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**SAMPLE PAPER 02 FOR FA – 3 (2016 – 17)**  
**CLASS – X**  
**MATHEMATICS**

**T.T. 1:30**

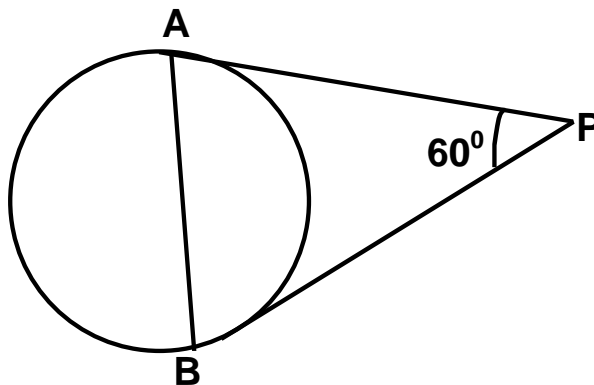
**M.M. 40**

**General Instructions:**

1. All questions are compulsory.
2. Question paper is divided into four sections: Section A contains 4 questions each carry 1 mark, Section B contains 4 questions each carry 2 marks, Section C contains 4 questions each carry 3 marks and Section D contains 4 questions each carry 4 marks.

**SECTION – A(1 marks each)**

1. Find the value of  $x$  for which  $(8x + 4)$ ,  $(6x - 2)$  and  $(2x + 7)$  are in AP.
2. Find the 105<sup>th</sup> term of the A.P.  $4, 4\frac{1}{2}, 5, 5\frac{1}{2}, 6, \dots$
3. Solve:  $x^2 + 5x - 6 = 0$
4. In the below figure, PA and PB are tangents such that  $PA = 9\text{cm}$  and  $\angle APB = 60^\circ$ . Find the length of the chord AB.



**SECTION – B(2 marks each)**

5. Find the 10th term from the last term of the AP :  $4, 9, 14, \dots, 254$ .
6. Find the value of  $k$  for which the quadratic equation  $kx(x - 3) + 9 = 0$  has two real equal roots.
7. Solve by using quadratic formula:  $\sqrt{2}x^2 - 3x - 2\sqrt{2} = 0$
8. A point P is at a distance 13 cm from the centre C of a circle and PT is a tangent to the given circle. If  $PT = 12$  cm, find the radius of the circle.

**SECTION – C(3 marks each)**

9. Find the number of terms of the AP  $18, 15, 12, \dots$  so that their sum is 45.
10. Find the sum of all three digit natural numbers which are multiples of 7.

11. Solve:  $\frac{1}{x-2} + \frac{2}{x-1} = \frac{6}{x}$ , ( $x \neq 2, 1$ )

12. Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that  $\angle PTQ = 2\angle OPQ$ .

**SECTION – D(4 marks each)**

13. In a potato race, a bucket is placed at the starting point, which is 5 m from the first potato, and the other potatoes are placed 3 m apart in a straight line. There are ten potatoes in the line. A competitor starts from the bucket, picks up the nearest potato, runs back with it, drops it in the bucket, runs back to pick up the next potato, runs to the bucket to drop it in, and she continues in the same way until all the potatoes are in the bucket. What is the total distance the competitor has to run? What are the benefits of participating in competitions?
14. In a flight for 3000 km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 100 km/hr and consequently time of flight increased by one hour. Find the original duration of flight.
15. Prove that “The lengths of tangents drawn from an external point to a circle are equal.”
16. A triangle ABC is drawn to circumscribe a circle of radius 4 cm such that the segments BD and DC into which BC is divided by the point of contact D are of lengths 8 cm and 6 cm respectively. Find the sides AB and AC.

