First of all, I would like to say it is the first year that Dr Okan teaches this module along with 2 other lecturers, hence the allocation of points is a bit confusing (like Capt Tan got only 2 lectures and quite easy questions but they accounted for half the total score). This mod really requires a lot of memory work so just work hard and wish you all the best for the exam 😊

Again, some tips for you: Read the question carefully, if it asks to list or name, just list it out, no need to elaborate. Prof Okan will really like to compare and contrast, so make sure you understand the concepts carefully.

Question 1:

a. Outline the origin of TMSA and its primary objective.
TMSA was introduced by OCIMF in 2004 as a standard framework to help vessel operators assess, measure and improve their management system.
The framework is based on 12 elements of management practice, each one associated with a clear objective and a set of supporting KPIs to help operators assess the level of attainment in their company.
The programme encourages companies to assess their safety management systems (SMS) against key performance indicators (KPIs) and provides a minimum expectation (level 1) plus three levels of increasing best practice guidance. Self assessment results can be used to develop phased improvement plans that support continuous improvement of their ship management systems. Companies are encouraged to regularly review their self assessment results against the TMSA KPIs and to create achievable plans for improvement.

b. Name the new element as added in TMSA3.
Maritime Security

c. Identify and state four areas of key changes as impacted in TMSA 3
   - **Expanded and revised best practice guidance**, to remove ambiguity and duplication and also to complement the KPIs.
   - Streamlining and merging of the TMSA elements, as well as **removal of the option to mark KPIs as not applicable.**
   - Introduction of **updated industry legislative requirements**, including the Manila Amendments to the Maritime Labour Convention 2006, the Polar Code and the Ballast Water Management Convention.
   - The TMSA programme will continue to evolve with time. **New KPIs** may be added and best practice guidance will be updated in future editions.

Question 2:

a. Define the term Near Miss as per MSC-MEPC.7/Circ.7

Near-miss: A sequence of events and/or conditions that could have resulted in loss. This loss was prevented only by a fortuitous break in the chain of events and/or conditions. The potential loss could be human injury, environmental damage, or negative business impact (e.g., repair or replacement costs, scheduling delays, contract violations, loss of reputation).

Some general examples of a near-miss:

1. Any event that leads to the implementation of an emergency procedure, plan or response and thus prevents a loss. For example, a collision is narrowly avoided; or a crew member double checks a valve and discovers a wrong pressure reading on the supply side.

2. Any event where an unexpected condition could lead to an adverse consequence, but which does not occur. For example, a person moves from a location immediately before a crane unexpectedly drops a load of cargo there; or a ship finds itself off-course in normally shallow waters but does not ground because of an unusual high-spring tide.

3. Any dangerous or hazardous situation or condition that is not discovered until after the danger has passed. For example, a vessel safely departs a port of call and discovers several hours into the voyage that the shipís radio was not tuned to the Harbour Masterís radio frequency; or it is discovered that ECDIS displayís scale does not match the scale, projection, or orientation of the chart and radar images.

b. Main barriers to Near Miss reporting

There are many barriers related to the reporting of near-misses. In many cases, near-misses are only known by the individual(s) involved who chose to report or not report the incident. Some of the main barriers to the reporting of near-misses include the fear of being blamed, disciplined, embarrassed, or found legally liable. These are more prevalent in an organization that has a blame-oriented culture. Amongst other barriers are unsupportive company management attitudes such as complacency about known deficiencies; insincerity about addressing safety issues and discouragement of the reporting of near-misses by demanding that seafarers conduct investigations in their own time.

c. Suggest five Management Initiatives that can encourage and promote effective reporting of Near Miss in a shipping Company.

1. Encouraging a "just-culture" in the company which covers near-miss reporting.

2. Assuring confidentiality for reporting near-misses, both through company policy and by "sanitizing" analyses and reports so that personal information (information identifying an individual) of persons associated with a near-miss is removed and remain confidential. Personal information should not be retained once the investigation and reporting processes are complete.

3. Ensuring that investigations are adequately resourced.

4. Following through on the near-miss report suggestions and recommendations. Once a decision has been made to implement, or not implement, the report's recommendations should be disseminated widely.

5. Provide training/safety orientation that addresses the importance of reporting near-misses for all new employees.

Question 3:

a. Define the meaning of radical change (Kaikaku) and incremental change or continuous improvement (Kaizen) in management.

Kaikaku is the Japanese word for "radical change." It is a lean method used to make fundamental, significant, radical changes in the workplace. Unlike Kaizen, which uses slow, continual, small changes, Kaikaku involves making one-time, large, major changes

Kaizen and Kaikaku are not mutually exclusive. They both have their place in an organization's arsenal of lean tools. Kaikaku is a tool that is used in addition to Kaizen, not instead of Kaizen. In many cases Kaikaku is used initially, and the Kaizen provides the long-term transformation.

1. Kaizen – slow, gradual change of an existing practice, system, or process.

2. Kaikaku – complete upgrade or replacement of a system or process

Typically both Kaikaku and Kaizen will be applied. Kaikaku is intended to bring about radical change, and Kaizen is to sustain that change and make further improvements.

b. Discuss major differences between Kaikaku and Kaizen. What are the pros and cons of implementing Kaikaku and Kaizen approaches for quality management?

(i)   Major differences

Kaizen - Continuous improvement	Kaikaku - Large-scale, radical change
Focus on small changes and slowpace	Focus on radical change (breakthroughs)
Planning and execution timeline of hours and weeks	A lean initiative or event with a planning timeline of weeks to months, but execution can range from hours to weeks
Smaller projects	Generally larger projcts
Smaller staff and resources required	More staff and resources required
Faster results with small, individual contributions to the bottom line	Results are seen slowly, however with larger and various contributions to the bottom line
Tactical	Strategic
Less innovative	Innovative
May lose market share to disruptive innovation	Change in infrastructure, business structure, culture and training
Less problematic due to repetition of tasks	More problematic due to changes in major aspects

(ii)   Kaikaku

Pros	Cons
Innovate / Change the way business doing things	Increased resources and time
Produce new products/services => More markets and customers	Not suitable for traditional approach
Suitable for SMEs to compete against MNCs	Unpredictable results (good/bad)
	Effectiveness limited by regulations and law
	High R&D cost and capital investment

(iii)   Kaizen

+ Pros:

- Improve productivity (processed workflow)
- Improve quality of products overtime / business performance
- Better work safety
- Reduce waste (due to reduction in waiting time)
- Faster delivery of product
- Increase customer satisfaction
- Improved motivation, hence increase staff morale
- Systematic organizational learning

+ Cons

- Discourages creativity (Needs different mindset, capabilities, ect)
- Subject to company culture to succeed (more beneficial to established company)
- Extra admin task to lower level of management, hence decrease staff morale

Question 4:

a. Evaluate the role of IMO as an international agency for shipping

(Also can mention IMO overall purposes and mission)

Shipping is the most international of all global industries and ownership and management chain surrounding any particular vessel embrace different countries; the owner, operators, shippers, charterers, insurers, classification societies, officers and crews may be from different nationalities. Ships move between different countries and between jurisdictions.
A universal standard that can be applied and recognised by all is required.
Shipping is an inherently dangerous occupation- ships confront worst elements and disasters pending.
A framework of internationally recognised standards to regulate shipping for all is required.
For example, without these, a ship leaves country A bound with cargo for country B, fully compliant with country A's requirement for ship design, construction, equipment, manning and operations but country B has its own different requirements.
The common approach ensure ships can ply their trade around the world and countries receiving them confident that they do not place their own safety, security and environment integrity at an unreasonable risk.
Improving safety at sea best way will be to develop international treaties with regulations followed by all shipping nations.
IMO is one such international agency for maritime (shipping) regulatory framework.
IMO main function has been to develop and maintain a comprehensive regulatory framework for international shipping.

b. Explain how the IMO Conventions are enforced.

The enforcement of IMO conventions depends upon the Governments of Member Parties.

Contracting Governments enforce the provisions of IMO conventions as far as their own ships are concerned and also set the penalties for infringements, where these are applicable.

They may also have certain limited powers in respect of the ships of other Governments.

In some conventions, certificates are required to be carried on board ship to show that they have been inspected and have met the required standards. These certificates are normally accepted as proof by authorities from other States that the vessel concerned has reached the required standard, but in some cases further action can be taken.

The 1974 SOLAS Convention, for example, states that "the officer carrying out the control shall take such steps as will ensure that the ship shall not sail until it can proceed to sea without danger to the passengers or the crew".
This can be done if "there are clear grounds for believing that the condition of the ship and its equipment does not correspond substantially with the particulars of that certificate".

An inspection of this nature would, of course, take place within the jurisdiction of the port State. But when an offence occurs in international waters the responsibility for imposing a penalty rests with the flag State.

Should an offence occur within the jurisdiction of another State, however, that State can either cause proceedings to be taken in accordance with its own law or give details of the offence to the flag State so that the latter can take appropriate action.

Under the terms of the 1969 Convention Relating to Intervention on the High Seas, Contracting States are empowered to act against ships of other countries which have been involved in an accident or have been damaged on the high seas if there is a grave risk of oil pollution occurring as a result.

The way in which these powers may be used are very carefully defined, and in most conventions the flag State is primarily responsible for enforcing conventions as far as its own ships and their personnel are concerned. The Organization itself has no powers to enforce conventions.

However, IMO has been given the authority to vet the training, examination and certification procedures of Contracting Parties to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978. This was one of the most important changes made in the 1995 amendments to the Convention which entered into force on 1 February 1997. Governments have to provide relevant information to IMO's Maritime Safety Committee which will judge whether or not the country concerned meets the requirements of the Convention.

Question 5:

    a. Benefits of carrying and maintaining the Statutory Certifications of the Vessel
In order for a ship to trade and to get Customs' clearance at each of its ports of call, the vessel will have to maintain and carry on board at all times a complete set of Certificates. Valid statutory certificates are taken as prima facie evidence that the vessel has been surveyed and found to comply with mandatory international requirements.
This means that a vessel holding valid certificates can trade internationally without having to prove that she and her crew meet the requirements of each foreign jurisdiction. This reduces the regulatory burden on international shipping as ships do not need to be inspected at every port.

    b. Explain the required Ballast Water Management standards under BWM Convention

There are 2 ballast water management standards:
1. Regulation D-1 relating to Ballast Water Exchange (BWE) and
2. Regulation D-2 relating to Ballast Water Treatment which will normally require the fitting of an approved Ballast Water Management System (BWNS)

The Convention defines two basic methods of managing ballast water:
Ballast Water Exchange: ships are required to discharge ballast water and re-ballast in the deep ocean. The basis for this procedure is that aquatic organisms transported from coastal environments are unlikely to become established when discharged in deep water; conversely those aquatic organisms taken on board when drawing ballast water from the deep ocean are far fewer in number and unlikely to become established if discharged in a coastal environment.
Ballast Water Treatment: ships are required to treat ballast water prior to discharge so that it meets specified criteria for the maximum content of organisms.

Methods: Three methods of carrying out BWE have been approved by IMO: sequential, flow through and dilution. The flow-through and dilution methods are referred to as 'pump-through' methods.

Sequential method-A process by which a ballast tank is first emptied and then refilled with replacement ballast water to achieve at least a 95 percent volumetric exchange.

Flow-through method-A process by which replacement ballast water is pumped into a ballast tank intended for the carriage of water ballast, allowing water to flow through overflow or other arrangements. At least three times the tank volume is to be pumped through the tank.

Dilution method-A process by which replacement ballast water is filled through the top of the ballast tank intended for the carriage of water ballast with simultaneous discharge from the bottom at the same flow rate and maintaining a constant level in the tank throughout the ballast exchange operation. At least three times the tank volume is to be pumped through the tank.

Answers provided by Grace Dang