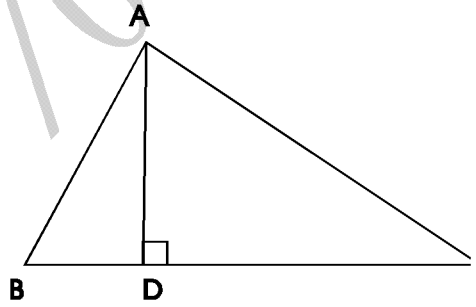
29 Prove that: $\frac{\cos^3\theta+\sin^3\theta}{\cos\theta+\sin\theta}+\frac{\cos^3\theta-\sin^3\theta}{\cos\theta-\sin\theta}=2$

30 Find the Arithmetic mean of the following data by step deviation method.

Marks obtained	No. of students
Less than 10	12
Less than 20	19
Less than 30	35
Less than 40	47
Less than 50	58
Less than 60	65
Less than 70	84
Less than 80	100

31 Prove that $AB^2 - BD^2 = AC^2 - CD^2$ in given figure in which $AD \perp BC$.



32 P and Q are two points on the sides AB and AC respectively of ΔABC. If AP = 2cm, PB = 4cm, AQ = 3cm and QC = 6 cm, show that BC = 3 PQ.

33 The following table shows marks secured by 140 students in an examination:

Marks	0 – 10	11 – 20	21 – 30	31 – 40	41 - 50
Amount Spent (In Rs.)	600	4000	1200	400	1000

Calculate median and draw ogive of above data.

34 Prove that the ratio of areas of two similar triangles is equal to the ratio of the squares of their corresponding sides.

Or

State and Prove Pythagoras Theorem.

ALL THE BEST