



Set 1

STD. 10
18-01-2018

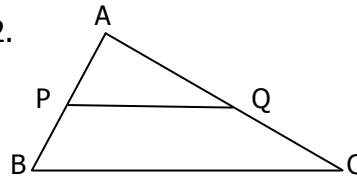
MAX. MARKS : 80
TIME : 3 HRS.

General Instructions:

- i) All questions are compulsory.
- ii) The question paper consists of 30 questions divided into four sections A, B, C and D.
- iii) Section A contains 6 questions of 1 mark each. Section B contains 6 questions of 2 marks each. Section C contains 10 questions of 3 marks each. Section D contains 8 questions of 4 marks each.
- iv) There is no overall choice. However, an internal choice has been provided in four questions of 3 marks each and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.
- v) Use of calculators is not permitted.

SECTION : A

1. Write whether $\frac{2\sqrt{45} + 3\sqrt{20}}{2\sqrt{5}}$ on simplification gives a rational or irrational number.
2. If the sum of the roots of the equation $3x^2 - (3k - 2)x - (k - 6) = 0$ is equal to the product of its roots, find the value of k.
3. Find the 20th term from the end of the A.P. 6, 10, 14, 18.....174.
4. Write the coordinates of the reflections of the point (3, 5) along x and y axes.
5. In the given figure, $PQ \parallel BC$ and $AP:PB = 1 : 2$.
Find $\frac{\text{Ar.}(\triangle APQ)}{\text{Ar.}(\triangle ABC)}$.



6. If $A+B = 90^\circ$ and $\tan A = \frac{3}{4}$ what is $\cot B$?

SECTION : B

7. Find the least number of square tiles required to pave the ceiling of a room 15m17cm long and 9m2cm broad, without any cutting of the tiles.
8. For what value of k will the following pair of linear equations have infinitely many solutions.
 $2x - 3y = 7$
 $(k + 1)x + (1 - 2k)y = 5k - 4$.
9. The sum of n terms of an A.P. is $\frac{5n^2}{2} + \frac{3n}{2}$. Find its 30th term.
10. If the vertices of a triangle are (1, -3), (4, p) and (-9, 7) and its area is 15sq. units, find the value of p.
11. Find the probability of getting 53 Fridays in an ordinary year.

Find the volume and surface area of the double cone so formed. (use $\pi = 3.14$)

(OR)

A cylindrical tub of radius 5cm and length 9.8cm is full of water. A solid in the form of a right circular cone mounted on a hemisphere is immersed into the tub. If the radius of the hemisphere is 3.5cm and the height of the conical part is 5cm, find the volume of the water left in the tub.

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MATHEMATICS (Set - 1)

22. Find the mean of the following :

Class	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100
Frequency	15	18	21	29	17

SECTION - D

23. A peacock is sitting on the top of a pillar, which is 9m high. From a point 27m away from the bottom of the pillar, a snake is coming to its hole at the base of the pillar. Seeing the snake the peacock pounces on it. If their speeds are equal, at what distance from the hole the snake caught?

(OR)

Find the discriminant of the equation $9x^2 - 15x + 6 = 0$ and hence write the nature of its roots. Find them, if they are real using the method of completing the square.

24. The sum of the first six terms of an arithmetic progression is 42. The ratio of its 10th term to its 30th term is 1:3. Calculate the first and 13th term of this A.P.

25. State and prove basic proportionality theorem.

(OR)

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

26. Draw a right triangle ABC in which $AC = AB = 4.5\text{cm}$ and $\angle A = 90^\circ$. Draw a triangle similar to $\triangle ABC$ with its sides equal to $\frac{5}{4}$ th of the corresponding sides of $\triangle ABC$.

27. Prove that $\frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1} = \frac{1}{\sec \theta - \tan \theta}$.

28. A man standing on the bank of a river observes that the angle of elevation of the top of a tree standing on the opposite bank is 60° . When he moves 40m away from the bank, he finds the angle of elevation to be 30° . Find the height of the tree and the width of the river.

29. Jay Prakash, a juice seller has set-up his juice shop. He has two types of glasses of inner diameter 7cm to serve the customers. Type A : glass with a plane bottom & Type B: glass with hemispherical raised base of same radius. The height of both types of glasses is 10cm. He decided to serve the customers in type A of glasses.

a) Find the volume of both type of glasses.

b) By choosing a glass of type A, which value is depicted by the juice seller?

30. The mean of the following frequency distribution is 62.8 Find the missing frequency f.

Class	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120
Frequency	5	8	f	12	7	8

(OR)

From the following frequency distribution, prepare the more than ogive:

Score	400 - 450	450 - 500	500 - 550	550 - 600	600 - 650	650 - 700
No. of	20	35	40	32	24	27

candidates						
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Also find the median from the ogive.

-X-X-X-X-X-