C–4468	Sub. Code
	98811H

DIPLOMA EXAMINATION

NAUTICAL SCIENCE

NOVEMBER 2021 EXAMINATION

First Semester

Part I – HINDI - I

STORY, NOVEL, GRAMMAR AND TRANSLATION – I

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

सभी प्रश्नों के उत्तर दीजिए।

उत्तर संक्षेप में हो।

1. बेनीमाधव सिंह का संक्षिप्त परिचय दीजिए।

2. प्रायश्चित कहानी का संदेश क्या है?

3. 'उसने कहा था' कहानी की भाषा पर विचार कीजिए।

4. मोहनलालजी महतो 'वियोगी' का जन्म कब और कहाँ हुआ?

5. जियाराम ने आत्महत्या क्यों किया?

6. रुकमणी का संक्षिप्त परिचय दीजिए।

7. उदयभानुलाल को किसने मार डाला और क्यों?

8. तोताराम ने निर्मला को संतुष्ट रखने के लिए क्या क्या उपाय किया?

9. लिंग की परभाषा दीजिए।

10. वचन किसे कहते हैं? हिन्दी में कितने वचन हैं? उनका नाम मात्र लिखिए।

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

सभी प्रश्नों के उत्तर दीजिए।

उत्तर 150 शब्दों से अधिक न हो।

11. (a) भालचन्द्र सिन्हा का संक्षिप्त परिचय दीजिए।

(या)

(b) 'उसने कहा था' इस कहानी में किसने किससे क्या कहा था?

12. (a) निर्मला ने शादी के पहले क्या स्वप्न देखा था, वह कहाँ तक ठीक निकला?

(या)

(b) सियाराम किसके साथ भाग गया और क्यों?

13. (a) पुल्लिंग से स्त्रीलिंग बनाने के नियमों को उदाहरण सहित समझाइए।

(या)

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

14. (a) पाँच मिनट कहानी की शीर्षक की सायकता पर विचार कीजिए।

(या)

(b) 'बडे घर की बेटी' कहानी का संदेश क्या है?

15. (a) कृष्ण का संक्षिप्त परिचय दीजिए।

(या)

(b) प्रायश्चित कहानी की शीर्षक की सायकता पर विचार कीजिए।

Part C

$(3 \times 10 = 30)$

किन्हीं तीन प्रश्नों का उत्तर दीजिए।

उत्तर विस्तार से हो।

16. (a) कहानी कला के तत्वों के आधार पर बड़े घर की बेटीं कहानी का सारांश लिखिए।

(या)

(b) 'पाँच मिनट' कहानी का सारांश लिखिए।

17. (a) विशेषण किसे कहते हैं? उनके भेदों को उदाहरण सहित समझाइए।

(या)

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

18. (a) निर्मला उपन्यास का सारांश लिखिए।

(या)

(b) अंग्रेजी में अनुवाद कीजिए।

लोगों में समाचार-पत्र पढ़ने की रुचि प्रतिदिन बढ़ती जाती है। मैं ऐसे भी लोगों को जानता हूँ, जिनको समाचार-पत्र पढ़े बिना नींद नहीं आती। समाचार-पत्र बिना पढ़े उनका भोजन नहीं पचता। जिस देश में पढ़े-लिखे लोगों की संख्या ज्यादा है, वहाँ समाचार-पत्र भी ज्यादा निकलते हैं। हमारे देश में पढ़े-लिखे लोगों की संख्या कम है। जो बेचारे नहीं पढ़ सकते, वे पढ़े-लिखे लोगों से अख़बारों की खबरें जान लेते हैं।

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C–4470	Sub. Code
	98812

DIPLOMA EXAMINATION

NAUTICAL SCIENCE

NOVEMBER 2021 EXAMINATION

First Semester

APPLIED MATHEMATICS

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. The position vector of the points A, B, C, D are $\vec{a}, \vec{b}, 2\vec{a}+3\vec{b}, \vec{a}-2\vec{b}$ respectively. Find $\overrightarrow{DB}$ and $\overrightarrow{AC}$.
2. Define vector with examples.
3. Define origin with example.
4. Draw a smooth curve through plotted points.
5. Write the equation of ellipse.
6. Write the equation of hyperbola.
7. Define acute angle.
8. Define rights angled triangle.
9. Write the trigonometry value of cot 90°.
10. Define centroid.

Part B (5 × 5 = 25)

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

11. (a) Find the vector joining the points $P(2, 3, 0)$ and $Q(-1, -2, 4)$ and also direction cosines of $\overrightarrow{PQ}$.

Or

(b) Find $\vec{u} + \vec{v}, \vec{u} - \vec{v}$ if $\vec{u} = (3, 4)$ and $\vec{v} = (5, -1)$.

12. (a) What is the name of horizontal and the vertical liens drawn to determine the position of any point in the Cartesian plane?

Or

(b) (i) What is the name of each part of the plane formed by these two liens?

(ii) Write the name of the point where these two lines?

13. (a) Solve the following linear programming problem graphically.

Maximize $Z = 4x + y$

Subject to the constraints :

$x + y \leq 50$

$3x + y \leq 90$

$x \geq 0, y \geq 0$

Or

(b) Find the maximum value of $Z = 4x_1 + 6x_2$, where $x_1 \geq 0$ and $x_2 \geq 0$ subject to the following constraints.

$-x_1 + x_2 \leq 11$

$x_1 + x_2 \leq 27$

$2x_1 + 5x_2 \leq 90$

14. (a) Explain :

(i) arc

(ii) chord

(iii) segment with example.

Or

(b) For a rectangular solid with length 14cm, height 17cm, and width 9cm, find the

(i) volume

(ii) surface area.

15. (a) Show that $\cos^4 A - \sin^4 A = 1 - 2\sin^2 A$.

Or

(b) If $x = a\cos\theta + b\sin\theta$ by $y = a\sin\theta - b\cos\theta$, show that $x^2 + y^2 = a^2 + b^2$.

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

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

16. (a) Explain the procedure and draw graph of given function with example. (10)

Or

(b) Solve the linear programming problem graphically. (10)

Maximize $Z = 4x + y$

Subject to the constraints :

$x + y \leq 50$

$3x + y \leq 90$

$x \geq 0, y \geq 0$

17. (a) Explain the standard equations of parabola. (10)

Or

(b) Derive the standard equation of hyperbola. (10)

18. (a) (i) If $\cos x = -\frac{3}{5}$, x lies in the third quadrant find the values of other five trigonometric function. (7)

(ii) Find the value of $\cos(-1710^\circ)$. (3)

Or

(b) (i) State and prove the spherical law of cosines. (5)

(ii) Explain right-angled spherical triangles and their properties. (5)

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C–4471	Sub. Code
	98813

DIPLOMA EXAMINATION

NAUTICAL SCIENCE

NOVEMBER 2021 EXAMINATION

First Semester

APPLIED SCIENCE

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. What is mean by collision?
2. Define conduction.
3. Define frequency.
4. What is the velocity of sound in air?
5. Define refractive index.
6. Write a short note on looming.
7. Define Ohm's law.
8. How do you understand about the units –KVA, KW?
9. What is the RMS value of ac current?
10. Mention about sky waves.

Part B (5 × 5 = 25)

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

11. (a) Briefly explain the Newton's laws of motion.

Or

(b) Write a note on spinning top and gyroscope.

12. (a) Explain the relationship between Celsius, Kelvin and Fahrenheit scale.

Or

(b) Discuss about the damped and undamped oscillations.

13. (a) Explain Doppler effect.

Or

(b) State and explain the laws of reflection.

14. (a) Heating effect of electric current in geysers.

Or

(b) What is Lenz's law? Explain its uses on board ships.

15. (a) Mention the types of electronic cables. Explain their uses in earthing and bonding.

Or

(b) Explain the basic working of sensors and tranducers for temperature.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) State and explain Newton's law of gravitation determine 'g' at different latitudes.

Or

(b) Explain the basic formation of superheat steam. Discuss about its applications hazards and precautions.

17. (a) Describe the application of reflection to the measurement depth echo sounder and to the ultrasonic detector for checking hatch weather tightness.

Or

(b) Discuss elaborately the series and parallel combination of resistance and power supply. Mention the uses of a wheat stone bridge.

18. (a) Explain magnetic effect of electronic current with special reference to straight conductor, parallel conductors, coil and solenoid.

Or

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

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C–4472	Sub. Code
	98814

DIPLOMA EXAMINATION

NAUTICAL SCIENCE

NOVEMBER 2021 EXAMINATION

First Semester

SHIP CONSTRUCTION AND SHIP STABILITY — I

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Poop deck?

2. What is the use of rudder on board ship?

3. Define principle of floatation.

4. In your opinion what is stable ship.

5. Why do ships marked with draught markings?

6. What is Metacentre?

7. State Archimedes principle.

8. What is Dock water allowance?

9. What would happen to ship, if the center of gravity is located above the metacentre?

10. Where is the position of center Gravity of a mass hanging on crane, relative to the ship?

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

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

11. (a) Draw the diagram of Forecastle deck and label the structural parts on it.

Or

(b) Draw the diagram of Rudder and mention its parts.

12. (a) Define and illustrate "Water Level and Length Over All".

Or

(b) Distinguish between Fore perpendicular and Aft Perpendicular.

13. (a) What is meant by "Stable" and "Unstable" condition of ship?

Or

(b) Define Load displacement, Dead weight and light displacement.

14. (a) Explain Angle of Loll with neat diagram.

Or

(b) Draw the Metacentric diagram and lable its elements.

15. (a) What is free surface effect? Explain with neat diagram.

Or

(b) Discuss the relationship between Displacement and Draught of a ship.

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

Answer **all** questions.

16. (a) Sketch the Peak Tanks, Double bottom tanks, Deep tanks, Cargo tanks and Ballast tanks.

Or

(b) Sketch and label the parts Bilge, Sounding pipe, Hatch-cover, Bulkhead and Deep tank.

17. (a) Explain the Load line marking of ship with an aid of neat diagram.

Or

(b) Explain the Curve of Statical stability with neat diagram.

18. (a) A ship of 6000 tonne is composed of masses of 300, 1200 and 2000 tonne at a distance of 60, 35 and 11 m aft of midships, and masses of 1000, 1000 and 500 tonne at distances of 15, 30 and 50 m forward of midships. Calculate the distance of the center of gravity of the ship from midships.

Or

(b) Derive the equation for change in mean draught due to density.

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C–4473	Sub. Code
	98815

DIPLOMA EXAMINATION

NAUTICAL SCIENCE

NOVEMBER 2021 EXAMINATION

First Semester

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 celestical 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 × 5 = 25)

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

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

Or

(b) Mention any ten 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 advantages 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 choosing either (a) or (b).

16. (a) Explaining 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–4474	Sub. Code
	98816

DIPLOMA EXAMINATION

NAUTICAL SCIENCE

NOVEMBER 2021 EXAMINATION

First Semester

NAVIGATION — II : BRIDGE EQUIPMENT, WATCH KEEPING AND METEOROLOGY

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is "Lubber line"?

2. Where is the location of Gyro repeaters on board ship?

3. How frequently magnetic compass and Gyro compass is compared and checked?

4. What is the use of Azimuth mirror?

5. What is lookout?

6. What is Gyroscope?

7. Name the uses of VDR.

8. Define "narrow channel and fairway".

9. Specify the Day and Night signals used in board ship.

10. What is the value of Atmosphere value?

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

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

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

Or

(b) Explain the procedures for over taking a vessel.

12. (a) Distinguish between "Under way and making way".

Or

(b) List down the restrictions on crossing the channel on fairway.

13. (a) What are the signals produced when the ship is at Anchorage?

Or

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

14. (a) Describe the composition of Earth's atmosphere.

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 meterological instruments used on board ship.

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

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

16. (a) Explain the sextant working principle with neat diagram.

Or

(b) Discuss the working principles of gyro compass with an aid neat diagram.

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

Or

(b) State the regulatory requirements with regard to Gyro and Magnetic compass.

18. (a) Sketch and explain the working of Aneroid barometer.

Or

(b) Sketch and explain the working of Barograph.

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C–4475	Sub. Code
	98817

DIPLOMA EXAMINATION

NAUTICAL SCIENCE

NOVEMBER 2021 EXAMINATION

First Semester

CARGO HANDLING, STOWAGE AND SEAMANSHIP — I

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Name the different types of Ores carried by ships.

2. Define bulk carrier.

3. What is broken stowage?

4. Describe transportable moisture limit.

5. Name the document required for loading.

6. What are grain loading booklet?

7. To what extend the clanship is required for Grain carrier ships?

8. What is the use of hydrometer?

9. Where the location of Ballast tanks on board ship?

10. When do you prefer for degreasing chemical wash?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Mention the cares required for containers carrying dangerous goods.

Or

(b) State the preparation of holds for loading cooled chilled and frozen.

12. (a) Write down the hazards associated with carriage of bulk cargos.

Or

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

13. (a) State the principles of freight rate.

Or

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

14. (a) Distinguish between upper and lower flammable limits.

Or

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

15. (a) State the precaution needed while attempting to pick up a heavy load from ground using your hands.

Or

(b) Describe briefly the various colour codes used in pipe line systems.

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

Answer **all** questions.

16. (a) Classify the ships as cargo carried on board.

Or

(b) Distinguish in detail about securing free grain in filled compartments.

17. (a) Write down the documentation require prior loading hazards associated with an precautions to be taken.

Or

(b) Describe Bimetallic and Galvanic corrosion.

18. (a) What precaution to be taken for the shipment of (i) Ores (ii) Concentrates (iii) DRI.

Or

(b) Explain the fixed gas monitoring system with neat sketch.

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C–5472	Sub. Code
	98818

DIPLOMA EXAMINATION, NOVEMBER 2021.

First Semester

Nautical Science

ENGLISH, HUMAN FACTORS AND MARITIME HISTORY

(2020 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer the following questions.

1. Define simple present tense.

2. Write on physical fitness in shipping.

3. What is the role of team members?

4. What is the role of shipboard staff?

5. Define prioritization.

6. Define MS Act 1958.

7. Define RPS.

8. What was the situation of Modern Indian Ports?

9. What are the salient aspects of travel safety?

10. What are safety measures to prevent obesity?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b)

11. (a) What are the different types of reading?

Or

(b) How do you describe nature of the job at Sea?

12. (a) Write a short note on the role of human error in accidents.

Or

(b) Write briefly on organizational culture.

13. (a) Prepare a chart on Company's Organizational structure.

Or

(b) List out the Cadet's role on board.

14. (a) Write a short note on team bonding.

Or

(b) Write in short on recruitment rules 2005.

15. (a) Write briefly on physical fitness of seafarers.

Or

(b) What are the preventing measures to prevent contagious diseases?

Part C (3 × 10 = 30)

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

16. (a) Write an essay on interpersonal communication.

Or

(b) Explain the needs and demands of seafarers on-board.

17. (a) Write an essay on maritime resource management in building positive attitude.

Or

(b) Describe the functions and responsibilities of shipboard staff.

18. (a) Explain about anger and conflict management.

Or

(b) Write an essay on seafarers public health awareness.

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