TEST PAPER: MATHEMATICS

Time: 80 Minutes **Class: 10th C.B.S.E.**

Max. Marks: 40 Marks **Date: 29th July, 2018**

Marking Scheme: *Four questions carry 10 marks each. Questions have 3 subparts each. Subparts (a) and (b) carry 3 marks each and subpart (c) carries 4 marks.*

Question 1:

a. Show that: $\tan 10^o \tan 15^o \tan 75^o \tan 80^o = 1$

b. If $\theta = 30°$, prove that $\cos 2\theta = \cos^2 \theta - \sin^2 \theta$

c. In Δ ABC, P is a point on AB, AP:PB =2:3. PQ ∥ BC and is extended to Q so that CQ ∥ BA. Find:
   (i) area Δ APO : area Δ ABC
   (ii) area Δ APO : area Δ CQO

Question 2:

a. In a triangle ABC, right angled at B, tan A = 5. Find the value of sin A, cosec A and cos A.

b. Rs. 480 is divided equally among x children. If the number of children were 20 more then each would have got Rs.12 less. Find x

c. A hotel bill for a number of people for overnight stay is Rs.4,800. If there were 4 people more, the bill each person had to pay, would have reduced by Rs.200. find the number of people staying overnight.

Question 3:

a. A car covers a distance of 400 km at certain speed. Had the speed been 12 km/h more, the time taken for the journey would have been 1 hour 40 minutes less. Find the original speed of the car.

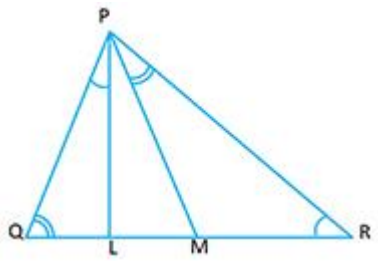
b. Without solving the following quadratic equation, find the value of 'p' for which the roots are equal.
$px^2-4x+3=0$

c. In Δ PQR, L and M are two points on the base QR , such that ∠ LPQ = ∠ QRP and ∠ RPM = ∠ RQP . Prove that:

   (i) Δ PQL ∽ Δ RPM

   (ii) QL x RM = PL x PM

   (iii) PQ^2= QR x QL .



Question 4:

a. A two digit number is such that the products of the digits is 6. When 9 is added to the number, the digits interchange their places. Find the number.

b. Find m, if the roots are equal:

$$x^2 + 2(m-1)x + (m+5) = 0$$

c. In the given figure Δ ABC is a right angled triangle with ∠ BAC = 90^o .
   (i) Prove Δ ADB ∽ Δ CDA
   (ii) If BD = 18 cm and CD = 8 cm , find AD
   (iii) Find the ratio of the area of triangle ADB is to area of triangle CDA .