THE INSTITUTE OF CHARTERED SHIPBROKERS

May 2023 Examiner's Report

Logistics and Multimodal Transport

Examiner's Report for Publication

Question 1

For each term or abbreviation, the student should cover the following:

- The meaning of the term/abbreviation
- Its context/origin
- A detailed description of what it represents
- Its significance in multimodal transport and the supply chain

The following are specific points to which the student should refer for each of the six parts of the question:

(a) **VGM**

- Verified Gross Mass
- Part of SOLAS Convention, effective 1 July 2016
- Developed following several incidents related to incorrect declaration of container weights (including MSC Napoli)
- Shipper must provide verified gross mass (VGM) of the container before loading (cargo + dunnage + tare weight of container)
- Two methods are available for determining VGM
- If no declaration, the container will not be loaded on the ship; container terminals may weigh the container as agent for the shipper and will charge for doing so
- Important for smooth and safe execution of maritime leg of multimodal transport

(b) 3PL

- 3rd Party Logistics (provider)
- Explain their role and the range of services provided
- How these services contribute to the efficient operation of multimodal transport and supply chains
- Distinguish from other types of logistics operators/service providers
- Why 3PLs are used by shippers and what are the advantages/disadvantages of using them

(c) ICD

- Inland Clearance (or Container) Depot
- Explain the role played by ICDs in through transport movements – including modal transfers, customs clearance/release away from port; staging point for inland movements, connection between rail/barge and road, storage for empty containers, packing/unpacking containers, maintenance and repair of containers
- Assist in removing congestion from port terminals

- Describe main facilities, equipment, infrastructure provided
- Explain the advantages of using ICDs for operators and customers using multimodal transport

(d) THC

- Stands for Terminal Handling Charge
- Can refer to charge paid by customer to the line, and also the charge paid by the liner to the terminal
- Charge made in a Liner tariff or contract, which covers the movement of the container on or off a vessel and may cover movement(s) within the terminal
- Set by the carrier and paid by the customer (historically set by conferences)
- Normally in local currency per container (different rates for 20ft, 40ft, reefer and other special containers)
- Can also refer to the charge raised by the container terminal on the container line in accordance with their contract
- An important cost/revenue item in a multimodal shipment

(e) WTO

- Stands for World Trade Organization
- An intergovernmental organisation to facilitate and develop trade (which also encourages multimodal transport shipments)
- Based in Geneva (established 1995) – the successor of GATT
- Supports and oversees international trade agreements
- Provides a forum for negotiations on trade agreements
- Handles disputes between countries over trade (e.g. tariffs etc.)
- Provides support and technical assistance for developing countries
- Publishes trade statistics

(f) Waybill

- Alternative to a bill of lading as a contract of carriage
- Commonly used for sea or air transport as main leg
- Receipt for goods
- Evidence of contract
- NOT a document of title (therefore cannot be negotiated, or used as security)
- Not required to be surrendered when goods are collected – discuss the implications of this
- Commonly used in short transit trades, where there is a risk of goods being delayed with conventional documentation
- Discuss commercial situations in multimodal transport when waybill may be preferred to a bill of lading

Question 2

In describing the concept of slow steaming, it is important to explain that when applied to container services, it is a more complex process than just reducing the speed of the ship, lengthening round voyages, and reducing the capacity generated.

Because the majority of container services operate on weekly fixed day schedules, in such cases, slowing down the ships also requires an additional vessel(s) in order to maintain the weekly

frequency. It is therefore an exercise in cost reduction rather than capacity reduction, and was initially adopted by the lines during the global economic crisis (2009 onwards) when they had surplus ships which could be employed in this way. The benefit of the bunker costs saved therefore has to be offset by the cost of the additional vessel(s).

However slow steaming has continued to be standard practice when lines design their networks, notwithstanding changes in demand for container services, and fluctuating bunker prices.

The advantages/disadvantages can be summarised as follows:

Advantages/Disadvantages to the lines:

- Network cost savings
- Utilising otherwise surplus vessels – helps supply/demand balance
- Environmental benefits (reduces CO2 emissions); will help compliance with new IMO EEXI and CII requirements
- Improves reliability – with a reserve of speed, vessels can speed up to meet terminal berthing windows
- The cost of providing containers increases, as containers are used for a longer periods on each trip
- If bunker prices reduce dramatically, the short term network cost savings from slow steaming may vanish

Advantages/Disadvantages to customers:

- The lines' cost savings are generally passed on to customers in lower freight rates
- Environmental benefits (these are claimed by both lines and customers)
- Improved schedule reliability provides supply chain benefits, however
- Longer transit times may have negative supply chain implications (more stock in transit, later arrival dates for cargo)

Question 3

The route specified in the question (China to Europe) gives students the opportunity to consider the following modes for the main leg of the journey:

- Air
- Sea
- Sea/Air
- Rail

(road is in theory possible for the complete journey, but hardly used)

While Sea/Air has declined in importance in recent years, the use of rail services across Central Asia has been increasing dramatically in the last few years, driven by various Chinese strategic initiatives ('One Belt, One Road'). However recently there has been a reluctance to use services passing through Russia as a result of the Russia-Ukraine war, and the imposition of sanctions on Russia.

Students were expected to give a brief description of the various services/routes available utilisation the different modes between China and Europe, and to explain how these factors apply to the different mode/route alternatives.

These factors include:

- Door to door cost (may depend on exact origin/destination in China/Europe)
- Type of goods (e.g. weight/hazard/perishability)
- Quantity of goods
- Value of goods/urgency
- Supply chain requirements for speed, reliability, frequency

The second part of the question asked students to consider how to differentiate between the various lines which offer services by sea from China to Europe. The factors discussed should include:

- Schedules offered (reliability/frequency/transit time/direct or transhipment)
- Space and container availability
- Freight Rate (price and other terms)
- Customer Service levels
- E Commerce systems (e.g. on line quotes/bookings/track and trace etc.)
- Inland operations (cost, modal choice, inland pick-up and delivery points)
- Value added services offered

Question 4

The importance of service factors in multi-modal transport, and in the management of supply chains is a recurring theme for logistics businesses. This question gave students an opportunity to demonstrate their knowledge both of the service factors which are important to users of these services, and of how to assess their value for the customer.

The key service factors which should be covered by students are:

- Speed
- Frequency
- Reliability
- Transparency of data on cargo movement, for supply chain management purposes

A description of what is meant by each service factor, and why it is important should be included, together with the financial value which could be attached to each factor, in order to justify being prepared to pay a premium on the freight rate for a better quality of service.

For example, a faster service would reduce the cost of stock in transit, and a more reliable service enables an importer to manage with lower safety stocks.

Practical examples for each service factor were essential to achieve a good pass mark.

There are a number of other relevant service factors, for example:

- Speed/accuracy of documentation
- Expert assistance/advice with cargo transport and related issues
- Range/quality of E Commerce products (ease of access to information/time saving)
- Guaranteed space availability per sailing

In each case it was important to show that high service standards could reduce the user's costs, or help to generate extra revenue for the user.

Question 5

Part (a)

The choice between owning and leasing containers is an important decision for multi-modal transport operators.

The main advantages and disadvantages of owning or leasing are as follows:

Advantages of Owning:

- Owning is cheaper in the long run, as it avoids paying a price which includes a profit element for the leasing company
- Containers can be built to the operator's specification, and the operator also controls the standards for maintenance and repair
- Containers will have the operator's colours/logo which increases brand awareness
- Containers from the owned fleet will always be available, rather than being dependent on short term availability in the leasing market

Disadvantages of Owning

- Capital has to be committed to the purchase, or the money borrowed, which may be expensive and/or stretch the operator's financial resources
- If demand reduces unexpectedly, it may be hard to dispose of surplus owned containers (which have a life of up to 20 years) and if newer containers are sold, there is likely to be a financial loss

Advantages of Leasing

- It is easier to adjust the fleet size in response to fluctuating demand for containers
- No requirement for capital financing
- Some types of leases allow pick up at one location, and drop off at a different location, which can be used to reduce imbalance costs

Disadvantages of Leasing

- In general, leasing is more expensive than owning containers
- If relying on the pick up of leased containers to meet customers' bookings, there is a risk that business will be lost if containers are unavailable
- Leasing companies may impose high charges to repair damage (even if only fair wear and tear) when containers are off hired at the end of the lease

Part (b)

There are a number of possible ways to reduce/avoid the cost of repositioning empty containers, including:

- Using leased containers which can be picked up at origin and dropped off at destination on the dominant leg
- Lease surplus containers out to third party for a one way trip (sometimes referred to as 'cabotage')

- Offer low freight rates (based on marginal pricing) to secure more cargo moving from surplus to deficit locations
- Offer alternative container types (if others are readily available)
- Delay the booking until containers are available
- Ensure that control systems are effective to ensure that container stocks are used to best advantage (including possibly reducing safety stocks of containers at shortage locations in the short term)

Question 6

Congestion is a wide-ranging problem in all transport and distribution systems, and it was important that in answering the question, a student considered as widely as possible where the problems occur, the causes and the potential solutions. The problems of congestion, particularly at ports, arising as a result of the pandemic enabled students to introduce topical elements into their answers.

Part (a)

The main points of congestion are at **modal interfaces** – ports (where congestion can occur at various pinch points for both ships and cargo); also ICDs and railheads. Congestion can also occur on road/rail systems, at canals waiting for transits, etc.

There are a number of causes of congestion, including:

- Shortage of equipment (e.g. cranes at terminals)
- Shortage of land (e.g. yard space, shortage of berths)
- Lack of capacity (roads, rail systems, canal transits)
- Problems of peaks, for example due to ship/container arrivals at certain times/days
- Shortage of labour
- Bad weather

Part (b)

The consequences of congestion are wide ranging, and it is important to discuss these from both the perspective of the user and the provider of the transport service.

Consequences can be grouped under the following headings:

- Operational consequences, for example delays to ships, cargo etc. There are also knock on effects – if a ship is delayed on a port call, there may be delays at later ports, or on the next round voyage, or port calls get omitted in order to regain the schedule
- Increased costs to both providers and users, either as a direct consequence (e.g. congestion surcharges, hiring in more equipment), or an indirect consequence (e.g. airfreighting goods to avoid running out of stock)
- Ongoing impact on the business, where reputation suffers, due to reduced reliability etc., so that financial losses go beyond the congestion event itself

There are numerous steps which can be considered to reduce/remove congestion, with various measures being possible on different timescales.

In the short term, actions may be limited, e.g. securing extra resources – hiring in extra labour or equipment if available; better operational planning can also help reduce congestion e.g. vehicle booking systems at container terminals can reduce vehicle queues with little extra resource needed, or longer gate opening hours.

On a longer timescale, investment in more infrastructure or equipment may be required, or focusing on particular business sectors/activities which are more productive (e.g. store empty containers away from the container terminal, rather than use up valuable yard space).

From the user's perspective, it may be wise to review the supply chain, and look for alternative routes/modes, as well as having 'back up options' available.

Student should avoid focusing on just one aspect of congestion. Examples are vital in order to secure a good mark on this question.

Question 7

The answer to this question requires detailed descriptions, showing an in depth knowledge of how e-commerce works in logistics and multi modal transport, and the specific products which are offered by providers.

While there are many general developments which have changed how business is carried out, e.g. email, internet, use of websites, it is important that the answer is focuses on changes specific to logistics services.

Part (a)

This should provide an overview of how e-commerce has changed how logistics business is conducted, and should include references to

- shared/transparent information
- real time/global information availability
- 24/7 access
- speed/accuracy of transfer of data
- smart systems - ability to test multiple alternative solutions to logistics challenges.

Part (b)

The student should provide **two** examples of specific products. Products can be wide ranging through the logistics industry – for example

- On line/automated booking or rate-quoting systems
- On line/automated shipping instructions
- Remote printing of B/Ls and invoices
- Track and Trace access for individual consignments
- Exception reports against an agreed delivery plan
- Stock control systems/logistics planning systems etc.

Answers should include a thorough description of the product, and information on how both parties (providers and users) have benefited from both parties using the product.

Part (c)

This part asks for a proposal for a specific e-commerce product which a logistics provider might develop – the student could either propose a product which is already being explored by some providers or a brand new product.
What is important is that it should relate to the logistics business with a description of how the product would function, and the benefits for the provider and the user.

Question 8

The first part of the question asked students to discuss the advantages and disadvantages of holding inventory. These include:

Advantages

- Ability to respond to unexpected increases in demand
- Ability to cope with delays in the supply chain (both delays at the point of manufacture, and delays in the supply chain)
- A secure base of stock from which to mount sales campaigns
- Slower shipment methods can be used

Disadvantages

- Financing cost of holding stock
- Cost of providing warehousing space, plus associated staff, equipment, systems etc.
- Risk of damage/obsolescence of the goods

The second part of the question covers the factors which determine the **level** of inventory to be held. These include both supply and demand factors:

- Lead time for supply of goods
- The features of the supply chain including the reliability and resilience of supply, considering the distance, mode, transit times involved
- The extent to which demand for goods varies
- The quality/accuracy of sales forecasts
- Perishability of the goods
- What alternative/emergency sources of supply may be available to address short term stock problems

It was vital that the question was answered by showing how these factors applied to a particular business/supply chain.