

Weaknesses

Most of the candidates did well in this question. However, quite a number especially the weak ones failed to identify the region of the graph representing the melting phase. This group used the entire time for the heating process hence they obtained wrong results in both questions 21 and 22.

Expected Response

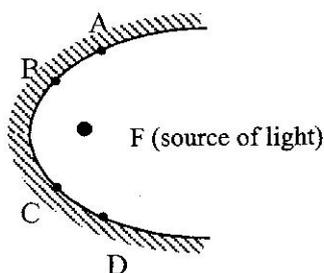
$$\begin{aligned} 21. \quad \text{Energy} &= Pt; \\ &= (450 - 150)P \text{ (determine } t) \\ &= 300 \times 50; \\ &= 15000\text{J} \end{aligned}$$

$$\begin{aligned} 22. \quad Q &= mL; \\ 15000 &= 0.10 \times L; \\ L &= 150,000 \text{ J/Kg} \end{aligned}$$

Question 23

Figure 12 shows a parabolic surface with a source of light placed at its focal point F.

Figure 12



Draw rays to show reflection from the surface when rays from the source strike the surface at points A B C and D. (1 mark)

Candidates were expected to use their knowledge of reflection on parabolic surfaces to show the effect of placing a light source at the focal point of the mirror. This is the principle used in production of parallel beams of light and candidates should have drawn/sketched parallel rays from points A, B, C and D.

Weaknesses

This question was poorly done. All candidates in this sample got it wrong. They all failed to apply their knowledge on the meaning of focal point in optics to this particular situation (ie. a point where all parallel rays falling on the surface will be focused). The principle of reversibility of light implies that parallel rays will be produced when the source of light is placed at this point.