



**SAMPLE QUESTION PAPER**  
**MATHEMATICS**  
**class - x**

[Time: 3hrs.]

[M. M.: 80]

**General Instructions:**

(1) All questions are compulsory.

(2) The questions paper consists of thirty questions divided into 4 sections A, B, C, D. Section 'A' comprises of ten questions of 1 marks each, Section 'B' comprises of five questions of 2 marks each, Section 'C' comprises of ten questions of 3 marks each and Section 'D' comprises of five questions of 6 marks each.

**SECTION – A**

**(10 marks)**

1. Centroid of triangle whose vertices are  $A(-4,6)$ ,  $B(2, -2)$  and  $C(2,5)$  is .  
a) (0, 2)    b) (0, 3)    c) (1, 3)    d) (1, 2)
- 2- The ratio between the volumes of two spheres is 8 : 27. What is the ratio between their surface areas?  
a). 2 : 3    b). 4 : 5    c). 5 : 6    d). 4 : 9
3. If first term of an AP is a and nth term is b, then its common difference is  
a).  $(b-a)/n+1$     b).  $(b-a)/n-1$     c).  $(b-a)/n$     d). none of these
4. In a lottery there are 7 prizes and 21 blanks. The probability of getting a prize is.  
a).  $1/2$     b).  $1/3$     c).  $1/4$     d).  $1/5$
5. A funnel is the combination of  
a). Cone and a cylinder                      b). Frustum of a cone and cylinder  
c). Hemisphere and cylinder              d). Hemisphere and cone
6. Which was the first book on Probability?

7. If the product of roots of the equation  $ax^2 + bx + c = 0$  is unity, then  
 a).  $a = c$     b).  $c = b$     c).  $b = a$     d).  $b^2 = 4ac$
8. The length of the tangent drawn from a point 8cm away from the centre of a circle of radius 6cm is:  
 a).  $\sqrt{7}$ cm    b).  $2\sqrt{7}$ cm    c). 10cm    d). 5cm
9. A letter is chosen at random from the letters of the word 'ASSASSINATION'. Find the probability that the letter chosen is a consonant.  
 a).  $1/13$     b).  $7/13$     c).  $6/13$     d).  $2/13$
10. If  $k$ ,  $2k-1$  and  $2k+1$  are three consecutive terms of an A.P., Find the value of  $k$ .

**SECTION B**

**(10marks)**

11. Use factorization method to solve:  $3x^2 - 2\sqrt{6}x + 2 = 0$ .
12. Divide a line segment of length 8 cm internally in the ratio 4:5. Also, give justification of the construction.
13. Without drawing the graphs, state whether the following pair of linear equations will represent intersecting lines, coincident lines or parallel lines.  
 $6x - 3y + 10 = 0$   
 $2x - y + 9 = 0$   
 Justify your answer.
14. Prove that the perpendicular at the point of contact to the tangent to a circle passes through the centre.
15. Solve for  $x$ ,  $4\sqrt{6}x^2 - 13x - 2\sqrt{6} = 0$  by using a completing the square.

**SECTION C**

**(30marks)**

16. Prove that the diagonals of a rectangle with vertices  $(0, 0)$ ,  $(a, 0)$ ,  $(a, b)$  and  $(0, b)$  bisect each other and are equal.
17. What is the probability that a leap year, selected at random will contain 53 Sundays?
18. Find the roots of  $4x^2 + x - 5 = 0$  by the method of completing the square.
19. The sum of the 4th and 8th terms of an AP is 24 and the sum of the 6th and 10th terms is 44. Find the first three terms of the AP.
20. Two concentric circles are of radii 5cm and 3 cm. Find the length of the chord of the larger circle which touches the smaller circle.

21. The cost of fencing a circular field at the rate of Rs 24 per meter is Rs 5280. The field is to be ploughed at the rate of Rs 0.50 per m<sup>2</sup>. Find the cost of ploughing the field.  $\left[\pi = \frac{22}{7}\right]$
22. Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.
23. A tree 12m high is broken by the wind in such a way that its top touches the ground and makes an angle of 60° with the ground. At what height from bottom the tree is broken by the wind. Give the answer to the second place of decimal.
24. For what value of n, the nth term of the following two A.P.'s are equal?
25. Construct an isosceles triangle whose base is 8 cm and altitude 4 cm and then another triangle whose side are  $1\frac{1}{2}$  times the corresponding sides of the isosceles triangle.

**SECTION D**

**(30marks)**

26. Water is flowing at 7m/sec through a circular pipe of internal diameter 2 cm into a cylindrical tank the radius of whose base is 40cm. Find the increased in water level in 30 minutes.

OR

A toy is in the form of a cone mounted on a hemisphere of radius 3.5cm. If the total height of the toy is 15.5cm, find its total surface area.(use  $\pi=22/7$ )

27. Show that the points (1, 7), (4, 2), (-1, -1) and (-4, 4) are the vertices of a square.
28. Prove that the lengths of tangents drawn from an external point to circle are equal.
29. Construct a triangle of sides 4 cm, 5cm and 6cm and then a triangle similar to it whose side's are  $\frac{2}{3}$  of the corresponding sides of the first triangle Give the justification of the construction.
- 30 .Sarah Purchases every year National Saving Certificates of value exceeding the last year purchases by Rs.25. After 20 years, she find the total value of certificates purchased by her is Rs.7250. Find the value of the certificates purchased.

# OUR RESULT REFLECTS OUR EXCELLENCE AND CREDIBILITY

**AIR 427(GE)**



AIPMT  
Prakhar Goel

Prakhar Goel is studying in *Maulana Azad Medical College Delhi*. He was our One year Dropper Batch Student

**AIR 1823(GE)**



IIT-JEE  
Shubham Mukherjee

Shubham Mukherjee is studying in *IIT-Guwahati*. He was our One year Dropper Batch Student



Siddhant Rathore  
BITS Score: 329

Siddhant Rathore is pursuing *B.Tech (Mechanical) from BITS Goa*. He was our Three years Classroom Program Student.

**AIR 5982 (IITAdvanced)**



Dhwani Jain

Dhwani Jain is pursuing Chemical Engineering from *N.U.S. (National university of Singapore)* Ranked 2nd University in Asia. she was our two years classroom program Student.



Arindham Roy

Arindham Roy is pursuing *B.Tech from NIT Patna*. He was our Two years classroom program Student

**AIR 521(GE)**



IIT-JEE  
Perna Kashyap

Perna Kashyap is pursuing *B.Tech (EC) from NIT Kurukshetra*. She was our Two years classroom program Student

## Best Results in Ghaziabad

**IIT-Advanced**

**65**

Selections

**IIT-Main**

**60%**

Selections

**Medical**

**23**

Selections

### Admission cum Scholarship Test

20th March, 3rd & 10th April 2016

SCHOLARSHIP UP TO

**100%**

### CBSE-XII RESULT 2014

96%

M-95, C-98, P-95



Vibhav Singh  
Roll No. 5670175

96%

B-98, C-97, P-95



Apeksha Garg  
Roll No. 5670387

95.4%

M-95, C-95, P-92



Abhilasha Bhatnagar  
Roll No. 5655355

95%

M-98, C-97, P-93



Arindham Roy  
Roll No. 5670179

93%

M-95, C-94, P-88



Sahil Bhatnagar  
Roll No. 5670048

92.8%

M-95, C-94, P-86



Rishabh Gupta  
Roll No. 5655367

91.6%

M-95, C-95, P-81



Siddhant Rathore  
Roll No. 5654166

91.2%

M-95, C-91, P-87



Pulit  
Roll No. 9614554

91%

M-95, C-93, P-85



Pranit Kaul  
Roll No. 5654154

90%

M-95, C-83, P-87



Abhishek Patial  
Roll No. 5670146

89%

M-95, C-82, P-84



Atishay Jain  
Roll No. 9123206

89%

M-95, C-95



Hasan Nabeel  
Roll No. 5655535

88%

M-91, C-83, P-81



Ashima Kumari

84.8%

M-95, C-95



Musaib Alam  
Roll No. 5655370

84%

M-95, C-95, P-81



Ashish Verma

83%

M-86, C-77, P-72



Apoorv Raj  
Roll No. 5670467

82%

B-88, C-84,



Deepti Negi  
Roll No. 5653705



# APEX INSTITUTE

...Where Success Reflects.

(A unit of Ghaziabad Apex Coaching Pvt.Ltd)

For more Admission Detail Call : 999 0495 952, 991 0817 866

Head Office : 62, Niti Khand-III, (Near Jaipuria Sunrise) Indirapuram

Branch Office : C-27, RDC (Near Bikanerwala), Raj Nagar