Turing Aerodynamics (Turing) has formed a joint venture (JV) with Riemann Generators (Riemann) in order to design and manufacture high-performance wind turbines which generate electricity. The joint venture is called TandR with each party owning 50%. Turing will design and build the pylons, housing and turbine blades while Riemann will supply the generators to be fitted inside the housing.

Turing is a medium sized firm known for its blade design skills. It is owned by three venture capital firms (VCs) (each holding 30% of the shares), with the remaining 10% being given to management to motivate them. The VCs each have a large portfolio of business investments and accept that some of these investments may fail provided that some of their investments show large gains. Management is an ambitious group who enjoys the business and technical challenges of introducing new products.

On the other hand, Riemann is a large, family-owned company working in the highly competitive electricity generator sector. The shareholders of Riemann see the business as mature and want it to offer a stable, long-term return on capital. However, recently, Riemann had to seek emergency refinancing (debt and equity) due to its thin profit margins and tough competition, both of which are forecast to continue. As a result, Riemann's shareholders and management are concerned for the survival of the business and see TandR as a way to generate some additional cash flow. Unlike at Turing, the management of Riemann does not own significant shareholdings in the company which has preferred to pay fixed salaries.

TandR is run by a group of managers made up from each of the JV partners. They are currently faced with a decision about the design of the product. There are three design choices depending on the power which the wind turbines can generate (measured in megawatts [MW]):

Design type	Description
8 MW	a large 8 MW unit
3 MW	a 3 MW unit
1 MW	a basic 1 MW unit

The engineering for the 1 MW and 3 MW units is well understood and so design is much simpler than for the 8 MW unit which would be world leading if completed.

The demand for the different types of units will depend on government subsidies of the electricity price charged by the electricity generating companies who will buy the wind turbines and the planning regulations for building such large structures. It is believed that there will be orders for either 1,000 or 1,500 or 2,000 units but there is no clear picture yet of which demand level is more likely than the others.

The estimated costs and prices for the units are:

Туре	Variable cost per unit	Fixed costs	Price per unit
	\$m	\$m	\$m
8 MW	10.4	7,500.0	20.8
3 MW	4.8	820.0	9.6
1 MW	1.15	360.0	4.6

Notes:

1. The fixed costs cover the initial design, development and testing of the units.

2. The costs and prices are in real terms with the 8 MW unit likely to take two more years to develop than the others.

Required:

(c) Discuss the problems encountered in managing performance in a joint venture such as TandR. (8 marks)