UNIT 36 Further Transformations  
CSEC Revision Test

1. The diagram represents a kitchen tile with only one half of the pattern drawn. The pattern is symmetrical about the line AB.

Copy and complete the pattern.  
(2 marks)

2.  
(a) The square ABCD is reflected in the line $x = 1$. What are the new coordinates of C?  
(2 marks)

(b) The square ABCD is rotated about the centre (2, 0) until B is at (-2, 0). What are the new coordinates of C?  
(2 marks)
3. From this diagram:
   (a) describe fully the transformation which maps parallelogram A onto parallelogram B. 
      (3 marks)
   (b) If the parallelogram A is enlarged, scale factor 3, with centre of enlargement at P, 
       write down the coordinates of the point onto which the corner X is mapped. 
       (2 marks)

4. The diagram shows the plan of a building site drawn on a grid. A large pipe, AB, is to be 
   moved by a crane. The crane rotates it and places it in a trench, PQ. The crane stands at the 
   centre of rotation.

   The end, A, is moved to P and B is moved to Q. Answer the following questions.
   (a) State the coordinates of the centre of rotation. 
       (2 marks)
   (b) Find the angle of rotation, stating whether it is clockwise or anticlockwise. 
       (2 marks)
5. (a) On a copy of the diagram, rotate triangle ABC anticlockwise through 90° about A. Label the image T. (2 marks)

(b) On a copy of the diagram, rotate triangle ABC anticlockwise through 90° about C. Label the image S. (2 marks)

(c) Describe fully the single transformation which will map T onto S. (2 marks)

6. (a) On a copy of the diagram below, draw the image of the shaded shape after a rotation of \(\frac{1}{4}\) turn clockwise about the origin O. Label this shape A. (2 marks)

(b) Draw also the image of shape A after a reflection in the y-axis. Label this shape B. (2 marks)

(c) Describe the single transformation that will transform the shaded shape directly to the shape labelled B. (3 marks)
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7. On the axes on page 5 a trapezium, ABCD, has been drawn.

   (a) On a copy of the diagram, rotate ABCD though 90° in an anticlockwise direction about the point A to form the trapezium AB'C'D'.  
      \(2 \text{ marks}\)

   (b) Reflect ABCD in the line through AD to form the trapezium AB''C''D'.  
      \(2 \text{ marks}\)

   (c) What single transformation will transform AB'C'D' onto AB''C''D'?  
      \(3 \text{ marks}\)
Axes for Question 7
8. The diagram shows the position of a parallelogram ABCD.

(a) The parallelogram ABCD is rotated through $180^\circ$ about B to form a new parallelogram $A_1B_1C_1D_1$. On a copy of the diagram, draw and label the parallelogram $A_1B_1C_1D_1$. (2 marks)

(b) The parallelogram $A_1B_1C_1D_1$ is enlarged by a scale factor of 3 to form a new parallelogram $A_2B_2C_2D_2$. The centre of the enlargement is $(2, 0)$. Draw and label the parallelogram $A_2B_2C_2D_2$. (2 marks)

(c) Describe a single transformation which would take $A_2B_2C_2D_2$ back onto $A_1B_1C_1D_1$. (3 marks)

TOTAL MARKS: 42
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Answers

1. B2

2. (a) (−3, 4) B2
   (b) (−2, 3) B2

3. (a) Rotation; anticlockwise through 90°; about (−1, 4) B1 B1 B1
   (b) (2, −2) B2

4. (a) (1, 4) B2
   (b) 90°, anticlockwise B1 B1

5. (a) T in diagram B2
   (b) S in diagram B2
   (c) Translation \( \begin{pmatrix} 5 \\ 1 \end{pmatrix} \) B1 B1

6. (a) A in diagram B2
   (b) B in diagram B2
   (c) Reflection in line \( y = −x \) B2

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7. (a) Shape AB’C’D’ B2
(b) Shape AB’’C’’D B2
(c) Reflection in line $y = 2 + x$ B1

8. (a) Shape A1D1C1B B2
(b) Shape A2B2C2D2 B2
(c) Enlargement, scale factor $\frac{1}{3}$, about (2, 0) B1

(TOTAL MARKS 42)