

**NAROTTAM MORARJEE INSTITUTE OF SHIPPING
MUMBAI**

Examination Paper – March 2019

Associateship/Post Graduate Diploma in Shipping Management – First Year

GEOGRAPHY OF SEA TRANSPORT

02.03.2019

Total 100 Marks

Time: 3 Hours.

NOTE: Questions 1 & 2 carry 20 marks each and are compulsory. Answer any FOUR from remaining – each question carry 15 marks.

Q1. On the outline of Map 'A' (world map) mark and name the following:

- | | |
|--|---------|
| (a) Three shipping canals – with seas & ports on either sides. | 6 |
| (b) Two Bauxite producing & exporting areas with ports of shipment. | 2 |
| (c) Gulf stream, Peru current, Californian current & equatorial current
With direction and state whether cold/warm. | 4 |
| (d) Prominent ports – Gibraltar, Los Angeles, Lisbon & Port Said. | 4 |
| (e) Gibraltar, English channel, Bay of Biscay & Cape of good hope. | 4 |

Q2. On the outline of Map 'B' (area map) mark and name the following:

- | | |
|--|---------|
| (a) Three crude oil exporting countries. | 3 |
| (b) Gulf of Mexico, Panama Canal, Yellow Sea, Malacca Strait, Cape Horn. | 5 |
| (c) Time zones of four different countries. | 4 |
| (d) Four Bunkering ports. | 4 |
| (e) Route of Capesize coal loader from ex-Australia to Mexico. | 4 |

Q3. Write short notes:

- | | |
|--|---------|
| (a) St. Lawrence seaway. | 3 |
| (b) Passenger port. | 3 |
| (c) Free port. | 3 |
| (d) Panama canal & its advantages. | 3 |
| (e) Pipelines as mode of liquid cargo transport. | 3 |

- Q4. Elaborate the statement "Suez canal is a boon to shipping, yet it has its own problems".
- Q5. Reasons for underdevelopment of Inland waterways in India compared to USA & Europe. initiatives taken by Indian Govt. for future development.
- Q6. Discuss the following Trading Blocks: (3 marks each):
- (a) SAARC
 - (b) ASEAN
 - (c) GATT
 - (d) OAU
 - (e) LAFTA
- Q7. Differentiate between: (3 marks each):
- (a) Ocean currents & Tides.
 - (b) OBQ & ROB.
 - (c) SBT & SLOP.
 - (d) Grounding and Capsizing.
 - (e) F.W.A and Brackish water.

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EXAMINATION - MARCH 2019

SUBJECT : GST

Q	1	2	3	4	5	6	7	8	9	10	11	12	Total
M	19	16 1/2	11 1/2	13	13	14							87

WRITE BELOW

Q3 a) St. Lawrence seaway:

St. Lawrence seaway is located in Canada region. It consists of Lake Ontario, Lake Erie, Lake St. Clair, Lake Huron & Lake Superior. It is the largest fresh water lake system in the world.

The seaway starts from Montreal in Canada & is about 400 km long till Lake Superior. There are numerous lock gates in this seaway, most prominent being located in the "Welland Canal" that bypasses the Niagara falls & changes the water level to 99 mtrs. The seaway is only navigable in Summer season & remains closed due to subzero conditions in the winter season. Maximum draft allowed is about 8 mtrs & maximum breadth allowed is only 24 mtrs, thereby restricting the size of vessels. Special barges called "lakers" are designed to carry cargo.

b) Passenger port:

Passenger ports are designed to accommodate passenger ferries, Cruise liners & pleasure crafts.

They are well connected to cities & areas of tourism. Immigration & customs formalities are made convenient for passengers. These ports are generally not far off from populated areas and may have duty-free shops & other convenience stores.

located within the port limits. In India, passenger vessels trade commonly between Chennai & Port Blair. There are numerous passenger ports in the world, 'Cork' in Ireland is one famous example as the 'Titanic' docked here before commencing her maiden trans-Atlantic voyage.

c) Free Port:

A "Free Port" or 'Entree Port' is designed or located to promote trade & commerce in the area, it works as a 'Transit port' where cargo may be unloaded, re-packaged & then re-exported to a destination without attracting customs duty. There may be ~~many~~ numerous reasons for this trans-shipment activity such as:

- Cargo destination is a small port where bigger vessels can-not go.

A large vessel may bring smaller parcels for different receivers in an area. These parcels are segregated at Free port.

- Political reasons do not allow vessel or cargo from a particular origin to enter certain countries. eg: For many years in the past, a vessel could not trade directly between Taiwan & China.

d) Panama Canal & its advantages:

Panama canal connects the Atlantic ocean with Pacific ocean between the North & South American ~~continent~~ continents. The canal itself is about 100 km long & cuts the sea-going distance between East & West Coast of USA by about 7000 NM. The canal can accommodate drafts upto 12m in old canal & 15m in new canal.

allows traffic to run in both directions at the same time. The shore based locomotive engines assist the vessel during canal transit. The canal is mostly fresh water due to influx of water from rivers in 'Gaton lake'. There are lock gates on either side to regulate the outward flow of water. The Panama canal is run efficiently & is a boon to the ocean going vessels transiting in this area. It is interesting to note that fresh water density reaches 0.9980 (less than 1) in some seasons in the canal.

2 1/2 Pipeline as mode of liquid cargo transport.

Pipe-lines are most efficient mode of liquid cargo transport. Various types of cargo such as crude oil, refined oils, clean petroleum products, Dirty petroleum products & chemicals are transported through pipelines. Advantages of pipelines are:

- Fast and efficient
- All weather transport
- Easy to start & stop
- No "freights" incurred repeatedly.

2 1/2 Disadvantages of pipelines are:-

- Huge capital investment required to build
- prone to disruptions due to security threats.
- Agreement required if passing through different countries
- Trans-ocean pipelines not possible
- Bulk cargo cannot be transported
- maintenance, inspection of pipelines required.

Q4 "Suez Canal is a boon to Shipping, yet it has its own problems".

Suez canal runs across Egypt connecting Red Sea to the Mediterranean Sea and thereby providing important connectivity between Eastern & Western part of the world. Without the Suez canal, ships had to go around 'Cape of good hope' ~~thereby~~ increasing the distance by a large margin. In many cases, this increased distance would make the voyage unprofitable for smaller vessels. The canal itself is 160 km long & provides two-way traffic in most parts since a new section was opened in 2015. Although, the Suez canal has many benefits but it is also associated with following problems:-

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a) Ship size limitations. Even after opening up of new section of canal, large vessels cannot transit the canal in loaded condition. VLCCs & VLOC ships & Cape size bulk carriers cannot transit the canal as draft is limited to 15m in some parts & 20m in other parts of the canal. The Suez canal authorities have tried to make alternative arrangements to allow passage of such ships by making discharging & loading facilities at both ends of the canal but these have proved to be inefficient.

b) Siltting.

The canal is prone to siltting and therefore regular dredging is required to maintain depth in the canal. The Suez canal authorities have

c) One-way transit :-

The canal is not wide enough to allow two-way transit at the same time. Usually, ships transit in convoys therefore, one convoy anchors in Great Bitter Lake during the transit so that ships transiting in opposite direction can pass.

d) Canal charges :-

Suez canal is single most revenue generating source for Egypt, followed by tourism. High canal transit charges which includes tonnage tax, pilots, boat, moving crew, electricians etc sometimes become too much & due to low prices of crude oil, ships opt to pass through Cape instead.

e) Delays in transit :-

Ships need to anchor upon arrival at both ends and wait for a suitable date/time for transit. The delays are usually limited to less than a day in most cases but may get extended due to heavy traffic.

f) Special arrangements required :-

Ships need to have a "Suez Canal tonnage certificate", Suez canal lights and need to use mandatory bugs in case carrying hazardous cargo. All these special arrangements required increase the transit cost.

g) Misc :-

There have been cases where pilots, customs & other authorities have demanded gifts or other form of bribery to perform their duties effectively.

Q5 Inland waterways of India:-

India is a big country which is blessed with a large sea-coast of 7500km in length & even large inland waterways of about 14000km. Out of this stretch, about 5000km is navigable by self propelled craft.

However, if we compare utilization of our inland waterways with those of Europe or USA, the stark difference in our own resources become evident. In comparison of about 41% of cargo tonnage moved by inland waterways by Netherlands & 25% moved by USA, India moves only 0.1% of its cargo using inland waterways.

There are total 6 Inland waterways in India, first 5 have been existing previously & 6th has been announced in recent times:-
 IW1:- This IW is made over Ganga & Hooghly rivers and extends from Allahabad to Haldia for about 1600 km. Coal is one of the main commodity that moves in this IW, supplying to thermal power plants.

IW2:- This IW is made over Brahmaputra river in NE states and extends to about 900 km.

IW3:- IW3 was made connecting the canals on the west coast of India, length being 203 km.

IW4:- This extends on East coast of India on the Krishna & Godavari rivers.

IW5:- IW5 extends over Mahanadi & Brahmani

IW-6: opened recently & in Assam region.

The main reasons for under-development of these inland waterways are as follows.

- a) The canals need to pass through 2 or more states in most cases thus attracting different custom rates & regulations imposed by individual state.
- b) There has been a general lack of interest by central & state governments in the past regarding these canals. Without proper support, they have failed to contribute towards inland trade.
- c) The depths need to be maintained in the waterway so that vessels can transit. otherwise the depths reduce due to silting & erosion.
- d) Navigation, especially during night time is possible only when navigations aids such as buoys & light towers are provided. This has not been case in the past.
- e) Security issues have prevailed in the past during inland waterways transit & there have been cases of lobbying by some parties involved & control over cargo moved.
- f) Lack of jetties, connected road & rail network & in general the necessary infrastructure has been a major root cause behind under-development of inland waterways in India.

Thankfully, Indian government has now

taken initiatives for future development:-

- a) IWT (Inland Waterways Authority of India), ~~has~~ with its head quarters in Noida (UP) has played an active role in identifying the hurdles & removing them.
- b) Ministry of surface transport has provided the right push for the inland waterways. The ministry has proposed to open 183 new waterways.
- c) The cost of transport by waterways is in comparison of rail & road is $1:6:2:3$ only. Being the most economical means of transport & resulted in prompt attention of interested private parties.
- d) With enforcement of common GST, the inter-state barriers of local customs have come down & vessels can move easily behind one state.

With all-round efforts of the government, one of the major ship operator of the world - 'maersk lines' was able to move a small feeder vessel for the first time in Inland waterways recently -

The efforts of government are hence commendable.

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WRITE BELOW

Q7a) Ocean currents & Tides

Ocean currents

Tides

a) These are permanent or semi-permanent in nature

a) Tides occur daily with diurnal or semi-diurnal changes

b) Ocean currents are result of sustained wind, gradient or upwelling

b) Tides are result of gravitational pull by moon & sun

c) Direction of ocean currents do not change, strength may vary as per season.

c) Tides change direction almost every 6 hours in many parts of world.

b) OBB

ROB

a) OBB = On-Board Quantity remaining

a) ROB = Remaining - On-Board

b) OBB is measured, when a ship arrives at load port.

b) ROB is measured at the end of discharging at load port.

c) OBB is usually more due to 'clinging' 'clinging' etc.

c) ROB is usually less than OBB

c)

SBT

a) SBT stands for "Segregated Ballast Tank". These are essentially ballast tanks

b) Ballast contained in SBT can be pumped directly to sea

c) SBT can not carry oil cargo

Slop

a) Slop tanks are designated on a tanker to carry oily wash water of the cargo

b) Slop needs to be dewatered through a pump prior pumping to sea.

c) Slop tanks can be used to carry oils

d)

Grounding

a) Grounding occurs when a ship touches bottom of sea-bed unintentionally.

b) Reason for grounding is lack of under-keel clearance.

c) Damages are usually restricted to keel plate although further damages may occur.

Capsizing

a) Capsizing occurs when the ship topples over

b) Reason for capsizing is lack of stability (angle of heel) or heavy weather conditions.

c) This can be catastrophic for the ship as total loss can occur.

a) FWA

a) Fresh Water Allowance is the difference between draft of a ship ~~in~~ in sea water & fresh water.

b) FWA is fixed as per hydrostatic particulars of a vessel given in the stability booklet.

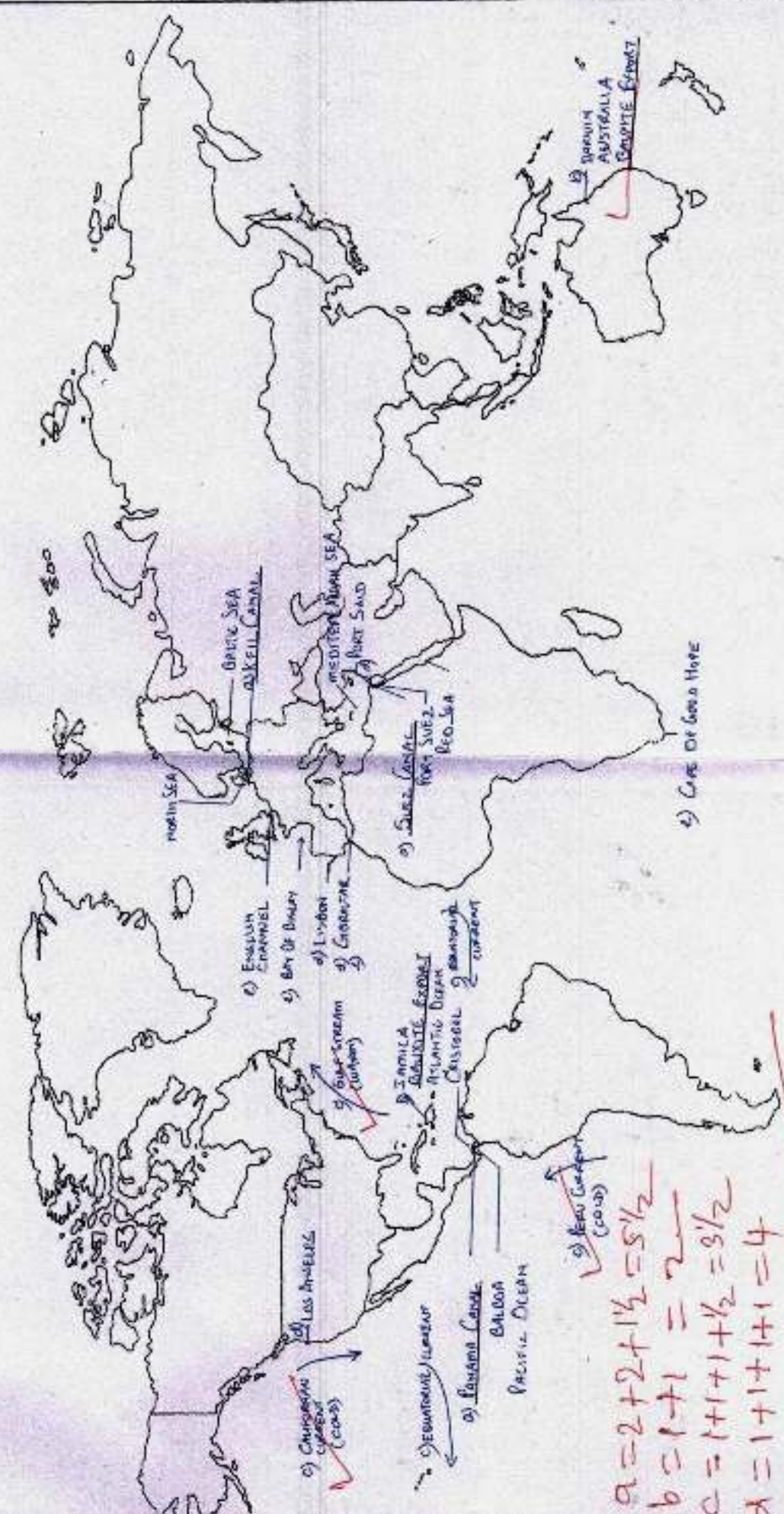
c) FWA is unique to every ship.

Brackish water

a) Brackish water is found inside some ports where density of water is between fresh water (1.0000) & seawater (1.025)

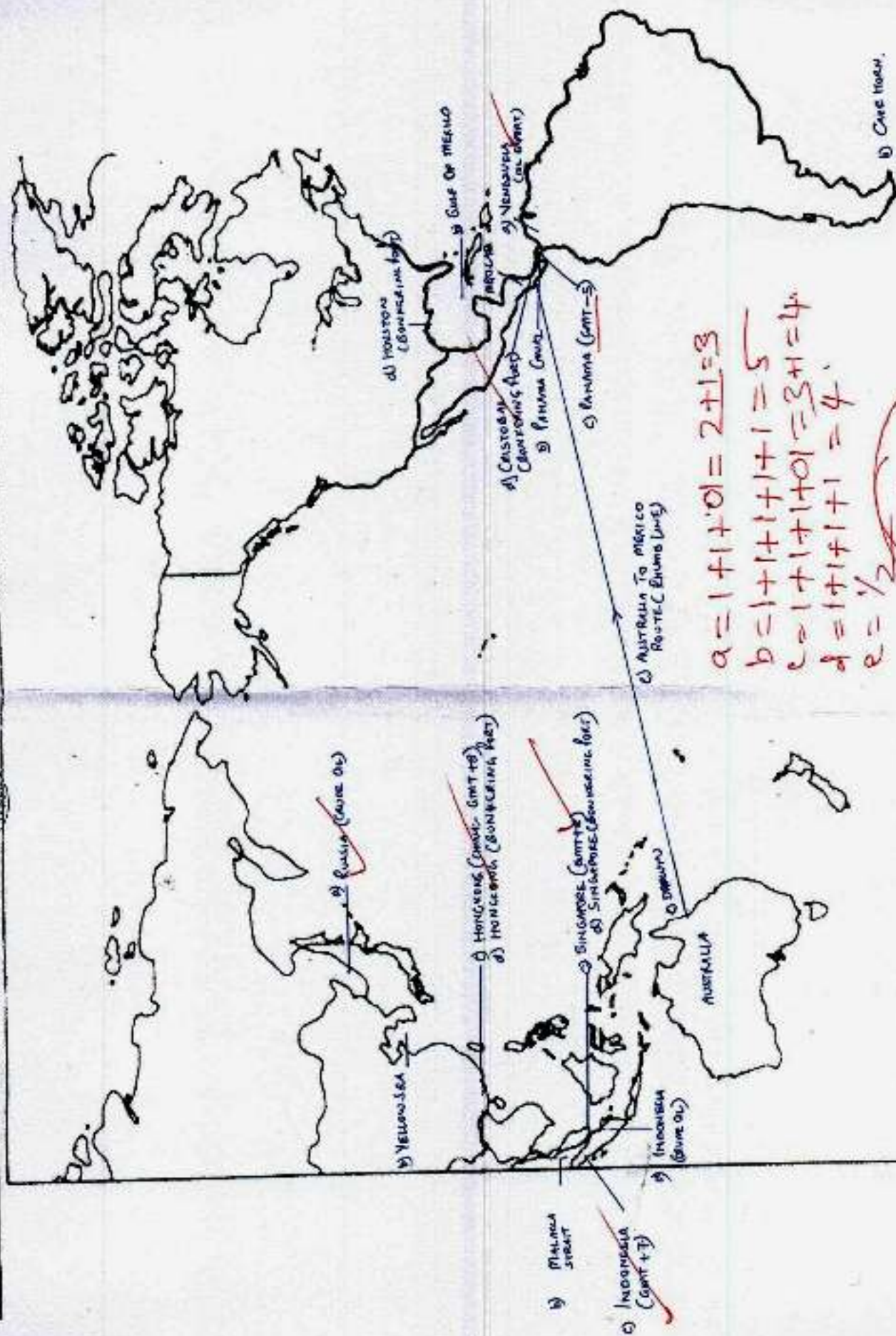
b) Density of brackish water may differ from port to port.

c) Brackish water density is unique for every port.



$$\begin{aligned}
 a &= 2 + 2 + 1\frac{1}{2} = 5\frac{1}{2} \\
 b &= 1 + 1 = 2 \\
 c &= 1 + 1 + 1 + \frac{1}{2} = 3\frac{1}{2} \\
 d &= 1 + 1 + 1 + 1 = 4 \\
 e &= 1 + 1 + 1 + 1 = 4
 \end{aligned}$$

(19)



$$a = 1 + 1 + 0 = 2 + 1 = 3$$

$$b = 1 + 1 + 1 + 1 = 4$$

$$c = 1 + 1 + 1 + 0 = 3 + 1 = 4$$

$$d = 1 + 1 + 1 + 1 = 4$$

$$e = \frac{1}{2}$$

16 1/2