In question 16 candidates were to recall that the life of the battery is dependent on the current of the cell it drives when connected in the circuit. The higher the current per unit time the shorter the life of the cell.

Candidates scored very poorly in these questions because they failed to critically analyse the diagrams from their knowledge of series and parallel connection.

Expected Response

15   In Fig 10(a) internal resistors add up; reducing current; (or in Fig 10(b) net resistance is reduced by parallel addition; so current is higher) or total resistance in 10(a) is higher; reducing current.

16.   In Fig 10(b) the current from each cell is less than in Fig 10(b); thus takes longer

Question 20

An electric heater is connected to the mains supply. A fault in the mains reduces the supply potential slightly.
Explain the effect on the rate of heating of the heater.   (3 marks)

Candidates were expected to apply their knowledge of the relationship of rate of heating (power) and the voltage of the supply ie. $P = IV = \dfrac{V^2}{R}$ to explain the effect of voltage reduction to the rate of heating.

Weaknesses

None of the candidates in the sample obtained the maximum mark in this question. Candidates who scored one mark stopped at stating the effect but failed to explain. Many candidates did not attempt the question.

Expected Response

Since power $P = IV = \dfrac{V^2}{R}$

When V is reduced
        Power is reduced;
        So rate of heating is reduced;