Consider a shipper that needs to select carriers to carry its freight on various shipping lanes. There are 8 carriers and 3 shipping lanes. The projected demands of freight to be shipped are 650, 775 and 880 units for lane 1, 2 and 3, respectively. Price quoted by each carrier to transport a unit of freight demand on each lane is as given in the table below:

Carriers	Lane 1	Lane 2	Lane 3
1	392	368	311
2	268	265	202
3	208	215	299
4	315	279	347
5	340	340	279
6	249	375	397
7	324	363	328
8	264	285	370
Project demand	650	775	880

The Minimum Quantity of Freight quoted by each carrier below which it will not participate (Minimum Quantity commitment (MQC)) is 1,000 units. The amount of freight allocated to each carrier servicing a lane cannot be more than 60% of the total freight demand on the lane. The carriers have formed the following alliances among them. Alliance A comprises carriers 1,2,3,4, while Alliance B comprises carriers 5,6,7,8. The amount of freight allocated to each alliance servicing a lane cannot be more than 90% of the total freight demand on that lane.

Which carrier should carry how much freight on each lane to minimize the total cost for the shipper. Show your mathematical model and solve it using a solver of your choice.