Candidate's Index Number:
Signature:

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
INSTITUTE OF EDUCATION

COLLEGES OF EDUCATION
FOUR-YEAR BACHELOR OF EDUCATION (B.ED)
FIRST YEAR, END-OF-SECOND SEMESTER EXAMINATION, JULY/AUGUST, 2021

JULY 26, 2021   COLLEGE GEOMETRY   2:40 PM – 4:00 PM
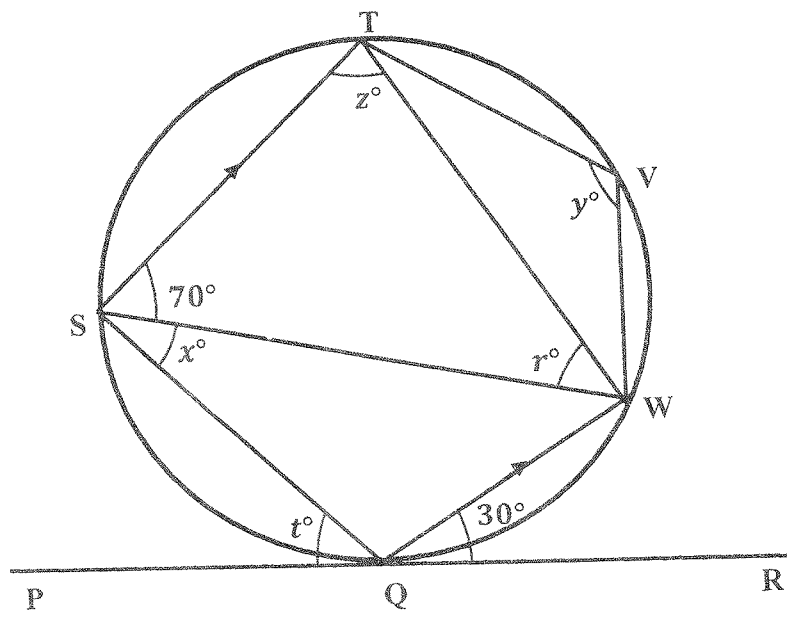
SECTION B
(60 MARKS)
Answer only THREE questions from this section

1. (a) Using a ruler and a pair of compasses only;

   (i) Construct triangle ABC in which AB = 10*cm*, BC = 6*cm* and angle ABC = 45⁰.

   (ii) Locate the point D inside the triangle ABC such that D is equidistant from AB and AC and 5cm from B

   (iii) Construct the perpendicular to AC through D. Label, Y, the point of intersection of the line AC and the perpendicular from D.

   (iv) Measure $|AY|$

   [10 Marks]

   (b) The equation of a circle is $x^2 + y^2 + 3x - 4y - t = 0$. Given that the radius of the circle is $\frac{7}{2}$, find the value of t.

   [10 Marks]

2. (a) The equations of two circles are

   $$x^2 + y^2 - 2x + 4y = 4 \text{ and } x^2 + y^2 + 4x - 6y = -12.$$

   i) If a line passes through the centers of the two circles, find the equation of the line
   [9 Marks]

   ii) If the centers of the two circles in (a) are the ends of a diameter of another circle, find its equation.
   [11 Marks]

3. In the diagram Q, W, V, T and S are point on the circumference of the circle. If ST is parallel to QW and PR is a tangent to the circle at Q, find the values of the angles marked x, y, z, t and r

[Provide reasons for your answers]

4) a) E(0, 1), F(1, 3) and G(3, 0) are the vertices of a triangle. Find the coordinates of the point:

(i)   P that divides FG **externally** in the ratio 2:1;   [5 marks]

(ii)   S that divides EF **internally** in the ratio 2:3.   [5 marks]

b) Find, correct to two decimal places, the total surface area of a regular square pyramid that has base length of 50 cm and lateral length of 60 cm.   [10 marks]