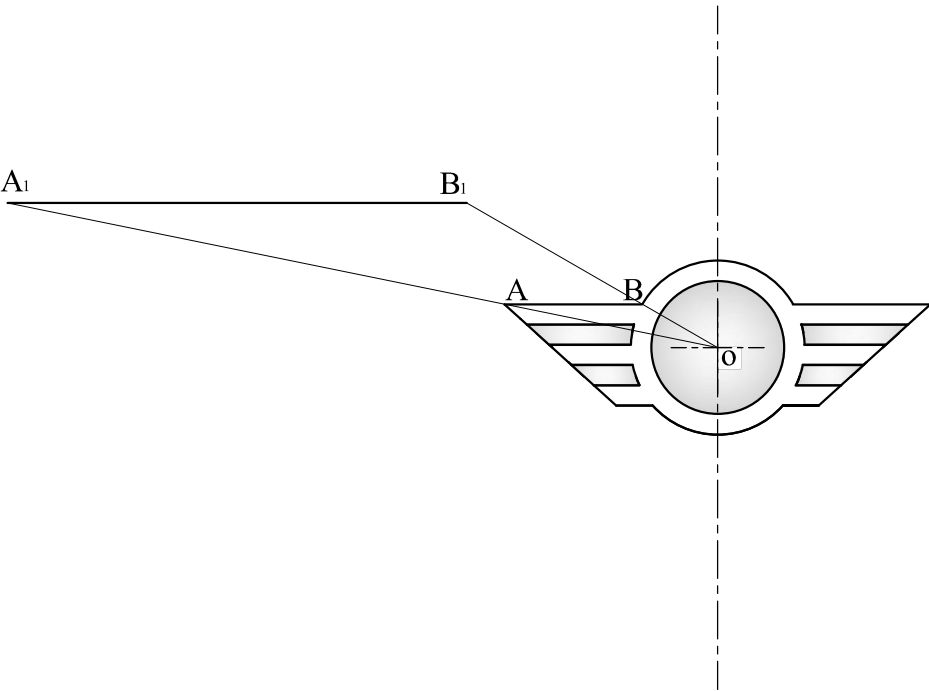


Question 1. The drawing of a car emblem is shown below. By means of geometrical construction, line AB has been enlarged to A<sub>1</sub>B<sub>1</sub>. Complete the construction to enlarge the whole drawing using centre O as the pole.

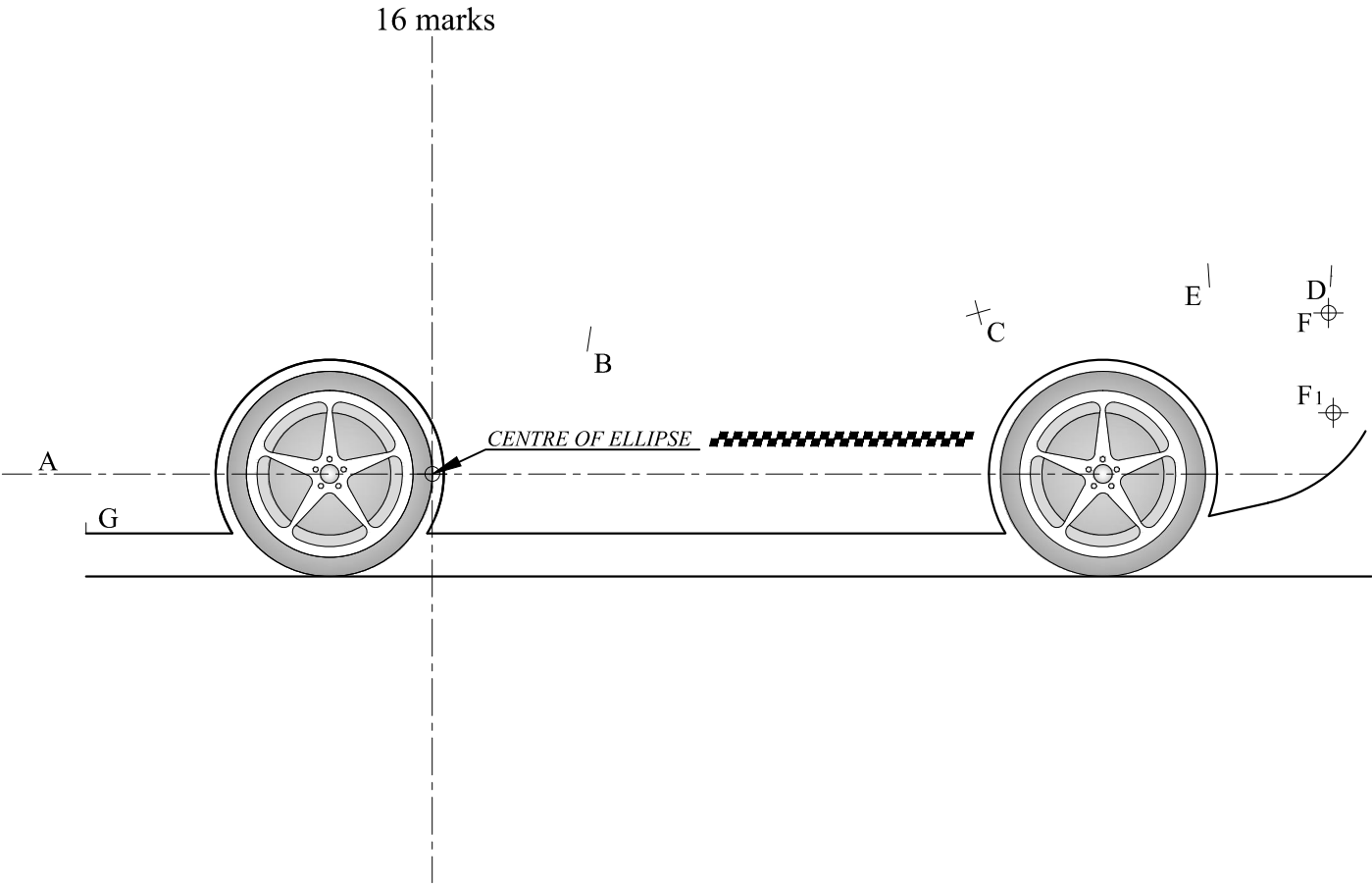
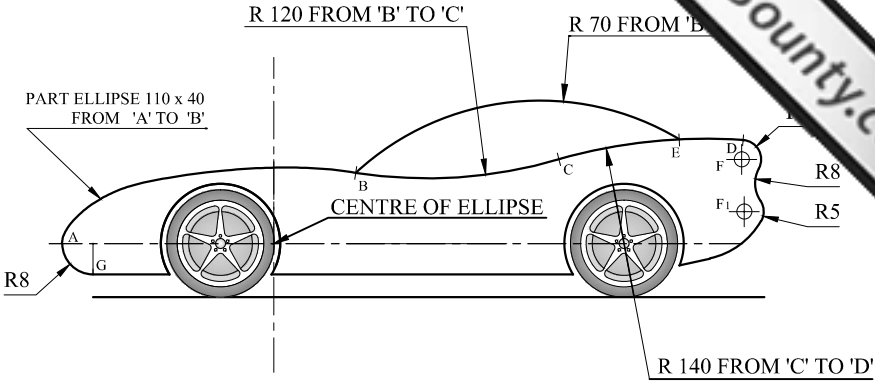
*Note: To save time, construct the left-hand side of the emblem and mirror copy (reflect) the right-hand side.*

10 marks



Question 2. The profile of a sports car is given on the right. Using the given start lines and dimensions, draw the view showing clearly the construction required to complete the part ellipse, and to locate the required centres.

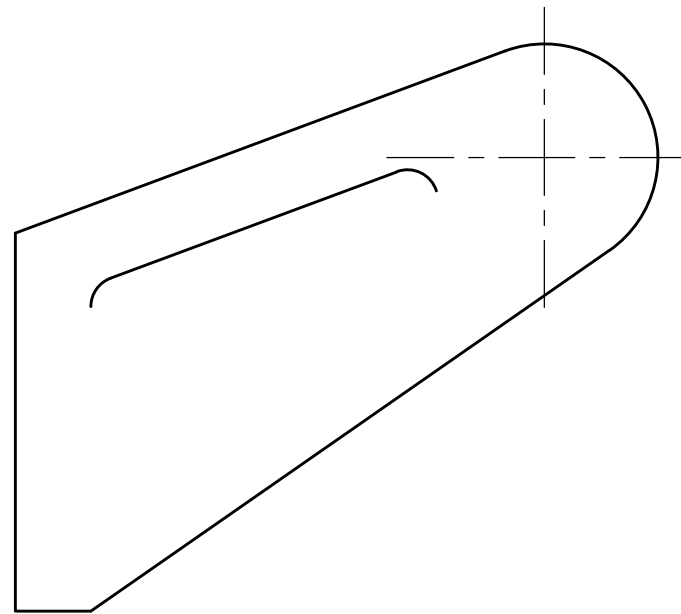
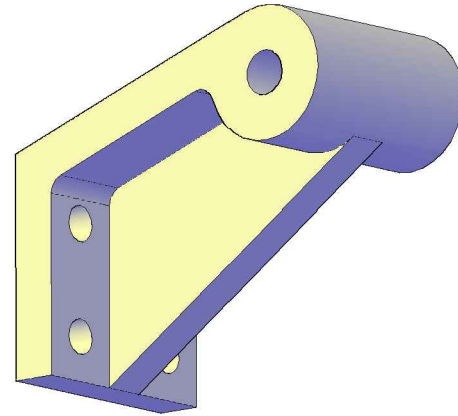
- Notes:
- Start by constructing the part ellipse AB having a major axis of 110mm and a minor axis of 40mm.
  - Points A, B, C, D, and G are all points of tangencies.
  - Points B and E are endpoints of arc R70.
  - F and F<sub>1</sub> are centres of the two R5 arcs.



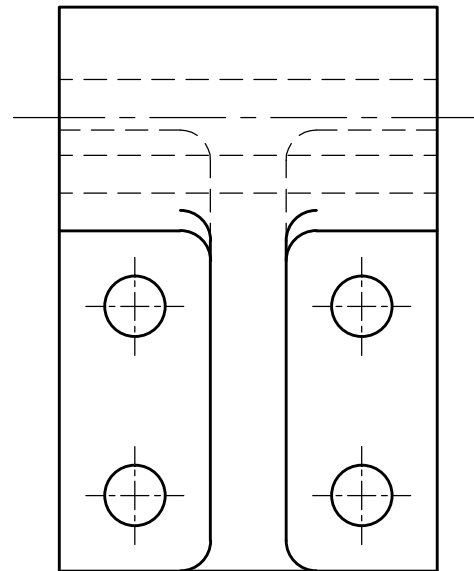
Question 3. A pictorial view, an end view, a plan view and an incomplete front view of a LINKAGE BRACKET are given.

- Complete the sectional front A-A.
- Print the angle of the projection used.

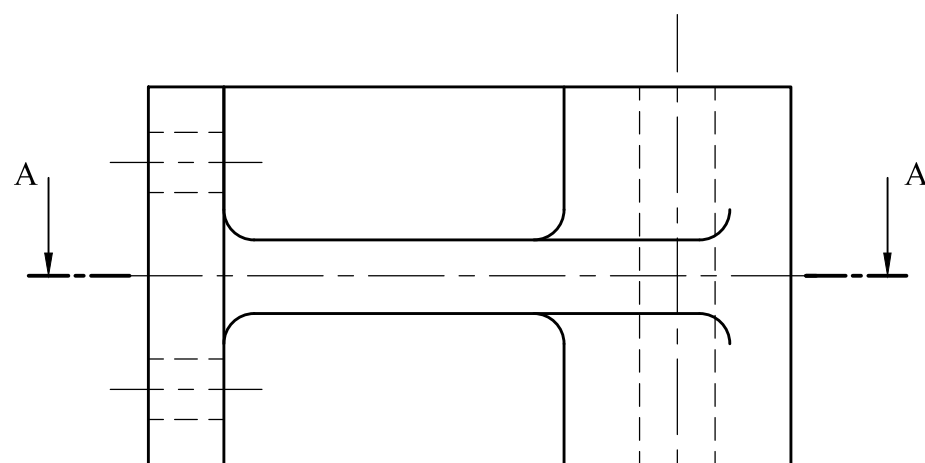
10 marks



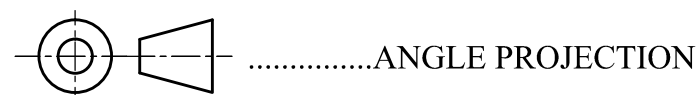
SECTIONAL FRONT A-A



END VIEW



PLAN (AS SEEN FROM BELOW)



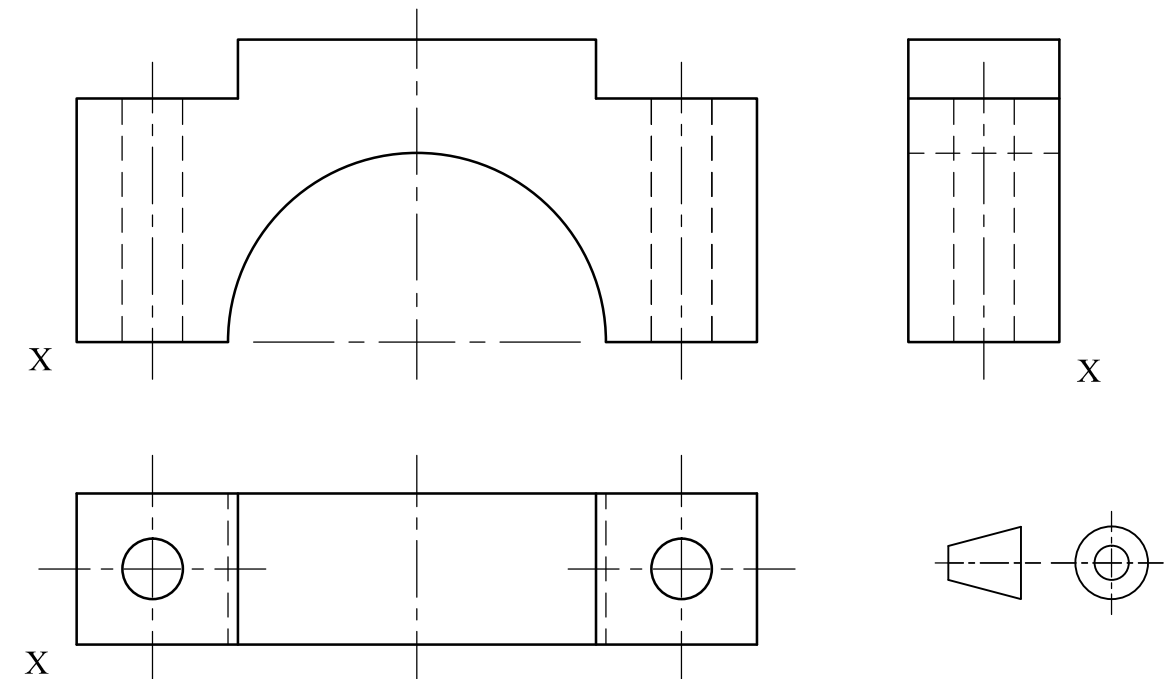
Question 4. Three **full size** orthographic views of a car engine BEARING CAP are given below.

Measure the given drawings and:

- insert three important linear dimensions,
- insert two important radial dimensions,
- using the given start lines below, project a planometric view of the Bearing Cap.

Note: Place corner X in the lowermost position.

16 marks

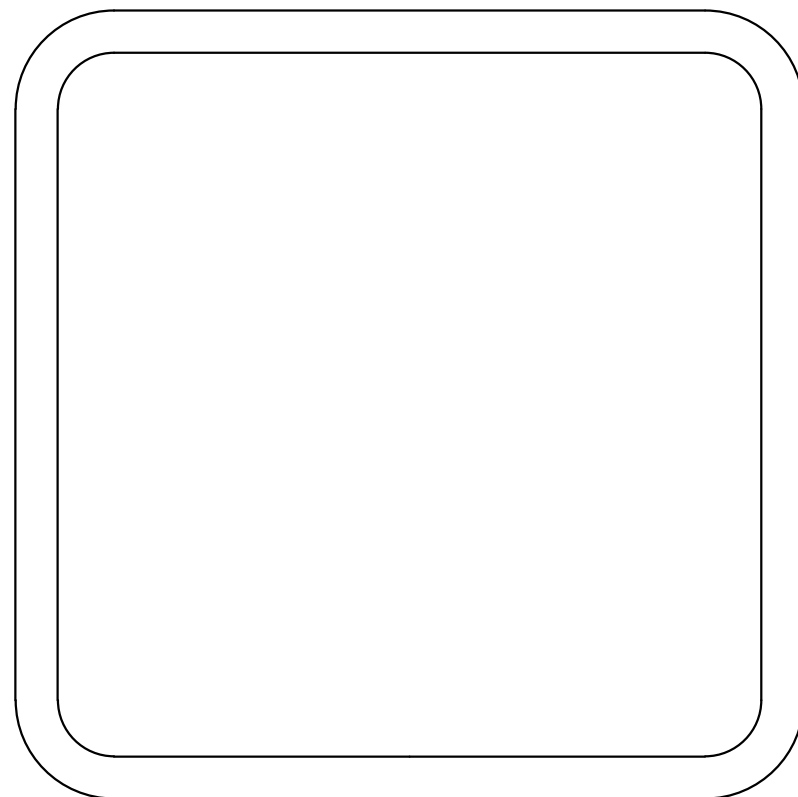
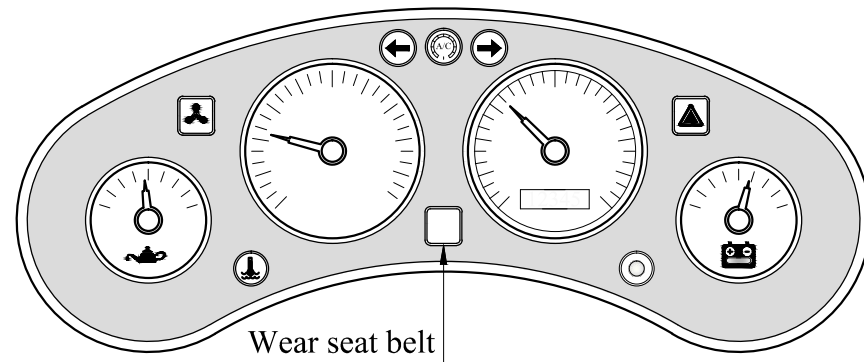


Question 5. The figure below shows an incomplete version of motor vehicle instrument panel. Graphic symbols (two of which are shown enlarged below), indicate the function of the respective instruments / gauges, indicators and warning lights.

The blank indicator lamp situated in the lower centre of the dashboard is intended to remind the driver to **wear the seat belt**. You have been asked to design the required graphic symbol which should have the same characteristics as the symbols given below. In the spaces provided below, draw:

- one preliminary sketch that illustrates your developing idea,
- a final developed drawing based on your initial sketch.

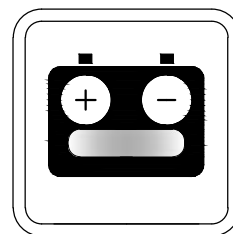
12 marks



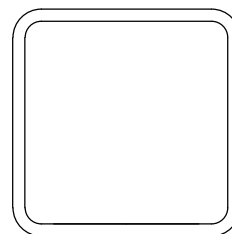
Final Drawing  
of the  
wear seat belt symbol



Oil pressure symbol



Battery level symbol

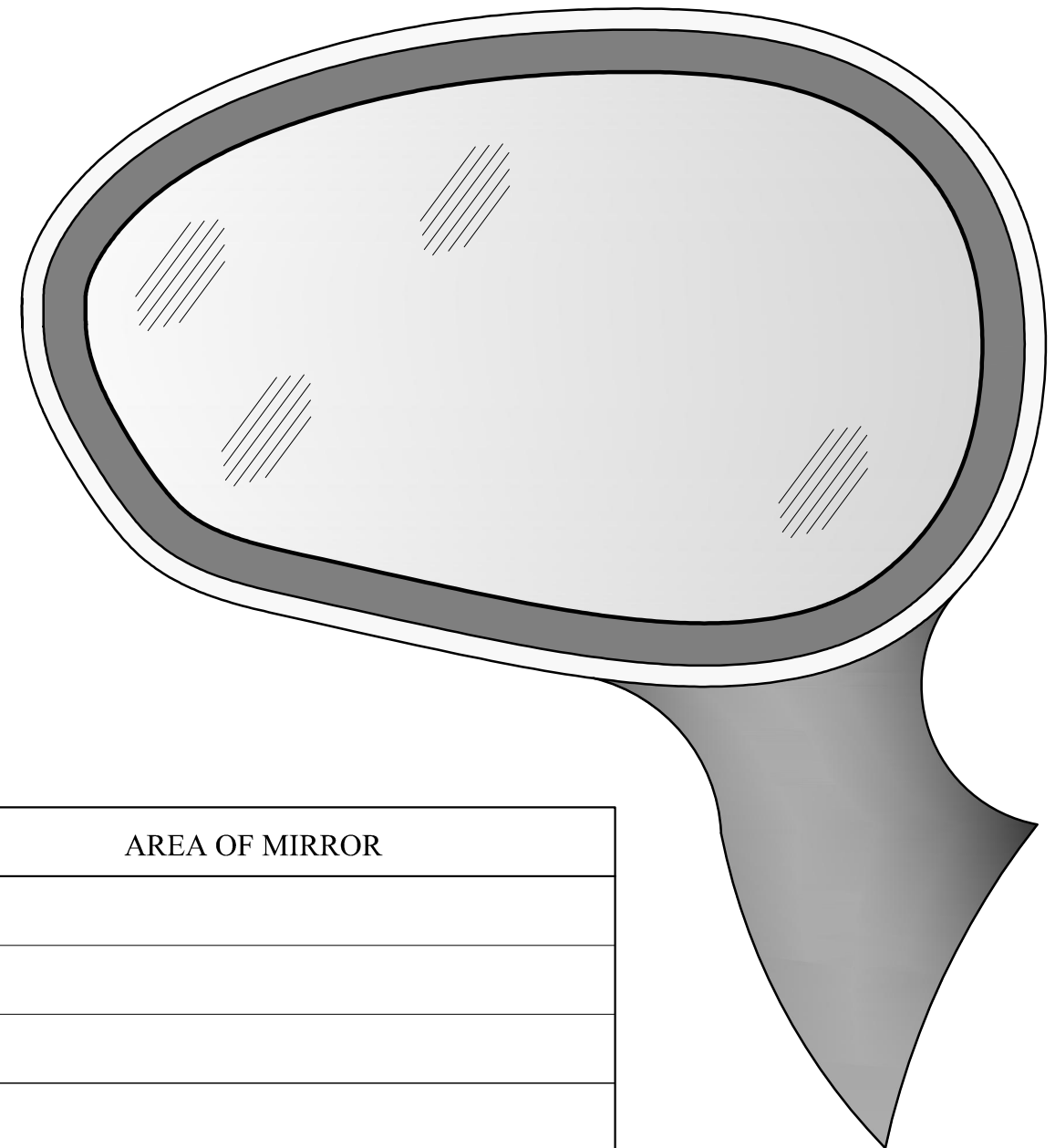


Wear seat belt symbol

### Preliminary sketch

Question 6. The figure below shows a car side door mirror. Using the space provided below, determine graphically the visible area of the mirror.

12 marks



AREA OF MIRROR	
TOTAL AREA OF MIRROR	cm <sup>2</sup>

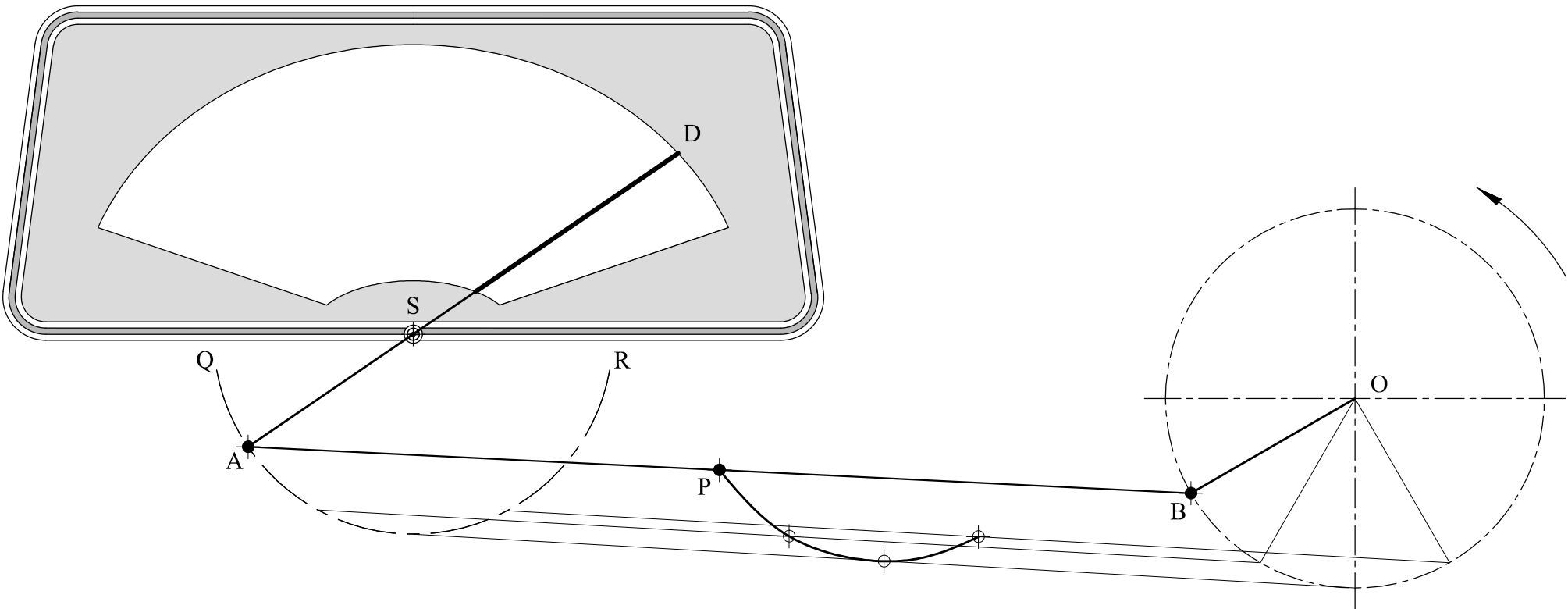
Question 7. The drawing shows a car windscreen wiper mechanism which consists of the following items:

- fixed pivots O and S
- crank OB
- link AB
- wiper AD

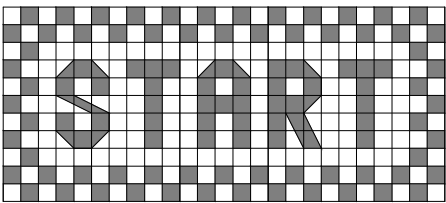
Crank OB rotates about fixed pivot O.  
Link AB is pivoted at A and B.  
Wiper AD oscillates about fixed pivot S.  
Pivot A oscillates about pivot S along the path of arc QR.  
The locus of point P for the first quarter turn of the crank is given.

Plot the locus traced out by the mid-point P of link AB for the remaining three quarters of a revolution of crank OB.

12 marks



Question 8. The figure on the right shows a plan view of the starting line of a car racing track. The incomplete drawing below shows a single-point perspective version of the track.



- Complete the drawing and show clearly the construction necessary to determine the size of the receding squares and letters.
- Neatly shade your drawing.

12 marks

