C–7978

Sub. Code
98811H

DIPLOMA EXAMINATION, NOVEMBER 2022

First Semester

Nautical Science

Part I – Hindi Paper – I

STORY, NOVEL, GRAMMAR AND TRANSLATION

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

सभी प्रश्नों के उत्तर दीजिए।

उत्तर संक्षेप में हो।

1. श्रीकंठ का संक्षिप्त परिचय दीजिए।

2. प्रायश्चित कहानी का संदेश क्या है?

3. लहनासिंह ने बोधासिंह को कैसे बचाया?

4. मोहनलाल महतो 'वियोगी' का संक्षिप्त परिचय दीजिए।

5. प्रेमचन्द के उपन्यासों में किन्हीं चार का नाम लिखिए।

6. कल्याणी और उदयभानुलाल के बीच में झगड़ा क्यों हुआ?

7. विवाह की सूचना पाकर निर्मला के हृदय में क्या शंका होने लगा?

8. सियाराम किसके साथ भाग गया? और क्यों?

9. लिंग बदलिए।

(a) मालिक (b) सिंह

(c) सुनार (d) विधवा

10. वचन बदलिए

(a) लता (b) आँख

(c) घर (d) रीति

Part B $(5 \times 5 = 25)$

सभी प्रश्नों के उत्तर संक्षेप में लिखिए।

11. (a) रामू की बहू को घर में रहना मुश्किल क्यों हो गया?

या

(b) पंडित परमसुख की आकृति कैसी थी?

12. (a) 'उसने कहा था' इस कहानी में किसने किससे क्या कहा था?

या

(b) 'पाँच मिनट' कहानी में, पाँच मिनट में पति-पत्नी के बीच क्या-क्या बातें होती है?

13. (a) मंसाराम का मृत्यू का जिम्मेदार कौन है? स्पष्ट कीजिए।

या

(b) जियाराम ने क्यों आत्महत्या कर लिया?

14. (a) एकवचन से बहुवचन बनाने के नियमों को उदाहरण सहित समझाइए।

या

(b) पुल्लिंग से स्त्रीलिंग बनाने के नियमों को उदाहरण सहित समझाइए।

15. (a) संज्ञा किसे कहते हैं? उनके भेदों को उदाहरण सहित समझाइए।

या

(b) कारक किसे कहते हैं? उनके भेदों को उदाहरण सहित समझाइए।

Part C $(3 \times 10 = 30)$

सभी प्रश्नों के उत्तर विस्तार से लिखिए।

16. (a) 'बड़े घर की बेटी' कहानी का सारांश लिखिए।

या

(b) 'उसने कहा था' कहानी का सारांश लिखिए।

17. (a) निर्मला उपन्यास का सारांश संक्षेप में लिखिए।

या

(b) निर्मला उपन्यास में चर्चित सामाजिक समस्याओं का वर्णन कीजिए।

18. (a) सर्वनाम किसे कहते हैं? उनके भेदों को उदाहरण सहित समझाइए।

या

(b) अंग्रेजी में अनुवाद कीजिए।

एक दिन की बात है। रामदास अपने कमरे में लेटे आराम कर रहा था कि इतने में दो तीन ग्वाले दौड़ते हुए उसके पास आये। उनके मुँह पीले पड़ गये थे। चेहरे पर रंग नहीं था। धीरज बंधाने पर उन लोगों ने कहा कि टीले के बाई ओर, नाले के पास की झाड़ियों में बाघ छिपा हुआ है। रामदास ने तुरंत बंदूक थाम ली और कारतूल लेकर टीले की ओर चल पड़ा। शाम का समय था। सूर्यास्त होने को आया। रामदास टीले के एक बड़े पत्थर पर जा बैठा और बाघ की गंध लेने लगा। एक घंटा बीत गया, पर कहीं बाघ का पता नहीं लगा।

C–7979	Sub. Code
	98812

DIPLOMA EXAMINATION, NOVEMBER 2022

First Semester

Nautical Science

APPLIED MATHEMATICS

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. Define the scalar product or dot product of the two vectors a and b.

2. Find grad ϕ for $\phi(x, y, z) = x^2 + y - z$ at the point $(1,1,1)$.

3. Define abscissa and ordinate.

4. Define the graph of a function.

5. What are the basic concepts of linear programming?

6. Define optimum solution.

7. Give any two advantage of linear programming.

8. What is a co-ordinate in geometry?

9. What are the three types of trigonometry?

10. What is the difference between trigonometry and spherical trigonometry?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Find the work done in moving a particle in a force field $\vec{F} = 3xy\,\vec{i} - 5z\,\vec{i} + 10x\,\vec{k}$ along the curve $x = t^2 + 1 : y = 2t^2, z = t^3$ from $(2,2,1)$ to $(5,8,8)$

Or

(b) Find the equation to the circle which passes through the points $(1,0),(0,-6)$ and $(3,4)$.

12. (a) How can it happen that a linear program will have more than one optimal solution?

Or

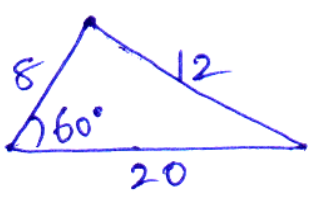
(b) Draw the graph of the function $f(x) = 2x^3 - 2$ along with the point $(1,0)$ you found from its solution.

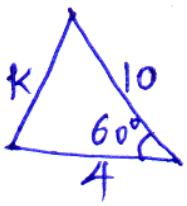
13. (a) Find the centre an radius of the circle $2x^2 + 2y^3 - 8x - 7y = 0$.

Or

(b) Find the equation of the tangent at the point $(0,2)$ to the circle $x^2 + y^2 - 4x + 2y - 8 = 0$.

14. (a) Check whether the two triangles shown below are similar and calculates the value K.





Or

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(b) Calculate the perimeter of a square having a side of 16cm.

15. (a) Find the value of $Sin75^{\circ}$

Or

(b) Evaluate the value of $\sin 30^{\circ} + \tan 45^{\circ}$

Part C $(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Solve the following LPP by the graphical method.

Minimize $Z = 3x_1 + 5x_2$

Subject to $-3x_1 + 4x_2 \leq 12$

$x_1 \leq 4$

$2x_1 - x_2 \geq -2$

$x_2 \geq 2$

$2x_1 + 3x_2 \geq 12$

and $x_1, x_2 \geq 0$

Or

(b) Find all the basic solutions to the following problem

Minimize $Z = x_1 + 3x_2 + 3x_3$

Subject to $x_1 + 2x_2 + 3x_3 = 4$

$2x_1 + 3x_2 + 5x_3 = 7$

(i) Basic feasible

(ii) Non –degenerate basic feasible

(iii) optimal basic feasible

17. (a) If the length of the semi major axis is 7 cm and the semi minor axis is 5 cm of an ellipse.

Find its area.

Or

(b) The height of tree (in feet) was measured every five years after it was planted and recorded in the table below.

Years	height
0	1
5	3.5
10	6
15	7.5

Use the interpolation to estimate the height of the tree eight years after it was planted.

18. (a) In a spherical triangle ABC, Angle $C = 90^\circ$, Angle $B = 30^\circ$, side $AB = 70^\circ$ find side AC and angle A.

Or

(b) Calculate the centroid of the region (Use Simpson's rule with $n = 20$ if necessary) $y = x^2$ and the line $y = 2x$ for $0 \leq \pi \leq 2$

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C–7980	Sub. Code
	98813

DIPLOMA EXAMINATION, NOVEMBER 2022.

First Semester

Nautical Science

APPLIED SCIENCE

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. What is frequency?

2. Write a note on Mollier diagram.

3. Write the difference between absorption and reflection.

4. Define amplitude.

5. What is the approximate frequency range of audible sound?

6. Write a note on prism binocular.

7. Expand EMF.

8. What is mean by solenoid?

9. Discuss about ammeter and voltmeter.

10. What is radar transmitter?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Discuss about the Newton's law of motion.

Or

(b) Explain the process of conduction, convection and radiation.

12. (a) Explain the basic concepts and features of S.H.M.

Or

(b) Discuss about the velocity of sound in air compare with water.

13. (a) Briefly describe the propagation of light with neat diagram.

Or

(b) Define ohm's law and give its applications and limitations.

14. (a) State the hazards associated with the use of electrical energy.

Or

(b) Explain the electromagnetic induction.

15. (a) State the principle, construction and working of DC generator.

Or

(b) Write a note on

(i) Antennas

(ii) Ground waves

(iii) Sky waves

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Discuss about the triangle and parallelogram of forces.

Or

(b) Clearly explain the specific heat and latent heat.

17. (a) Explain the resonance with relation to critical revolutions of machinery and rolling.

Or

(b) State the laws of refraction and define refractive index with neat diagram.

18. (a) Explain the principle, construction and working of AC generators and motors.

Or

(b) Explain the working of radio transmitter and receiver with block diagram.

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C–7981	Sub. Code
	98814

DIPLOMA EXAMINATION, NOVEMBER 2022

First Semester

Nautical Science

SHIP CONSTRUCTION AND SHIP STABILITY - I

(2020 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. Define Double bottom tanks.

2. What is Hatch Coaming and type hatch cover?

3. Explain the plimsoll line.

4. Describe the difference between forward perpendicular and aft perpendicular.

5. What is TPC?

6. Define trim and how to calculate the trim in sea water.

7. What is meant by “Buoyancy”?

8. Explain the terms “fresh water allowance” and “dock water allowance”.

9. What is the use of hydrometer?

10. How to measure the ullage in the tank?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Explain the construction and types of rudder.

Or

(b) Sketch the Ship Cross section view, mark the all parts.

12. (a) Explain Load line mark and Draw to scale the Load line mark.

Or

(b) Write a short notes.

(i) LOA

(ii) Moulded Depth

(iii) Moulded Draught

(iv) Draught and Trim.

13. (a) A Ship 135m long, 18m beam and 7.6m draught has a displacement of 14000 tonne. the area of the load water plane is 1925m^2 and area of the immersed midship section 130m^2 and Calculate Block Coefficient.

Or

(b) Explain why TPC varies with draughts.

14. (a) What are the factors affecting losses in Buoyancy?

Or

(b) What is the importance of Fresh water allowance (FWA) and What is its relevance?

15. (a) Explain why the draught of a ship decreases when it is passes from Fresh water to Seawater?

Or

(b) What is Free surface effect? Explain with neat Diagram.

Part C $(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Describe the different types of hatch cover with neat sketch.

Or

(b) Explain Arrangement of Double bottom in Machinery space.

17. (a) What are the uses of Dead weight scale and How to find Dead weight of the ship at various draught in seawater.

Or

(b) The immersed Cross sectional area through a ship 180m long, at equal intervals, are 5,118,233,291,303,304,304,302,283,171 and 0 m^2 respectively. Calculate the displacement of the ship in Seawater of 1.025 tonne/m^3.

18. (a) Describe the uses of Hydrometer and Difference between Load line Hydrometer and Draft survey Hydrometer.

Or

(b) The TPC values for a ship at 1.2 m intervals of draught commencing at the keel are 8.2, 16.5, 18.7, 19.4, 20.0, 20.5, and 21.1 respectively. Calculate the displacement at 7.2 m draught.

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C–7982	Sub. Code
	98815

DIPLOMA EXAMINATION, NOVEMBER 2022

First Semester

Nautical Science

NAVIGATION - I; TERRESTRIAL AND CELESTIAL

(2020 onwards)

Duration: 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Great Circle?

2. Define Canals.

3. Describe Rhumb line.

4. Define DMP.

5. What is the effect of leeway on ship's course?

6. Name celestial poles.

7. What do you understand by the term "Refraction"?

8. Define natural scale of charts.

9. Define "Dead Reckoning position".

10. How will you express the speed of ship?

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) Explain "Latitude and longitude with neat diagram.

Or

(b) Mention any 10 major ports of India.

12. (a) Describe the limitations of Plane sailing formulae.

Or

(b) Describe Mercator charts and Mercator projections.

13. (a) List the advantage of Mercator sailing over Plane sailing.

Or

(b) Define 'Visible and Sensible' horizons.

14. (a) Find the true course from given quarantal course.

	1	2	3
Q.Course:	N 62° W	S 07° E	S 42° W
True Course:	-	-	-

Or

(b) Discuss the True magnetic compasses of ship.

15. (a) Explain how will you measure the Vertical and Horizontal angles of horizon on board ship.

Or

(b) Find the position arrived

Position: Lat: 36°12'N 089°18' E

Course: East: Distance : 300 m (parallel sailing)

Part C $(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Explain the following:

(i) Course steered

(ii) Course made good

(iii) Leeway

(iv) Leeway track

(v) Dead reckoned

Or

(b) Find the course and distance using TT

A: 20° 30'N 179° 36' E

B: 16° 18'N 173° 32' W

17. (a) With an aid of neat sketch explain the working principles of Sextant.

Or

(b) Find the course and distance the Mercator sailing.

From: 24° 00'N 074° 15'W

To: 46° 00'N 053° 45' W

18. (a) Explain the types of Charts.

Or

(b) Find the position arrived from the given information.

Position left: 36° 48'N 085° 53'W

Course: 241°00(T), Distance: 1897 M (Mercator).

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C–7983

Sub. Code
98816

DIPLOMA EXAMINATION, NOVEMBER 2022

First Semester

Nautical Science

NAVIGATION – II : BRIDGE EQUIPMENT, WATCHKEEPING AND METEOROLOGY

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is "True north"?
2. How many compasses are used on board ship?
3. What is Monkey Island?
4. How frequently Magnetic compass & Gyro compass is compared and checked?
5. What is the frequency of ship's course alteration?
6. What is IRPCS?
7. What is Gyroscope?
8. Define the term "Vessel's constraint by her draught".
9. Define "narrow channel and fairway".
10. What signals are exhibited during Fog condition?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) List out the advantages and disadvantages of Gyro compass.

Or

(b) State the factors to be taken into account in determining a safe speed.

12. (a) State the duties of Lookout.

Or

(b) Describe the Navigation of a small Craft.

13. (a) What are explain NUC and RAM and mention the actions to be taken on these conditions.

Or

(b) State the visibility of lights as described in Rule 22.

14. (a) Describe :

(i) Troposphere

(ii) Stratosphere.

Or

(b) Discuss the relationship between atmospheric pressure and height above the sea level.

15. (a) Explain the sound signals to be used by vessels in sight of another vessel.

Or

(b) Name any five Meteorological instruments available in ship's bridge.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Discuss the working principle of gyro compass with an aid neat diagram.

Or

(b) Explain the Sextant working principle with neat diagram.

17. (a) Describe the nature of Solar radiation.

Or

(b) What are the Navigational signals exhibited by a ship of above 50 m length during underway.

18. (a) Explain the heat exchange processes.

Or

(b) Sketch and explain the working of anemometer.

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C–7984

Sub. Code
98817

DIPLOMA EXAMINATION, NOVEMBER 2022

First Semester

Nautical Science

CARGO HANDLING, STOWAGE AND SEAMANSHIP – I

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are container vessels?
2. Define hygroscopic cargoes.
3. What is the use of off-shore vessels?
4. Define ad-valorem freight.
5. What is the use of Hydrometer?
6. What is Bill of lading?
7. What are grain loading booklets?
8. When do you use Gantry cranes?
9. What are cargo securing manuals?
10. What is Hot work permit?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) What precautions are observed prior loading Timbers oh board ship.

Or

(b) Describe the Reefer ships role.

12. (a) What are Live stock carrier ships?

Or

(b) What precaution will you take during and after loading Sulphur?

13. (a) Mention the different types of frights.

Or

(b) How will you ensure weather tightness of Hatch cover?

14. (a) Discuss any two cargo handling gears.

Or

(b) List down the preloading inspections of cargo space.

15. (a) State the general guidelines for Safety committee.

Or

(b) State the conditions to be imposed in 'Permit to work order'.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Discuss about :

(i) Container vessel

(ii) Bulk carrier.

Or

(b) Discuss the safety precautions to be observed for ships carrying Liquefied gases.

17. (a) Describe the basic cargo planning and understanding of load distribution.

Or

(b) Explain the construction, care and maintenance of Natural fibre ropes.

18. (a) Explain the Mooring system with neat sketch.

Or

(b) How will you prepare surface prior to painting the ship's hull?

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C–7985	Sub. Code
	98818

DIPLOMA EXAMINATION, NOVEMBER 2022

First Semester

Nautical Science

ENGLISH, HUMAN FACTORS AND MARITIME HISTORY

(2020 onwards)

Duration: 3 Hours **Maximum : 75 Marks**

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define onboard human relations.
2. Define travel arrangements.
3. How can you develope your listening skill?
4. Mention any two points on personal hygiene.
5. Define : Artide of Agreement (Indian ships).
6. What are the rights of seafarers?
7. What are the salient aspects of food safety?
8. What is team spirit?
9. Mention any two points on emotional management.
10. List out two role on cadet's on board.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write a note on importance of maritime circulars and notices.

Or

(b) Bring out the understanding of the relevance of requirement of English to all seafarers.

12. (a) Write a short note on responsibilities of shipboard staff.

Or

(b) List out the personal traits that will assist in effective functioning on board.

13. (a) Write a short note on the importance of Interpersonal relationship.

Or

(b) Write shortly on dangers of use of drugs.

14. (a) Write in short on MS Act 1958.

Or

(b) Brief on the salient features of stress management.

15. (a) Give an account of post Independence growth of Indian shipping.

Or

(b) Bring out the role of food safety in maritime Services.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Write an essay on seafarers public health awareness programme.

Or

(b) Write an essay functions and role of English in marine communication.

17. (a) Explain the role of leader and members in a team.

Or

(b) Write a short note on the following:

(i) Significance of RPS, Rules, 2005.

(ii) Recruitment and placement rules 2005.

18. (a) Describe India's ancient maritime history.

Or

(b) Write an essay on pre-sea human resources development and life skill programmes.

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C–5473	Sub. Code
	98821

DIPLOMA EXAMINATION, NOVEMBER 2022

Second Semester

Nautical Science

NAVIGATION III : TERRESTRIAL COASTAL AND CELESTIAL NAVIGATION

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define ‘Elevated pole’.

2. How will you keep the time at sea?

3. At what angle earth's axis is inclined to the plane of the orbit?

4. What is International Date Line?

5. What is the effect of `Leeway on ship's course?

6. Name celestial poles.

7. Define `Effective speed'.

8. Express natural scale of charts.

9. Define `Neap tide'.

10. How will you express the speed of ship?

Part B (5 × 5 = 25)

Answer **all** questions by choosing either (a) or (b).

11. (a) Explain "Latitude and longitude with neat diagram.

Or

(b) Explain the concept of the earth's axial rotation causing change in the hour angle of bodies.

12. (a) Define `Greenwich Hour Angle (GHA)' and `Local Hour Angle (LHA)'.

Or

(b) Distinguish between `vertical circle' and `prime vertical circle'.

13. (a) Describe salient features of `Great Circle'

Or

(b) Describe the relationship between the altitude of Polaris and the observer's latitude.

14. (a) Describe the uses of Ocean Passages of the world.

Or

(b) List Nautical Publications carried onboard.

15. (a) Explain how will you measure the Vertical and Horizontal angles of horizon on board ship.

Or

(b) State the danger of placing implicit reliance upon floating navigational aids.

Part C (3 × 10 = 30)

Answer **all** questions by choosing either (a) or (b).

16. (a) Describe the information contained in general in the Nautical Almanac (NA) and in detail in the daily pages.

Or

(b) Explain the relationship between azimuth and quadrantal bearings.

17. (a) Describe the significance of intercepts and long by Chron methods of sights.

Or

(b) Explain the principles and rules of the Maritime Buoyage System.

18. (a) Explain the use of Admiralty and other distance tables.

Or

(b) Discuss in detail the Voyage planning and execution process.

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C–6849	Sub. Code 98822

DIPLOMA EXAMINATION, APRIL 2022

Second Semester

Nautical Science

NAVIGATION IV – ADVANCED BRIDGE EQUIP, KEEPING AND METEOROLOGY

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Note: (1) Draw diagram wherever it is applicable.

(2) Use of Norie's tables or other tables allowed.

(3) Use of 2008 Nautical Almanac is allowed.

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is the principle of the 'Echo Sounder"?

2. What are the important duties of the "MASTER" of a ship?

3. Differentiate "RASTOR and VECTOR CHARTS"?

4. Briefly explain the position fixing in Congested waters.

5. What is the responsibility of an OVER TAKING VESSEL as per Rule no.13?

6. What is the difference between "PRECIPITATION and "DRIZZLE"?

7. Name the rules from 1 to 10.

8. Give an example of a situation where the rule allows you to make a departure from ROR. Name the rule.

9. What do you understand by the terms "True wind and Apparent wind"?

10. What is Buy ballot's law?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Name and explain three modes of steering controls.

Or

(b) What are the controls of a RADAR? Briefly explain.

12. (a) What is the purpose of fitting a VDR? List out the data which will be recorded automatically by a VDR unit.

Or

(b) Describe the organizational structure of a bridge team.

13. (a) Under what circumstances an OOW will call MASTER as per ROR?

Or

(b) How will you take over a sea watch?

14. (a) List various ship reporting systems and explain any one in details?

Or

(b) Explain rule no.17 "Action by stand on vessel"?

15. (a) What are the duties of the "LOOK OUT personal" at sea?

Or

(b) Explain briefly the causes of "Tsunamis".

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain GNSS system of position fixing using earth orbiting satellites?

Or

(b) What is principle of "SPEED LOG"? Explain any one type of speed log.

17. (a) As an officer on watch how will make the preparations for departure port? Explain in detail.

Or

(b) Explain rule no.19 "Conduct of vessels in Restricted Visibility".

18. (a) Explain land and sea breezes with neat diagrams.

Or

(b) What do you understand by "TRS"? Briefly explain origin, path and movement of TRS with diagrams.

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C–6850

Sub. Code
98823

DIPLOMA EXAMINATION, APRIL 2022

Second Semester

Nautical Science

CARGO HANDLING, STOWAGE AND SEAMANSHIP — II

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. What is use of "Slop tank" in a tanker?

2. What is meant by "Inert gas"?

3. What do you understand by Reefer temperature log of a container?

4. What do you understand by the term "BAY PLAN"?

5. What is "Mate's log book"?

6. What is the meaning of "Tainting"? Name any TWO cargoes which will taint?

7. Define the terms :
   (a) A'cock bill
   (b) Anchor aweigh.

8. Draw a joining shackle and label its parts.

9. What are the functions of "Scrubber" and "Demister pads" in an Inert Gas plant?

10. What are the uses of "Bridge fittings" and Penguin hooks"?

Part B $(5 \times 5 = 25)$

Answer **all** questions.

11. (a) (i) Name the different types of Cargo pumps.

(ii) Sketch and briefly explain the working of any one pump.

Or

(b) Briefly explain

(i) Direct Pipe line system.

(ii) Ring Main system.

12. (a) Briefly discuss about the container handling gears.

Or

(b) Name the markings on a container.

13. (a) Explain in detail about the hazards associated with coal cargo.

Or

(b) Explain the SEGGREGATION of IMDG cargo with neat diagram.

14. (a) State the contents of "CAPACITY PLAN".

Or

(b) Explain the "Standard crane signals" while operating cranes.

15. (a) How do you secure an anchor for sea?

Or

(b) List the safety precautions observed prior entering "Battery Room".

Part C $(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Write down important 20 points of SHIP/SHORE CHECK LIST of a tanker.

Or

(b) Sketch and explain

(i) Explosive meter

(ii) Tankscope.

17. (a) Draw and briefly explain the container securing arrangements.

Or

(b) What are the precautions one will observe prior "ENTERING A CARGO HOLD"?

18. (a) Prepare a "PERMIT TO WORK SYSTEM" prior doing any "HOT WORK" on board a ship.

Or

(b) Explain the procedure of preparing a Hold for loading "Grain Cargo"?

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C–5476	Sub. Code
	98824

DIPLOMA EXAMINATION, NOVEMBER 2022

Second Semester

Nautical Science

SHIP CONSTRUCTION & SHIP STABILITY-II

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are gastight zones?

2. What is meant by 'Slamming'?

3. Which parts of the ship is affected by panting stress?

4. Define bilge strum box.

5. Why and where are ballast tanks provided?

6. Describe Centre of Pressure?

7. Where is the position of Centre of Gravity of a hanging mass, relative to the ship?

8. Define Righting lever.

9. What do you understand by the term Trim?

10. What is MCT 1CM?

Part B (5 × 5 = 25)

Answer **all** questions by choosing either (a) or (b).

11. (a) Illustrate and label Camber, Sheer, Draught, Free board and Moulded depth of a ship.

Or

(b) Explain Gross Tonnage and Net Tonnage.

12. (a) Differentiate 'hogging' and 'sagging' with neat diagram.

Or

(b) What are racking stresses? Explain the causes of racking with neat diagram.

13. (a) Describe the bilge piping system of a cargo ship

Or

(b) Describe FFA and LSA Plan.

14. (a) Explain Buoyancy and Centre of buoyancy with neat diagrams.

Or

(b) Distinguish between Stiff and Tender condition of ship.

15. (a) Describe and illustrate standard steel sections used for ship construction.

Or

(b) Which are the factors to be considered while calculating the quantity of cargo to be loaded?

Part C (3 × 10 = 30)

Answer **all** questions by choosing either (a) or (b).

16. (a) Draw the profile view of a General Cargo ship and mention any five principal parts.

Or

(b) Sketch and label elevation of a double hull tanker.

17. (a) Draw a Sketch of a typical forecastle mooring and anchoring arrangements

Or

(b) Sketch and describe parts of a balanced type rudder.

18. (a) A vessel of constant triangular cross-section has a depth of 12 m and a breadth at the deck of 15m. Calculate the draught at which the vessel will become unstable if the center of gravity is 6.675m above the keel.

Or

(b) Explain the concept of Free Surface Effect with neat diagrams.

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C–6852

Sub. Code
98825

DIPLOMA EXAMINATION, APRIL 2022

Second Semester

Nautical Science

MARPOL AND MARINE ENGINEERING KNOWLEDGE

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What type of Pollution certificate is issued to Tanker ship?

2. What do you understand by the term COW System?

3. Define the term IMO 2020.

4. What is the purpose of Annex-II?

5. Expand SOPEP.

6. Define Chemical carrier ship.

7. State that sources of emission of harmful gases from ships.

8. What is Clean Ballast?

9. Why do you use Super charger?

10. Where do you find quick closing valve on board ship?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Enumerate SOPEP equipment.

Or

(b) State the permissible limits of ship's exhaust constituent.

12. (a) What precautionary measures will you take to avoid oil spillage during bunkering operation?

Or

(b) Explain all the Annexes to the MARPOL 73/78 Convention.

13. (a) Define Volatile Organic Compounds? Explain with examples.

Or

(b) Discuss the safety precautionary measures to be followed for carriage of Noxious Liquid substances.

14. (a) List down the special areas with respect to MARPOL.

Or

(b) Explain the working principle of OWS.

15. (a) What safety precautionary measures are to be observed while entering into Pump room.

Or

(b) Explain 'Ballast Water Management Plan'.

Part C

$(3 \times 10 = 30)$

Answer **all** questions.

16. (a) Discuss the safety precautions to be observed for ships carrying Liquefied gases.

Or

(b) With an aid of neat diagram explain the special safety system provided for Tanker ship.

17. (a) With an example explain the special safety arrangements to be made prior to loading Coal.

Or

(b) State that provisions under MARPOL Annexure –I, which deals with measures taken for prevention of Oil pollution from ships.

18. (a) With neat diagram explain the Fresh water generation system.

Or

(b) Distinguish between Centripetal and centrifugal pumps with neat sketches.

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C–6853	Sub. Code
	98826

DIPLOMA EXAMINATION, APRIL 2022.

Second Semester

Nautical Science

EMERGENCIES, MARITIME COMMUNICATIONS AND COMMERCIAL SHIPPING KNOWLEDGE

(2019 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is FPD?

2. Describe the penalty for not using or wrongly using an Jack staff

3. How will you check the ingress of air in fire flaps?

4. What is Fire control station?

5. State the objectives of ISM.

6. When do you hoist Courtesy flag?

7. What is Semaphore signal?

8. State precautions to be observed while crossing narrow channel?

9. Define Freight.

10. What is MLC?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) What are the functions of flag State Inspection?

Or

(b) State the roles of PSC.

12. (a) Mention the salient features of SOLAS.

Or

(b) Describe the procedures for launching Life rafts.

13. (a) What is the minimum mandatory requirement for Navigational watch Keeping officers at operational level?

Or

(b) List down the GMDSS equipment.

14. (a) Describe the function of BIMCO.

Or

(b) State the relationship between ship-owner and agent.

15. (a) List the precautions to be observed while lowering lifeboat.

Or

(b) Explain the Articles of Agreement.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Explain the proper procedure to use a walkie-talkie and VHF set.

Or

(b) With an aid of neat diagram explain the fire fighting in machinery spaces of General Cargo ship.

17. (a) Explain Liner and Tramp shipping trades.

Or

(b) Discuss in detail about Global Maritime Distress and Safety System.

18. (a) What is IMO and specify the Conventions made by it for Maritime sector?

Or

(b) Explain the role of Shipping Master in detail.

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