

Question 1

- a. Shipbuilders will have to deal with:
 - i. Shipping cluster – Freight rate - Determines the demand of the various types of vessels and are the main customers of the shipbuilders
 - ii. R&D Cluster – Allows shipbuilders to build the most technologically advanced vessels and appeal to the buyers
 - iii. Finance Cluster – Institutions such as banks for funding required for raw materials and other miscellaneous costs in order to build the vessels
 - iv. Education & Training Cluster – To equip workers with the correct skillsets required for the operation of equipment and the construction of the vessels
 - v. Port cluster – Shipyards are required in the construction of vessels

- b. Shipmanagers
 - i. Source for qualified personnel to operate vessels
 - ii. Arranges for extra training for the crew to keep them up-to-date on the operation of the vessels
 - iii. Ensures that the vessels are stocked with adequate supplies for voyages and repairs
 - iv. Maintains validity of various certifications such as load lines or classification certification
 - v. Handles the technical aspects of the vessels are adequately taken care of, i.e. inspections, repairs, replacement of machinery, etc.

- c. Singapore Government
 - i. Ensures that the territorial waters around Singapore is charted and frequently updated to ensure accuracy (Hydrography)
 - ii. Traffic monitoring and directing of the vessels within territorial waters, especially within or around the ports to reduce chances of collisions
 - iii. Accurate forecasting of weather around territorial waters for the vessels sailing in (Meteorology)
 - iv. Ensures that the territorial waters around Singapore is clear of debris and objects as much as possible
 - v. Well-equipped ports to ensure that vessels are loaded correctly and not cause an imbalance on the ships

Question 2

- a. Absolute advantage is the advantage a place/country has when it can produce, manufacture or grow a certain type of good over another place/country which can't due to climate or geographic factors. This causes a derived demand for seaborne trade because there will be a demand for the good in the place which is unable to produce the good from the place which can produce it. One example is the production of tropical fruits in Asia such as durians, mangoes and rambutans while European countries such as England and Norway are unable to produce them due to climate conditions. Hence, there is a demand for trade of these fruits from Asia to Europe.
Comparative advantage is the advantage a place/country has over another place/country when it can produce, manufacture or grow a certain type of good at a much lower cost due to higher efficiency or lower input costs. This will also cause a derived demand for seaborne trade as people will demand for cheaper good produced in other places. One example is the mass manufacture and production of electronic goods such as smartphones which is cheaper in China due to lower labour and land costs as compared to USA, hence there is trade of these electronic goods from China to USA.
- b. Agricultural Products such as grains, Iron ore, bauxite, phosphate and coal

Question 3

- a. The price of new vessels depends on several factors:
 - i. Price of raw materials required to build new ships such as steel – the higher the cost price of the new ships, the higher the sale price
 - ii. Price of 2nd hand vessels – the more the 2nd hand vessels cost, the higher the demand for the new vessels, causing the price of the new vessels
 - iii. Expectations of freight rate – if the freight rate is expected to increase, more new vessels will be ordered in preparation for the increase in freight rate to take advantage of it for more revenue
 - iv. Demand for sea trade – the higher the demand for sea trade, the higher the demand for more capacity and more vessels. This leads to a higher price of new vessels
 - v. Supply of new vessels in the market – the higher the supply of shipbuilders and new vessels in the market, the lower the price of the new vessels

- b. Reasons for this trend
 - i. Expectation that freight rate will decrease – the lower the freight rate, the higher the number of vessels being demolished – it is more economical to scrap old vessels than continue operations
 - ii. Supply of 2nd hand vessels in the market is high while demand for 2nd hand vessels is low; hence, it is more economical for ship-owners to scrap their vessels as compared to waiting for a buyer in the 2nd hand market to sell their vessels
 - iii. Majority of the vessels over the past few years are nearing the end of their operational life, hence, there is an increased number of vessels being demolished to make way for renewals of the vessels
 - iv. It is a good phenomenon for the future freight market. As more vessels are being demolished instead of being resold in the 2nd hand market, the number of vessels available for sea trade decreases. This causes the supply of vessels to decrease, hence, there will be an upward pressure on the freight rate and it can be expected to increase in the future

Question 4

- a. State oil companies or drilling companies will be involved in the extraction of crude oil from oil fields or sea beds. Crude oil will be sent through rail cars, pipe lines, barges or trucks to crude oil storage facilities. It will then be transported to refineries to be separated into its useful components. The useful components will be transported off, leaving the waste product which is bunker, fuel for vessels. Bunker will then be sold off to the bunker suppliers who will then sell bunker fuel off to carriers or charterers. Bunker can also be sold off to traders. However, to increase their profit margin, traders may contaminate and dilute their bunker, causing a trust problem to exist. Ultimately, the bunker will be sold off to carriers and charterers, who will employ surveyors or fuel testing services to ensure that the bunker they receive are of good quality and can be used. The bunker will be transported to the bunker tanks of the vessels through pipelines and bunker tankers.
- b. Singapore plays the role of:
 - i. Rig builders – manufacturing, building and providing the oil rigs required in the offshore industry to fulfil one of the main functions of the offshore industry which is oil and gas production
 - ii. Suppliers of various equipment and supplies such as ropes, machinery, and bridges – allows the offshore industry to function normally, i.e. ropes required to tie vessels to offshore platforms
 - iii. Training of seafarers and workers – equips personnel with the skillsets and knowledge of the job scopes in the offshore industry, i.e. a drilling rig worker
 - iv. Financial and legal institutions – Singapore offers a regulated and legitimate market for financial and legal services such as loans and insurance
 - v. Shipbuilders – Builds the various specialised offshore vessels required in the offshore industry ranging from OSVs, crane vessels to wind turbine installation vessels and pipe-laying vessels

Question 5

- a. Liquid bulk cargo such as crude oil will be produced from oil fields and oil rigs. It will be transported via pipelines or barges to refineries where it will be split into its various components. The components will then be sent to storage facilities, tanks and then transported using pipelines, tankers, barges to further production phases such as blending and then sent to the various buyers.
- b. The terms are
 - i. Draft is the distance from the water level to the keel of the vessel
 - ii. Deadweight tonnage is the measure of how much weight a vessel is carrying or can safely carry including cargoes, fuel, crew, etc. The plimsoll line indicates the maximum permissible deadweight tonnage when the vessel is loaded
 - iii. Gross tonnage is a measure of a vessel's overall internal volume within the vessel. It serves as an index without units.
 - iv. Aframax vessel is the second smallest liquid bulk carrier, only bigger than Panamax
 - v. Capesize vessel is the second largest dry bulk carrier, only smaller than VLOC