B.Sc., DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

First Semester

NAUTICAL MATHEMATICS – I

(2016 onwards)

Time: 3 Hours   Maximum: 75 Marks

Part A   (10 x 2 = 20)

Answer ALL the questions

1. Find $\vec{a} \times \vec{b}$ if $\vec{a} = 2\vec{i} + 3\vec{j} + \vec{k}, \vec{b} = \vec{i} - \vec{j} + \vec{k}$

2. Define regression lines.

3. Find the equation of the circle whose centre is (5,3) and radius is 3 units.

4. Define Sphere

5. Define Great circle

6. Define Right spherical triangle

7. If $x = a\cos 2t$, $y = b\sin 2t$, find dy/dx.

8. Write any two properties of definite integral

9. Find the eigen values of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 0 & 3 & 1 \\ 0 & 0 & -2 \end{bmatrix}$

10. Find the rank of the matrix $\begin{bmatrix} 4 & 5 & 6 \\ 8 & 10 & 12 \\ -1 & 3 & 8 \end{bmatrix}$

Answer ALL the questions

11 (a) If

$$\vec{a} = \vec{i} + 2\vec{j} + 3\vec{k}$$

$$\vec{b} = -\vec{i} + 2\vec{j}$$

$$\vec{c} = 4\vec{j} - \vec{k}$$

Verify that $\vec{a} \times (\vec{b} \times \vec{c}) \neq (\vec{a} \times \vec{b}) \times \vec{c}$

(or)

(b) State and prove Baye's theorem

12 (a) Find equations to the lines in which the plane $2x+y-z=0$ cuts the cone
$4x^2-y^2+3z^2=0$

(or)

(b) Find the equations of hyperbola with vertices (0,-4),(0,4) and focu

foci (0,-6), (0,6)

13 (a) Derive the law of cosines for angles

(or)

(b) Derive the law of sines

14 (a) If $y = (x + \sqrt{1+x^2})^m$, show that $(1+x^2)y_2 + xy_1 - m^2y = 0$

(or)

(b) Evaluate $\int x^3 e^{-2x} \, dx$

15 (a) Find the rank of the matrix $\begin{bmatrix} 0 & 1 & -3 & -1 \\ 1 & 0 & 1 & 1 \\ 3 & 1 & 0 & 2 \\ 1 & 1 & -2 & 0 \end{bmatrix}$

(or)

(b) Verify Cayley Hamilton theorem for the matrix $\begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$

Part C   (3 x10 = 30)

Answer ALL the questions

16 (a) Calculate the correlation coefficient for the following heights(in inches) fathers(X) and their sons(Y)

X	65	66	67	67	68	69	70	72
Y	67	68	65	68	72	72	69	71

(or)

(b) Find the equations of the smallest sphere which contains the circle

$x^2+y^2+z^2+2x+6y+4z-11=0$

17 (a) i) $ax^2+2hxy+by^2=1$, prove that $\dfrac{d^2y}{dx^2} = \dfrac{h^2-ab}{(hx+by)^3}$

ii) If x = 2cost-cos2t, y=2sint-sin2t, find $\dfrac{d^2y}{dx^2}$ when $t = \pi/2$

(or)

(b) Evaluate $\displaystyle\int_0^{\pi/2} \log sinx\ dx$

18 (a) Reduce the matrix A = $\begin{bmatrix} -1 & 2 & -2 \\ 1 & 2 & 1 \\ -1 & -1 & 0 \end{bmatrix}$ to the diagonal form

(or)

(b) Derive Napier's analogies

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	11614

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

First Semester

NAUTICAL PHYSICS AND ELECTRONICS - I

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   State Kepler's laws.

2.   Define capillary.

3.   What is solenoid?

4.   Define RMS value.

5.   Give any 2 applications of Bernoulli's equation.

6.   What is a prssure gauge?

7.   Define photo electric effect.

8. What is optical pyrometer?

9. Draw a neat sketch of half-wave bridge rectifier.

10. What is a beacon?

Part B (5 × 5 = 25)

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

11. (a) Write a short notes on direct and oblique impact.

Or

(b) Write a short note on projectile and surface tension.

12. (a) List out the common use and characteristics of batteries.

Or

(b) Difference between isogonic and isoclinic lines.

13. (a) Discuss the flow of viscous fluid through pipes.

Or

(b) Write down the applications of LDR and LED.

14. (a) Write a note on astronomical telescope and its applications.

Or

(b) List down the characteristics and uses of a semiconductor.

C–3274

15. (a) Construct and characterize the junction transistor with the help of neat diagram.

Or

(b) Discuss about radio detection finding (RDF).

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

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

16. (a) Write a note on : (i) Weston differential pulley (ii) Hydrograph

Or

(b) Brief note about (i) R.M.S. and peak value (ii) Transformers.

17. (a) Elaborately explain about the Bourdon pressure gauge.

Or

(b) With a neat diagram explain the diffraction by single slit.

18. (a) Compare the Half wave and Full wave rectifier with a neat sketch.

Or

(b) Write a small note on RADAR range and elements of RADAR system along with its limitations.

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C–3275	Sub. Code 11615

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

First Semester

NAVAL ARCHITECTURE - I

(2016 onwards)

Duration : 3 Hours　　　　　　　Maximum : 75 Marks

Part A　　　　　(10 × 2 = 20)

Answer **all** questions.

1. What are specialized carriers?

2. What is list?

3. What is Archimedes principle?

4. What is summer dead weight?

5. What is camber?

6. What do you understand by WNA of a load line? Whether WNA is applicable for all ships?

7. What is a deck line of a load line?

8. A rectangular tank measuring 16 m × 15 m × 6 m. How many tones of oil of RD 0.78 can it hold?

9. Name any two advantages of welding.

10. What is monkey island? Write four instruments situated in monkey island.

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Write a short note on (i) Engine room (ii) Cattle carrier.

Or

(b) Write short notes on container ship and general cargo ships?

12. (a) Write sort notes on anchoring and mooring equipments and how the equipment is handled for heaving up anchor?

Or

(b) Describe the advantages of welding over riveting?

13. (a) A rectangular tank has a total depth of 21m and volume 10250 m² that includes a trunk way of depth 1m and volume 250 m². Oil of RD 0.90 is to be loaded so as to leave 3% of the volume of oil loaded for expansion. Find the MASS of the oil to be loaded and the FINAL ULLAGE.

Or

(b) A vessel's statutory freeboard is 2.0m. She is loading in DW of RD 1.015 and her freeboard is 2.10m, TPC=24m, FWA=200mm. Find the DWT available.

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14. (a) A ship of 8000t displacement had KB=3.5m, KM=6.5m & KG=6m. Find the statical stability at 20° heel, assuming that the deck edge remain above water (i.e. Ship is still wall sided at the angle of heel).

Or

(b) On a ship of W 8000 T, KG 7.0m, KM 7.5m, 100 t of cargo is loaded on he upper deck (KG 9.2m) 2m to port of the centerline. Find the list.

15. (a) A vessel of 18000 t displacement, KM = 8.9m, KG = 8.3m, has a DB tank partly full of FW. If the tank surface is rectangular 20m long and 18m wide, calculate her fluid GM.

Or

(b) Briefly explain different types of framing.

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

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

16. (a) Sketch and define the following (i) Breadth extreme (ii) Camber (iii) Sheer (iv) Rise of floor (v) Flare.

Or

(b) Explain with suitable sketches (i) Stable equilibrium (ii) Unstable equilibrium (iii) Neutral equilibrium.

17. (a) Write short notes with diagrams of: (i) Fore peak tank (ii) DB tanks.

Or

(b) Draw PORT SIDE of a LOAD LINE MARK for a ship of 98m long.

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18. (a) A ship of 8000 tons displacement has KM = 8.7m and KG = 7.6m. The following weights are then loaded and discharged.

Loads 250 tonnes cargo KG 6.1m and center of gravity 7.6m to starboard of centerline.

Loads 300 tonnes fuel oil KG 0.6m and center of gravity 6.1m to port of centerline.

Discharges 50 tonnes of ballast KG 1.2m and center of gravity 4.6m to port of the center line.

Find the final list.

Or

(b) A ship's derrick, whose head is 22m above the keel, is used to discharge a weight of 20t (KG 5m), lying on the center line. If the ship's displacement and KG before discharging were 6000 t and 8m calculate the KG (i) when the derrick lifts the weight and (ii) after discharging.

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B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

First Semester

SHIP OPERATION TECHNOLOGY - I

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

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

Answer **all** questions.

1.   Briefly explain "Poop deck".

2.   Name 4 types of ships.

3.   What is boat and fire drill?

4.   What is totally enclosed life boat?

5.   What is a TPA and its use?

6.   What is a fire triangle?

7.   What is the use of fiber heart of a wire rope?

8.   What is the use of inert gas?

9.   Name different types of ropes?

10.   What is the use of MONKEY FIST in a heaving line?

Part B   (5 × 5 = 25)

Answer **all** questions.

11.   (a)   Box the compass from SOUTH TO WEST.

Or

(b)   Briefly explain the preparation of a surface for painting on board ships.

12.   (a)   What are the checks you will carry out prior using SCBA?

Or

(b)   Ship's Galley is on fire. Explain how will you go about extinguishing the fire?

13.   (a)   Draw the profile of a ship and mark at least 10 parts.

Or

(b)   What are the requirements of an emergency fire pump?

14.   (a)   Write short notes on the following :

(i)   Life jacket (ii) LTA

Or

(b)   Name 5L/boat equipments and briefly explain its usage.

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15. (a) Explain the procedure for inflating a L/raft.

Or

(b) What are the advantages and disadvantages of synthetic fiber ropes?

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) What are the different types of merchant ships and briefly explain each type.

Or

(b) Name the boat station, fire station and man over board alarms.

17. (a) Briefly explain the lowering of open life boat from storage position to water level.

Or

(b) What are the different types of portable fire extinguishers? Briefly explain each type.

18. (a) Explain fixed fire fighting system (CO_2) with a neat diagram.

Or

(b) Explain the care and maintenance of ropes.

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		11623

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

Second Semester

NAUTICAL MATHEMATICS – II

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

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

Answer **all** questions.

1. Write the expansion of $\tan n\theta$ interms of $\tan \theta$.

2. Find the real and imaginary parts of $\cos hz$.

3. Write the formula for Simpson's 1/3rd rule.

4. Write the Newton's forward difference formula for derivative of y at $x = x_0$.

5. State Green's theorem.

6. If $\vec{F} = 3xy\vec{i} - y^2\vec{j}$, evaluate $\int \vec{F} \cdot d\vec{r}$ where C is the curve in the xy-plane $y = 2x^2$ from (0, 0) to (1, 2).

7. Solve $\dfrac{dy}{dx} = e^{3x-2y} + x^2 e^{-2y}$.

8. Solve $(x^2y - 2xy^2)\,dx - (x^3 - 3x^2y)\,dy = 0$.

9. Solve $(D^2 + D + 1)y = 0$.

10. Find the particular integral of $(D^2 + 9)y = \sin 3x$.

Part B $\qquad$ (5 × 5 = 25)

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

11. (a) Prove that $\cos 6\theta = 32\cos^6\theta - 48\cos^4\theta + 18\cos^2\theta - 1$.

Or

(b) Separate the real and imaginary parts of $\tan(x + iy)$.

12. (a) Find $f(4)$ from the following data :

x	0	1	2	3
$f(x)$:	1	2	1	10

Or

(b) Evaluate $\displaystyle\int_0^{0.6} e^{-x^2}\, dx$ by Simpson's 1/3 rule.

13. (a) Determine whether

$\vec{F} = (y^2\cos x + z^3)\vec{i} + (2y\sin x - 4)\vec{j} + (3xz^2 + 2)\vec{k}$ is a conservative vector field? If so find the scalar potential φ.

Or

(b) Using Green's theorem, evaluate $\displaystyle\int_C (y - \sin x)\, dx + \cos x\, dy$ where C is the plane triangle enclosed by the lines $y = 0$, $x = \dfrac{\pi}{2}$, $y = \dfrac{2x}{\pi}$.

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14. (a) Obtain the differential equation of all circles of radius 'a' and centre (h, k).

Or

(b) Solve $x \dfrac{dy}{dx} + y = x^3 y^6$.

15. (a) Solve $\dfrac{d^2 y}{dx^2} - 4y = x \sinh x$.

Or

(b) Solve $y'' - 2y' + 2y = e^x \cos x$.

Part C $\hspace{3cm} (3 \times 10 = 30)$

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

16. (a) Sum the series

$$\sin \alpha + x \sin(\alpha + \beta) + \frac{x^2}{2!} \sin(\alpha + 2\beta) + \dots + \infty.$$

Or

(b) Evaluate $\displaystyle\int_0^6 \frac{dx}{1+x^2}$ by using

(i) Trapezoidal rule

(ii) Simpson's 1/3 rule

(iii) Simpson's 3/8 rule and

(iv) Weddle's rule.

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17. (a) Verify Gauss divergence theorem for $\vec{F} = (x^2 - yz)\vec{i} + (y^2 - zx)\vec{j} + (z^2 - xy)\vec{k}$ taken over the rectangular parallelopiped $0 \le x \le a, \ 0 \le y \le b, \ 0 \le z \le c$.

Or

(b) Solve $\dfrac{dy}{dx} = \dfrac{y + x - 2}{y - x - 4}$.

18. (a) Solve $(D^2 - 3D + 2)y = xe^{3x} + \sin 2x$.

Or

(b) A particle of mass m executes S.H.M. in the line joining the points A and B on a smooth table and its connected with these points by elastic strings whose tensions in equilibrium are each T. If I, I' be the extensions of the strings beyond their natural lengths, find the time of an oscillation.

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C–3278	Sub. Code
	11624

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Second Semester

NAUTICAL PHYSICS AND ELECTRONICS - II

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. Define nuclear energy.

2. Give any two causes of formation of charges in an oil tanker.

3. Define a spectrum.

4. What is called critical frequency?

5. Write the names of the universal gates.

6. Explain power amplifier.

7. Define modulate carrier wave.

8. What is meant by transmitter?

9. Explain the switching circuits.

10. Define sensitivity in radio receivers.

Part B (5 × 5 = 25)

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

11. (a) Write a short notes on remedial measures in electrostatics.

Or

(b) How to identify the weather forecast by using satellite.

12. (a) Write uses of electrical resonance in radio communication.

Or

(b) Give the difference between skip distance and skip zone.

13. (a) Give a short notes on half adder and full adder.

Or

(b) What is multivibrators? Describe about a stable multivibrator.

14. (a) Describe in detail about the transistor as amplifier in CE mode.

Or

(b) Describe a various circuits in which transistor is used as a switching device.

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15. (a) Compare AM and FM.

Or

(b) Give short notes on transmitter and its function.

Part C (3 × 10 = 30)

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

16. (a) Describe in detail about the various causes of formation of charges in an oil tanker.

Or

(b) (i) Write a short notes about the effects in electrical circuits.

(ii) Describe the effect of ionosphere on radio waves.

17. (a) (i) Write a short notes on binary addition and binary subtraction.

(ii) Define AND, OR and NOT gates, with their symbols, circuit diagrams and the truth table.

Or

(b) (i) Describe in detail about the characteristics of CB mode transistor.

(ii) Explain the important terms in switching transistor.

18. (a) Describe in detail about AM and FM modulation and give their advantages and disadvantages.

Or

(b) Describe the characteristics of radio receivers such as selectivity, sensitivity and fidelity.

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C–3279	Sub. Code
	11625

B.Sc. DEGREE EXAMINATION

CATERING AND HOTEL ADMINISTRATION
APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

Second Semester

SHIP OPERATION TECHNOLOGY - II

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. What is the use of "Bow stopper"?

2. Name any four deck equipment.

3. Express "Abandonship" drill.

4. What is "immersion suit"?

5. What precautions are to be observed while handling electric tools?

6. Mention the safety precautions while rigging "pilot ladder".

7. Specify the different methods of fire extinguishing.

8. What is "Fire drill" and state the periodicity of fire drill?

9. Define "Trim".

10. What is the use of HRU in boat handling?

Part B   (5 × 5 = 25)

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

11. (a) Describe the process of securing of anchor for sea.

    Or

    (b) List down the types of anchors used on merchant vessel.

12. (a) Write down the launching process of life raft.

    Or

    (b) What is fall preventive device? Describe how does it function?

13. (a) List down the starting procedure of emergency fire pump?

    Or

    (b) Enumerate the procedures for entering into confined enclosed space.

14. (a) Name the different types of portable fire extinguishers.

    Or

    (b) Name at least any five PPE.

15. (a) On what situations the OOW will call the master?

    Or

    (b) Explain the process of jointing two mooring ropes.

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Part C (3 × 10 = 30)

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

16. (a) Discuss briefly about life saving appliances requirements for general cargo ship.

Or

(b) Write notes on :
   (i) Life buoys
   (ii) Life jacket
   (iii) Line throwing appliances
   (iv) Pyrotechniques
   (v) Rescue boat.

17. (a) Discuss in detail about the survey and markeings of anchor and chain cable.

Or

(b) Draw the neat diagram of water type portable extinguisher and mention the parts.

18. (a) Explain the fixed smothering system used for extinguishing major fire in general cargo ship.

Or

(b) Write notes on :
   (i) Drift angle
   (ii) Tactical diameter
   (iii) Head reach
   (iv) Side reach
   (v) Track reach

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C–3279

C–3280	Sub. Code
	11626

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Second Semester

NAVIGATION – I

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

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

Answer **all** questions.

1.   What is equator?

2.   What is Meridian or Longitude?

3.   What is Departure?

4.   What is d'lat?

5.   Define term "Plane Sailing".

6.   What is DMP and find the DMP between the following
     Lat : 20°N and Lat 40°N.

7.   Define Mercator Sailing.

8.   What is Deviation?

9.   Find the Compass Course from the following :
     True Course 075°(T), Variation 5°E and Deviation 3°W

10.   What is Sextant?

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

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

11. (a) (i) What is Meridional parts? Give examples.

    (ii) What is Estimated position?

Or

    (b) Define the following with diagram :

    (i) Leeway

    (ii) Set and drift.

12. (a) (i) Find the deviation from the following :

	(1)	(2)	(3)
Comp. Brg (C)	205°	120°	358°
Mag. Brg (M)	203°	124°	359°
Deviation	-	-	-

    (ii) Find the Compass Error (CE)

	(1)	(2)
Deviation	5°E	4°W
Variation	16°W	4°W
Compass Error	-	-

Or

    (b) (i) Find the True Bearing from the following Relative bearings :

	(1)	(2)	(3)
Rel Brg (Rel)	300°	090°	316°
True Course (T)	200°	100°	210°
True Brg	-	-	-

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(ii) Find Relative Bearing from the following :

	(1)	(2)
True Brg (Rel)	300°	040°
True Course (T)	200°	100°
Relative Brg	-	-

13. (a) Define Quadrantal course and True Course with sketch.

Or

(b) (i) Find the d'long and name the direction from the following :

	(1)	(2)	(3)
From	074°20'E	018°09'W	174°40'E
To	068°18'E	009°39'E	170°30'W
D'long	-	-	-

(ii) Find Mean Latitude (M'lat)

	(1)	(2)
Lat A	45°36'N	24°58'N
Lat B	11°44'N	52°10'S
M'lat	-	-

14. (a) (i) What do you understand by refraction?

(ii) Find DMP for the following Latitudes and state the direction.

	(1)	(2)	(3)
Lat A	07°12'S	20°30'N	60°45'S
Lat B	15°25'N	45°35'N	35°40'S
DMP	-	-	-

Or

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(b) Solve the following (use TT)

Course	Distance	D'lat		Dep	
		N	S	E	W
S70°W	345	-	-	-	-
N34°E	348	-	-	-	-
N20°W	112	-	-	-	-

15. (a) Find Course and Distance (Parallel Sailing)

Lat A   44°44'S   Long A   154°30'E

Lat B   44°44'S   Long B   179°50'E

Or

(b) Find the position arrived in the following case.

Position Left : Lat A : 40°24'N Long A : 086°38'E; Course : 270°; Distance 794.8M

Part C   (3 × 10 = 30)

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

16. (a) In the following case, Find the Course and Distance :

Latitude A	Longitude A	Latitude B	Longitude B
04°16.0'S	177°37.0'W	02°29.0'N	179°24.0'E

Or

(b) In the following case, find the arrived position.

Latitude A	Longitude A	Course	Distance
50°00.6'N	081°10.4'W	132°(T)	290 M

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17. (a) Find the Course and distance, in the following case
    (Traverse Table Method) :

Latitude A	Longitude A	Latitude B	Longitude B
20°30.0'N	179°36.0'E	16°18.0'N	178°32.0'W

                        Or

    (b) In the following case, find the Arrived Position
    (Mercator Sailing Method)

Latitude A	Longitude A	Course	Distance
36°48.0'N	085°53.0'W	241°	1897 M

18. (a) Find the Course and Distance, in the following case
    (Mercator Sailing Method) :

Latitude A	Longitude A	Latitude B	Longitude B
24°00.0'N	074°15.0'W	46°00.0'N	053°00.0'W

                        Or

    (b) On 6th March a ship in Position 46°36'S 175°34'E
    steamed as following :

Time	Course (C)	Deviation	Leeway	Wind	Speed (kt)
1200	150°	5°E	3°	SW×W	8
1600	140°	4°E	5°	SW	8
2000	120°	3°E	NIL	SW	7.5
2400	120°	3°E	NIL	SW	6.5
0400	100°	1°E	NIL	S	8
0800	095°	NIL	NIL	S	8
1200	095°	NIL	NIL	S	8

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Variation 10°E throughout. Find the DR Position at Noon on 7th March and, if the observed position then was 48°14.3S 178°06.5'E. Find the set and drift of the Current.

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C–3281	Sub. Code
	11632

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Third Semester

CARGO HANDLING AND STOWAGE - I

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

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

Answer **all** questions.

1.   What are RO-RO ships and what cargo do they carry?

2.   Define grain capacity.

3.   Name different types of container.

4.   What do you understand maximum permissible load?

5.   What is proof load?

6.   What do you understand by "sounding"?

7.   What is breaking strength?

8.   What do you understand by mechanical advantage?

9.   What is dew point?

10.   What is broken storage?

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

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

11.   (a)   Why do we need to ventilate cargo spaces? What is ship sweat and cargo sweat?

Or

      (b)   How can we control sweat by ventilation?

12.   (a)   What are the markings on a container? What is the standard size(s) of a container?

Or

      (b)   What are the documents required on-board the ship prior loading of dangerous goods?

13.   (a)   What inspections are carried before loading and discharging refrigerated cargo?

Or

      (b)   What is the purpose of recording temperature of the refrigerated cargo?

14.   (a)   Name parts of a ship's derrick. How is it hoisted, lowered and secured?

Or

      (b)   Write a short note on segregation of containers carrying dangerous cargoes.

2   **C–3281**

15. (a) How cargo holds are ventilated? Explain two types of ventilation systems.

Or

(b) What is cargo stowage plan and pre-stowage plan?

Part C (3 × 10 = 30)

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

16. (a) What are the entries to be made in the port log book during cargo operations?

Or

(b) Write down the procedure in detail to prepare the cargo hold for loading on a bulk carrier.

17. (a) What are the preparations and precautions required to be taken prior loading heavy weights.

Or

(b) Explain the construction and working of a single swinging derrick.

18. (a) Briefly explain the hazards of bulk cargoes.

Or

(b) State the duties of the officer on cargo watch.

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C–3281

C–3282	Sub. Code
	11633

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Third Semester

MARINE ENGINEERING AND CONTROL SYSTEM - I

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part - A   (10 × 2 = 20)

Answer **all** questions.

1.   State the properties of Mild steel.

2.   Why do bottom end bolts be exposed to potential fatigue failure.

3.   Specify the use of a stuffing box?

4.   What is the use of Thermostatic valve?

5.   Why do we prefer submersible pumps for Chemical tankers?

6.   What are Reefer compartments?

7.   Describe P.V. diagram.

8. Differentiate 2-Ram and 4-Ram systems in steering gears.

9. Name the main tests for circuit testing.

10. What is single phasing?

Part - B   (5 × 5 = 25)

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

11. (a) Express the uses of Ceramics.

Or

(b) Explain the heat treatment processes of steel.

12. (a) What are the safety cutout provided in marine boilers?

Or

(b) With the aid of a diagram, explain the process of a fresh water generator.

13. (a) Describe the cold storage system on board the ship.

Or

(b) Express the causes for reduction in suction pressure in Air-conditioning.

14. (a) State the process of insulation testing between conductors.

Or

(b) How will you check the Crankcase deflections?

15. (a) Why do the majority of ships prefer A.C. generators than D.C. generators.

Or

(b) Write down the routine maintenance carried out in Generator on board ship.

C–3282

Part - C (3 × 10 = 30)

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

16. (a) With a neat diagram explain the working of a Cohran boiler on board a ship.

    Or

    (b) Explain the central air conditioning system of the passenger ship.

17. (a) Explain the working principle of four-stroke engines.

    Or

    (b) Draw the neat diagram of a Fuel injector and explain the working principle.

18. (a) Explain the Shore supply connection arrangements made during dry-dock.

    Or

    (b) Explain the Marine electrical motors used on board ships.

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3   **C–3282**

C–3283	Sub. Code
	11634

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Third Semester

VOYAGE PLANNING AND
COLLISION PREVENTION – I

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Notes : Draw diagram wherever applicable.

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   What do you understand by "Natural scale of a chart".

2.   What do you know about the "units of sounding" used on chart?

3.   What do you understand by "Degree of reliability of information shown on the chart?

4.   What are "Leading lights"?

5.   What is "Ground track and water track"?

6.   What is SET and DRIFT?

7.	What is DR position?

8.	Define the term "Underway".

9.	How will you proceed in a "Narrow channel"?

10.	What is the use of the "BA CHART 5011"?

<div align="center">

Part B   (5 × 5 = 25)

</div>

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

11.	(a)	Draw the following chart symbols:

	(i)	Dangerous wreck for surface navigation

	(ii)	Submarine cable

	(iii)	Anchoring prohibited

	(iv)	Flood tide

	(v)	Light vessel.

<div align="center">

Or

</div>

	(b)	Draw the following chart symbols:

	(i)	Rock awash at chart datum

	(ii)	Wreck with mast visible

	(iii)	Pilot boarding ground

	(iv)	Depth contour 20m

	(v)	Designated fishing area.

12.	(a)	Define the term "RAM" V/L? Give five examples of RAM v/l.

<div align="center">

Or

</div>

	(b)	What do you mean by the terms "LOOK OUT" and 'SAFE SPEED"?

<div align="center">

2   **C–3283**

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13. (a) Explain the following:

(i) Dead Reckoning position

(ii) Observed position

(iii) Estimated position

Or

(b) What are different types of charts? Briefly explain.

14. (a) Define the following :

(i) Vessel

(ii) Sea plane

(iii) Restricted visibility.

Or

(b) What are the information you will get from "Routing charts"?

15. (a) Explain rule no.8 action to avoid collision.

Or

(b) Your V/l is in a narrow channel. You intend to over take another v/l. What will you do?

Part C   (3 × 10 = 30)

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

16. (a) (i) What are the terms "Give way vessel and stand on vessel"?

(ii) Explain give way v/l and stand on v/l as per rule nos.16 and 17.

Or

(b) Explain briefly about T.S.S according to COLREGS.

3   C–3283

17. (a) How do you use HORIZONTAL SEXTANT ANGLE for fixing a v/l's position? Explain.

Or

(b) What is IN SHORE TRAFFIC ZONE? Which are the ships are allowed to use ITZ as per ROR? Explain with a diagram.

18. (a) What do you know about Rule no.7 Risk of Collision?

Or

(b) Explain Rule no.19.

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4

C–3283

C–3284	Sub. Code 11635

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Third Semester

NAVAL ARCHITECTURE - II

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part - A   (10 × 2 = 20)

Answer **all** questions.

1.   What is bilge keel?

2.   What are the purposes of Peak tanks?

3.   State the uses of Spurling pipe.

4.   Cold water is more buoyant. State True or False.

5.   Define Archimedes Principle.

6.   Distinguish between buoyancy and Gravity.

7.   What is the free surface effect?

8.   What are sounding pipes?

9. What is stress corrosion?

10. Define MCT1cm.

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

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

11. (a) Describe the purpose and construction of Wink tanks.

Or

(b) With an aid of a diagram explain the pumping out arrangement in the tanker ship.

12. (a) Describe the methods adopted to maintain the watertight integrity on vertical divisions in the hull openings.

Or

(b) Distinguish between Hogging and Sagging with neat diagrams.

13. (a) Explain the Cathodic protection system provided on board ship with an aid of neat diagram.

Or

(b) Describe the Racking and Torsional stresses.

14. (a) Describe the use of Simpson's rule in the computation of centroids for area and volume.

Or

(b) The equally spaced half ordinates of a watertight flat 27 m long are 1.1, 2.7, 4.0, 5.1, 6.1, 6.9 and 7.7 respectively. Calculate the area of the flat.

C–3284

15. (a) A ship of 6,000 tonne displacement is composed of masses of 300, 1200 and 2000 tonne at a distance 60, 35 and 11 maft of midships, and masses 1000, 1000 and 500 tonne at distances 15, 30 and 50 m forward of midships. Calculate the distance of the centre of gravity of the ship from midships.

Or

(b) Draw the meta - centric diagram for a vessel of constant rectangular cross section.

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

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

16. (a) A ship has a mass of 60 tonne lying on the deck. A derrick whose head is 7.5 m above the centre of gravity of the mass, is used to place the mass on the tank top 10.5 m below the deck. Calculate the shift in the vessels centre of gravity when the mass is :

(i) just clear of the deck

(ii) at the derrick head

(iii) in its final position

Or

(b) Explain the arrangement of anchor chain arrangement on board ship with neat diagram.

17. (a) Draw the neat diagram of an unbalanced type of Rudder and mark the parts.

Or

(b) Explain the effect of tank divisions on free surface effect in detail with the help of neat sketches.

3 C–3284

18. (a) Sketch the Mid - ship section of a bulk carrier ship and mention the structural parts.

Or

(b) A ship 120 m long and 9100 tonne displacement floats at a level draught of F 6.5 m in fresh water of 1.000 t/m3. MCT1cm 130 tonne m, TPC in sea water 16.5, LCB 2.30 m forward of mid-ships. LCF 0.6 m aft of mid-ships. Calculate the draft F.

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C–3284

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

Third Semester

SHIP OPERATION TECHNOLOGY - III

(2016 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Define navigation.

2. What is preventive maintenance?

3. What is the effect of Barnacles?

4. Where all the wire ropes are used onboard a ship?

5. Explain "Anchor-a-cock bill" position.

6. State different types of hatch covers.

7. What is the meaning of smothering and starving?

8. Expand EPIRB, HRU, SART and GMDSS.

9. What is the specific use of turn buckle? (bottle screw)

10. Why do you mark the anchor chain?

Part B (5 × 5 = 25)

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

11. (a) What is an enclosed space and what precautions are taken prior to entering in?

Or

(b) What is the significance of Master's inspection of accommodations?

12. (a) What are the advantages of plant maintenance?

Or

(b) What is the difference between water tightness and weather tightness?

13. (a) What is a contingency plan?

Or

(b) In a ship/ how different areas of steel surfaces are safe guarded from corrosion?

14. (a) What is the need for SMCP? Give examples.

Or

(b) How is worldwide coverage achieved in GMDSS?

15. (a) Why is it essential to Dry dock a vessel?

Or

(b) What different jobs are carried out during dry docking?

C–3285

Part C (3 × 10 = 30)

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

16. (a) How to communicate in/respond to distress at sea?

Or

(b) Why ships are subjected to surveys and mention any five surveys?

17. (a) Explain the role of RPSL in seafarers placement.

Or

(b) What is the purpose of work permit including hot work permit?

18. (a) What is the function of classification society?

Or

(b) Elaborate on safety committee meeting.

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3   **C–3285**

C–3286	Sub. Code
	11637

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

Third Semester

NAVIGATION – II

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

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

Answer **all** questions.

1.   Define Celestial Pole.

2.   Define Celestial Meridian.

3.   What is Rational Horizon?

4.   Define the term Vertical Circle.

5.   Define Geographical position of a Celestial body.

6.   What is Solar Day?

7.   What is Equation of Time?

8.   Define Right Ascencian.

9.   Define Greenwich Hour Angle.

10.   Define Marine Sextant.

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

11. (a)   Convert the following LIT into the Longitude.

              1   2   3

    LIT   09h 40m 48s   03h 25m 00s   11h 45m 36s

Or

(b) (i)   Explain the term "Standard Time"

(ii)   What is "Elongation"?

12. (a)   (i)   On a certain day, the LMT Meridian Passage
of the Sun is tabulated as 11h 56m. What is
the approximate value and sign of Equation of
Time?

(ii)   If the Equation of Time is +6m, what is the
LMT of the Sun's Meridian?

Or

(b) (i)   Find the LHA in the following case :

              (1)   (2)   (3)

    GHA   249°20.0'   332°17.7'   098°29.6'

    Long   092°41.0'   102°52.0'   121°17.4'

    LHA   -   -   -

(ii)   Find the GHA in the following case :

              (1)   (2)

    LHA   127°18.7'   117°12.5'

    Long   141°37.9'   046°13.9'

    GHA   -   -

C–3286

13. (a) Find the Sun's GP at GMT March 04d 05h 23m 09s.

Or

(b) Find the GP of Venus on Sept 2008 at GMT 12d 04h 23m 04s, in position

41°21'S 142°27.2'W

14. (a) (i) On 13th Sept PM at ship in DR 27°16'N 075°00'W, the Chron showed 03h 18m 12s, error 02m 05s fast. Find correct GMT date and time.

(ii) What is the meaning of term "True Course"?

Or

(b) Solve the following :

(i) True Azimuth : 147°(T), Var:5°W, Dev:6°W, find the Compass Azimuth.

(ii) Compass Azimuth : 078°(C), Var:3°E, Dev:4°W, find the True Azimuth

(iii) True Azimuth : 105°(T), Compass Azimuth:107°(C), Find the Compass Error.

(iv) Compass Error: 2°(W), Variation:5°E, True Azimuth:275°(T). Find the compass Azimuth.

15. (a) On 23rd Aug 2008, in DR 34°31'S 003°30'W, GMT is Aug 23d 18h 17m 19s. Find the LHA and P of the star SPICA.

Or

(b) On 17th Jan 2008, AM the Sextant Altitude of Venus is 18°06.4', the IE was 2.8' on the arc. HE was 16m. Find the TZD.

3

C–3286

Part C   (3 × 10 = 30)

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

16. (a) On 5ᵗʰ March 2008, in position 32°12'N 178°16'E, the rising Sun Bore 100°(C). If variation was 3°E, find the deviation of the Compass.

Or

(b) On 27ᵗʰ April 2008, AM at ship in DR 33°30'N 140°11'W, the Moon bore 204.0°(G) at 16h 30m 56s by GPS clock. Calculate the Gyro Error and state if it is High or Low.

17. (a) On 28ᵗʰ April 2008, DR 25°20'N 075°00'E, the Sextant MERIDIAN altitude of JUPITER was 43°04.5'. If IE was 1.5' off the arc and HE was 25m, find the Latitude and LOP.

Or

(b) On 21ˢᵗ Jan 2008, in DR 24°36'S 110°20'W, the Sextant MERIDIAN ALTITUDE of the Sun's LL was 85°03.5'. If IE was 1.6' off the arc and HE was 10m, find the Latitude and state the direction of the PL.

18. (a) On 17ᵗʰ Jan 2008, AM at ship in DR 34°56'N 093°30'W, the Sextant Altitude of the VENUS was 18°06.4', when Chron showed 00h 40m 50s (error 03m 29s slow). If IE was 2.8' on the arc and HE was 16m, calculate the direction of the LOP and the Longitude where it cuts the DR Latitude.

Or

(b) On 29ᵗʰ Nov 2008, in DR 26°27'N 130°27'W, the Sextant Altitude of the Sun's UL. East of the Meridian was 28°11', when the Chron showed 05h 49m 20s (error 01m 31s fast). If HE was 10m and IE was 2.3' off the arc, Calculate the direction of the LOP and the Intercept.

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4

C–3286

C–3287		Sub. Code
		11642

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

Fourth Semester

CARGO HANDLING AND STOWAGE – II

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

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

Answer **all** questions.

1.   Name five parts of a container.

2.   What is a slop tank?

3.   What is sour crude?

4.   State the use of brine trap.

5.   What is TML?

6.   State the use of wilden pump.

7.   What do you understand by BLU code?

8. What are stacking cones?

9. Abbreviate SOPEP. Name a few SOPEP equipment.

10. What is DOA?

Part B (5 × 5 = 25)

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

11. (a) Briefly describe different types of container.

Or

(b) Describe all the markings on a container.

12. (a) What are the precautions to be taken when dealing with containers carrying dangerous cargo?

Or

(b) How do you test the weather tightness of a hatch cover?

13. (a) What are the precautions to be taken prior loading coal in bulk?

Or

(b) Explain different methods of securing grain cargo in a compartment.

14. (a) What is IMDG Code? Name different classes of dangerous cargo with example.

Or

(b) What are the precautions to be taken while loading high density cargoes?

2 C–3287

15. (a) Explain direct cargo piping system with a diagram?

Or

(b) What are the advantages and disadvantages of C.O.W.?

Part C (3 × 10 = 30)

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

16. (a) Define :
   (i) Static electricity
   (ii) Topping up
   (iii) Topping off
   (iv) Flame screen
   (v) Flame arrestor.

Or

(b) Define:
   (i) Filled and partly filled compartments
   (ii) Trimmed and untrimmed cargoes
   (iii) Specially suitable compartments
   (iv) Grain
   (v) Grain capacity.

17. (a) State the contents of the grain loading manual. What are the precautions to be taken prior loading grain cargo?

Or

(b) State the uses of a dunnage. Explain floor dunnage, lateral dunnage, interlayer dunnage and top dunnage.

3   **C–3287**

18. (a) Briefly explain with the suitable diagram.

    (i)   PV breaker

    (ii) PV valve

    (iii) Mast raiser

    (iv) Deck seal

    (v)   Deck isolation valve

                    Or

    (b) Briefly explain the following container lashing system.

    (i)   Conventional system

    (ii) Twist lock system

    (iii) Transversal lashing system

    (iv) Cellular system.

    _____

C–3287

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Fourth Semester

MARINE ENGINEERING AND CONTROL SYSTEM — II

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   Mention the properties of fuels used on board.

2.   List out the treatment of fuels in shore.

3.   What is ballasting?

4.   What is the purpose of windlass?

5.   Difference between slow speed and high speed engines.

6.   List out the function of lubricants.

7.   Define specific fuel consumption.

8.   What do you mean by heat balance of diesel engine?

9.   List out maneuvering aids.

10.   List out safety arrangements in IGS.

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

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

11. (a) Explain the different types of lubrication adopted in marine diesel engines.

Or

(b) Explain fresh water pumping system with simple line diagram.

12. (a) Explain different types of scavenging.

Or

(b) Explain in detail about warming up procedure for large diesel engines.

13. (a) Write short notes on :

(i) Shafting

(ii) Pitch angle

(iii) Slip

(iv) Efficiency.

Or

(b) Draw a neat sketch and explain biological sewage treatment plant.

14. (a) Explain in detail about precautions while maneuvering.

Or

(b) Explain procedure for remote handling of liquid cargo.

2 C–3288

15. (a) Briefly discuss about auto ventilation control in ships.

Or

(b) What are the precautions to be taken in IGS for petroleum carriers?

Part C (3 × 10 = 30)

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

16. (a) Sketch and explain bilge-water separator.

Or

(b) Explain and draw any one deck machinery and its planned maintenance.

17. (a) Sketch CO_2 smoothening system for engine room and discuss briefly.

Or

(b) Discuss in detail slow speed, high speed and medium speed engine. Suitability for various purposes.

18. (a) Sketch and explain foam generation and distribution system in cargo holds.

Or

(b) Explain tube electric drivers for main propulsion system.

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3

C–3288

C-3289	Sub. Code
	11644

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

Fourth Semester

VOYAGE PLANNING, COLLISION PREVENTION - II

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. How will a vessel (more than 50m in length) aground warn the other vessels in vicinity in RV?

2. What are M and MS notices?

3. What is courtesy flag? Where is it hoisted?

4.   What do you understand by landfalls?

5. What is parallel indexing?

6. Describe the lights for a trawler shooting nets.

7. Describe the isolated danger mark.

8.   What does it mean when a vessel hoists golf flag?

9.   Write the Morse for (a) Whiskey (b) Uniform

10. Define mast head light

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

</div>

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

11. (a) Write a short note on ocean passages of the world.

<div align="center">Or</div>

(b) What is the use of guide to port entry?

12. (a) Define :

   (i)   Bunting

   (ii)   Halyard

   (iii) At the dip

   (iv)   Closeup

   (v)   Half Mast.

<div align="center">Or</div>

(b) Give the International Phonetics and Morse code for the following alphabets.

   (i)   B

   (ii)   D

   (iii) O

   (iv)   M

   (v)   T.

13. (a) State the visibility of lights as per the length of the vessel.

Or

(b) State the Manoeuvring and Warning sound signals.

14. (a) What will be your action if you spot a vessel with three black balls, one near the fore mast and one at each end of the fore yard? Describe the light and fog signal for that vessel.

Or

(b) Describe the lights, shapes and fog signal prescribed for a vessel not under command.

15. (a) What do you understand by a Raster chart and a Vector chart?

Or

(b) What is Radar? How does it works?

Part C (3 × 10 = 30)

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

16. (a) What will be your role in passage planning as a 2nd officer?

Or

(b) Define :
    (i) Ship routing
    (ii) TSS
    (iii) Separation zone
    (iv) Traffic lane
    (v) Inshore Traffic zone

3   C-3289

17. (a) What is the essence of Rule 35 of COLREGS?

Or

(b) List out at least 10 distress signals as per ANNEX IV. Why is it essential for everyone to know and recognize the distress signals?

18. (a) Find the height of tide and depth of water at 1430 hours on March 2ⁿᵈ at a position off Singapore, where charted depth is 4 meters. Extract from the table for the day under reference are given below. (use tide table)

EXTRACT FROM ATT ZONE TIME – 0800

0014   2.7m

0603   0.8m

1209   2.9m

1830   0.6m

Or

(b) Describe the light, shape and fog signals for the following vessels with diagrams. (i) A power-driven vessel engaged in towing where the length of the tow exceeds 200 meters and is unable to deviate from her course, seen from the STBD side. (ii) A vessel of less than 50m in length engaged in minesweeping, seen from end on. (iii) A vessel aground of 50m or more in length, seen from port side.

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4

C-3289

C–3290		Sub. Code
		11645

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Fourth Semester

NAVAL ARCHITECTURE - III

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. What are the effects on draught when adding small masses?

2. What is launching?

3. Define Butt joint.

4. What is IRS with respect to classification societies?

5. Describe "LBP"

6. Define center of gravity of ship.

7. What is trim?

8. What is the permeability of machinery compartment?

9. Where is the Center of pressure f a parabolic shape?

10. Distinguish between Heel and list.

<div align="center">

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

</div>

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

11. (a) What drawings are prepared prior to ship building in shipyard?

<div align="center">Or</div>

(b) What is bilging and explain in details.

12. (a) Sketch the different types of welding joints.

<div align="center">Or</div>

(b) Give brief notes on load line marketing.

13. (a) Describe the process control and prefabrication in shipyard.

<div align="center">Or</div>

(b) What are the classes of fire and mentioned suitable fire extinguisher for each class of fire.

14. (a) A box shaped vessel us 50m long and is floating at an even keel at 6.0 m draft. mid-ship compartment is 10m long and is empty. Find the increase in draft if this compartment is bilged.

<div align="center">Or</div>

(b) A Ship of 5000 ton displacement has a mass of 200 tonne on foredeck 55m forward of mid-ship. Calculate the shift in center of gravity of the ship if the mass is move to a position of 8m forward of mid-ship.

<div align="center">

2   **C–3290**

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15. (a) A ship of 5000 ton displacement, 95m long floats at a draft of 5.5m. Calculate the wetted surface area of the ship.

Or

(b) A vessel 40m long has a constant cross section in the form of trapezoid 10m wide at the top, 6m wide at the bottom and 5m deep. It floats in sea water at a draft of 4m. Calculate the displacement.

Part C (3 × 10 = 30)

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

16. (a) A ship of 5000 ton displacement has a rectangular double bottom tank 9m wide and 12m long, half full of sea water. Calculate the virtual reduction in meta centric height due to free surfaces.

Or

(b) A ship 120 m long, COF 2.5 m abaft amidships (HF 2.5 m aft), MCTC 100 tm, TPC 25, floas at 7 m fwd and 10 m aft. find the new drafts if 200 t is discharged from a position 50 m abaft and amidships.

17. (a) Define angle of Loll and derive equation for angle of Loll.

Or

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

18. (a) Draw the organization charts of ship building process.

Or

(b) Name various classification societies and explain their roles.

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3

C–3290

C–3291		Sub. Code
		11646

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Fourth Semester

NAVIGATION – III

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. Define "Great Circle Sailing".

2. What is Great Circle Vertex?

3. What is synodic month?

4. Define the term Apogee and Perigee of the moon.

5. Abbreviate the following :

    (a) RADAR

    (b) ARPA

6. Abbreviate the following :

    (a) DGPS

    (b) NAVTEX.

7. Define Ex-Meridian Limit.

8.   What is Free Gyroscope?

9.   What is occulation planets?

10.   What is Course Recorder?

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

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

11.   (a)   What is Liberation of the Moon? Explain.

                        Or

      (b)   Explain Lunar and Solar Eclipses.

12.   (a)   Explain about Umbra and Penumbra of the Lunar
            Eclipse with diagram.

                        Or

      (b)   How does GPS work?

13.   (a)   What are the structure of GPS System? Explain the
            three segments of GPS System.

                        Or

      (b)   What is DGPS? Explain the uses of the DGPS.

14.   (a)   Draw a Block diagram of an Echo Sounder and
            explain all Controls.

                        Or

      (b)   Explain the Care and Checks in Course Recorded.

15.   (a)   What are the principles and uses of an AIS?

                        Or

      (b)   What is the difference between VDR and S-VDR?
            Give the information available from VDR.

                 2   **C–3291**

Part C (3 × 10 = 30)

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

16. (a) Explain the phases of the Moon with diagram and Waxing and Waning of the Moon.

Or

(b) What is Solar Eclipse and how it occur? Explain with neat diagram.

17. (a) Find the distance, initial and final course of Great Circle Sailing from Lat : 33°22'S, Long 113°08'E to Lat : 10°51'S, Long : 049°16'E.

Or

(b) On 4th March 2008, DR 27°18'N 168°11'W, the sextant altitude of the Sun's LL near the Meridian was 56°19.8' when the chron showed 11h 13m 24s. If chron error was 01m 20s slow, HE was 12m and IE was 2.8' on the arc, find the direction of the PL and a Position through which it passes. Note : Near the Meridian means that working is to be by the by Ex-meridian method.

18. (a) On 28th April 2008, DR 25°20'N 075°00'E, the sextant MERIDIAN altitude of JUPITER was 43° 04.5'. If IE was 1.5' off the arc and HE was 25m, find the Latitude and LOP.

Or

(b) On 1st Sept 2008, AM at a ship in DR 18°00'N 178°11'E, the Sextant altitude of the Pole Star was 18°47.4' at 05h 21m 08s by chronometer (error 01m 18s slow), HE was 12.5m and IE was 1.6' on the arc. Find the direction of the PL and a position through which to draw it. If the azimuth was 001° (C), and variation was 1.3°E, find the deviation.

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3

C–3291

C–3292		Sub. Code
		11651

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Fifth Semester

CARGO HANDLING AND STOWAGE - III

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

Note: Draw diagrams wherever applicable

1. What is height requirement of timber deck cargo?

2. Why do you carry out regular inspection of lashings of timber deck cargo?

3. What do you understand by "THIRD PARTY DAMAGE"?

4. Write short notes on "CARGO CLAIMS".

5. What do you understand by "Mate's receipt"?

6. What is the use of IMDG code?

7. What is the importance of labeling of IMDG cargo?

8. Define LFL and UFL?

9. What is "TLV?

10. What do you understand by "Emergency shut down procedure" on tankers?

Part B (5 × 5 = 25)

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

11. (a) Describe the stability requirement of timber deck cargo.

Or

(b) Explain different lashing arrangements of timber deck cargo.

12. (a) What is meant by 'CHARTER PARTY'. Briefly explain different charter parties.

Or

(b) What is meant by B/L? Briefly explain any TWO B/L's.

13. (a) (i) What are the criteria for carrying "EXPLOSIVES" in a passenger ship?

(ii) Define "MFAG'. How do you use it in case of emergency?

Or

(b) Write short notes on (i) UN NO (ii) EMS schedule (iii) Dangerous cargo manifest.

C–3292

14. (a) (i) What is the use of "VAPOUR RETURN LINE"?

    (ii) Briefly explain deep well pump in a chemical carrier.

Or

    (b) What are the precautions you observe when discharging IMDG cargo?

15. (a) Explain the CARGO DOCUMENTATION of a chemical tanker.

Or

    (b) Briefly explain fully refrigerated and semi refrigerated gas tankers.

Part C   (3 × 10 = 30)

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

16. (a) (i) Explain the hazards involved in carrying "TIMBER DECK CARGOES".

    (ii) Describe the action if the timber deck cargo is lost overboard.

Or

    (b) What is meant by "NOTE OF PROTEST"? What are the supporting documents for note of protest?

17. (a) (i) Write down different classifications of IMDG cargo?

    (ii) What is meant by "SEGGREGATION OF DANGEROUS CARGOES"? Explain segregation with the help of diagrams.

Or

    (b) What are the precautions taken for discharging heavy lift cargoes? Explain in detail.

3

C–3292

18. (a) Explain the procedure of loading chemical cargo.

Or

(b) Explain the properties and hazards of GAS vapours?

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4

C–3293		Sub. Code
		11652

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Fifth Semester

VOYAGE PLANNING, COLLISION PREVENTION - III

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

NOTES: 1. Draw diagram wherever applicable.

2. Use of 1992 Tide tables are allowed.

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   Name the shapes used for "Day signals".

2.   What is 'DSC"?

3.   What is "GMDSS" and its uses?

4.   Define the meaning of "Safety Net".

5.   What are the frequencies for "Distress MF and HF calling?

6. What do you understand by "Inspires"?

7. What is the meaning of "VTIS" and its uses?

8. What is the use of "NBDP"?

9. Define "NUC V/L" and what are the day and night signals?

10. Define "Geographical range".

Part B (5 × 5 = 25)

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

11. (a) State the uses of radio communication equipments on board ship.

Or

(b) (i) What are the uses and functions of "NAVTEX"?

(ii) Explain the details with message types and regions.

12. (a) What are the different between significance between NAVTEX and SAFETY NET?

Or

(b) What is distress alert? What is your action on receiving distress alert from other vessel?

13. (a) What are the "day and night signals" A "FISHING V/L" will display when the gear is extending more than 150m length?

Or

(b) Write down the "DAY AND NIGHT SIGNALS" a DREDGER" will display when the length is more than 50M and is having obstruction.

C–3293

14. (a) What are the "VISIBILITY OF THE LIGHT" of the following :

 (i) V/L more than 50M in length

 (ii) V/L is more than 12M in length and less than 50M in length.

Or

 (b) Define isolated danger mark and describe the characteristics of lights of isolated danger mark with diagram.

15. (a) What are Cardinal marks? Explain with diagram?

Or

 (b) What do you understand by INSPIRES? What is the procedure to report and send a sailing plan?

Part C (3 × 10 = 30)

Answer **all** questions.

Choosing either (a) or (b)

16. (a) Write down the "9 specific functions" GMDSS vessels has to comply with.

Or

 (b) What are the "Four Sea areas" in GMDSS? List out the radio equipments in each area.

17. (a) Describe Search and rescue system. Explain different methods of SAR system while a vessel in distress.

Or

 (b) Explain the characteristics of shapes and light of safe water mark. Explain the characteristics of light and shapes safe water marks.

3 C–3293

18. (a) (i) What do you understand by "COLREGS"? List (only names) the rues from 1 to 19.

    (ii) How many annexes are there in ROR? What are the distress signals as per Rule No.37?

                            Or

    (b) What do you understand by ALRS? List all ALRS and State in detail in the information available in each volume.

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C–3293

C–3294	Sub. Code
	11653

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Fifth Semester

COMPUTER PROGRAMMING AND UTILITIES

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   What do you mean by cell address?

2.   Define protocol.

3.   Group the OSI layers by functions?

4.   Define the terms (a) Column (b) Cell reference

5.   What is meant by data dictionary?

6.   What are the two types of protocols used in transport layer?

7.   Define the term variable and constant.

8.   Specify the use of printf ( ) and scanf ( ) functions?

9.   What is meant by Cryptography?

10.   What are the roles of database administrator?

Part B   (5 × 5 = 25)

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

11.   (a)   Explain about classification of computers.

Or

(b)   Write short note on data dictionary.

12.   (a)   Explain OSI reference model.

Or

(b)   Write about the types of networks.

13.   (a)   Distinguish with internet and intranet.

Or

(b)   Explain about DDL statements with example.

14.   (a)   Explain about DML statements with example.

Or

(b)   Explain about data type in C.

15.   (a)   Explain about program development life cycle.

Or

(b)   What is the procedure for entering formula in cells?

2   **C–3294**

Part C (3 × 10 = 30)

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

16. (a) Write a complete C program and explain with example.

Or

(b) Explain types of computer languages.

17. (a) Explain identifiers and keywords in C.

Or

(b) Explain components of database with neat diagram.

18. (a) Discuss RDBMS concept.

Or

(b) Explain internet applications.

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C–3294

C–3295	Sub. Code
	11654

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

Fifth Semester

SHIPPING MANAGEMENT

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

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

Answer **all** questions.

1.   Define organizational behaviour.

2.   What is elasticity of demand?

3.   What is human resource management?

4.   What is input, output devices and ALU?

5.   Mention the most important tool to ensure cooperation.

6.   State any two factors considered while decision making.

7.   What is the size of Indian fleet?

8. What is the major function of a port conservator?

9. What is freight?

10. What is despatch amount?

Part B (5 × 5 = 25)

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

11. (a) Discuss three fundamental concepts of managerial economics.

Or

(b) Is decision making an art or science? Discuss.

12. (a) Explain the different techniques of decision making.

Or

(b) List your own suggestions to make human resource more productive.

13. (a) Describe the current trends in operational management.

Or

(b) Define CPU and its process.

14. (a) Write the approaches of MIS development.

Or

(b) Describe the types of leadership styles in OB.

2

C–3295

15. (a) Explain in detail different services rendered by merchant ships.

Or

(b) What is NOR and an arrived ship?

Part C (3 × 10 = 30)

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

16. (a) Role of master in different aspects of shipping.

Or

(b) How to prepare for SEQ survey?

17. (a) What is the necessity for classification society? Name any ten of them.

Or

(b) State the pros and cons of flag of convenience.

18. (a) Who are the intermediaries? Name any three of them and mention their duties.

Or

(b) List different certificates to be carried by the ship.

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C–3295

C–3296	Sub. Code
	11655

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

Fifth Semester

METEOROLOGY AND OCEANOGRAPHY - I

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. Define dew point temperature.

2. Define pressure gradient.

3. Define ISALLOBARS.

4. What is barometric tendency?

5. What is the relationship between atmospheric pressure and height above the sea level?

6. What is absolute humidity?

7. Define buys ballot's law.

8.   Name various types of precipitation.

9.   What is variation of temperature with height?

10. Define pressure. What is the unit used for recording pressure?

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

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

11. (a) Explain hydrological cycle with a diagram.

Or

(b) Define : (i) Drizzle (ii) Rain (iii) Snow flakes (iv) Sleet (v) Hail

12. (a) Define fog and explain various types of fog.

Or

(b) What is diurnal variation and range of atmospheric temperature?

13. (a) What is adiabatic lapse rate? Define DALR and SALR.

Or

(b) Define atmosphere and its different layers.

14. (a) Why cloudy nights are warmer? Explain with the diagram.

Or

(b) What is coriolis force and gradient force? How do they affect the wind?

2   **C–3296**

15. (a) What is current? What are the causes of ocean currents?

Or

(b) What are the effect of ocean currents on climate?

Part C (3 × 10 = 30)

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

16. (a) Define: (i) Dew (ii) Hoarfrost (iii) Glazed frost (iv) Rime (v) Mist and fog

Or

(b) What is visibility? Enumerate the factors that can reduce visibility. How is visibility measured/judged and reported?

17. (a) On the monkey island of a ship doing 117° degree at 16 knots, an anemometer and wind vane showed 15 knots and 036° degree. Find the direction and speed of wind to be mentioned in the weather report.

Or

(b) What are ocean currents? Why are they caused? Name at least five cold and warm currents each.

18. (a) Give a brief description of types of clouds.

Or

(b) Explain formation of clouds with the help of diagrams.

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C–3297		Sub. Code
		11656

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Fifth Semester

NAVIGATION - IV

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. Identify any four stars and state magnitude of them (Use almanac).

2. What is constellation?

3. Name any two alarm system on bridge.

4. What is auto pilot?

5. Define the term "Charted depth".

6. What is Tidal Stream?

7. What is Doppler log?

8.   Define the term "current".

9.   Define drying height.

10. What is propagation?

<div align="center">Part B   (5 × 5 = 25)</div>

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

11. (a)   Explain the navigation lights and characteristics of lights with sketch.

Or

(b)   How do you identify the stars from the sky in dark night and write any three methods of position fixing your ship's positions?

12. (a)   Explain the principles of an auto pilot.

Or

(b)   Explain the following : (i) Follow up (ii) Non follow up.

13. (a)   Draw a sketch of different levels of Tide and explain HAT.

Or

(b)   Define the following : (i) Spring tide (ii) Neap tide

14. (a)   What is the operational principle of a Doppler shift?

Or

(b)   How do you calculate longitudinal correction to find tide for secondary port? Give examples.

C–3297

15. (a) How do you find the speed of the vessel and depth of the sea by using Doppler shift?

Or

(b) What are the use and limitation of an AIS?

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

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

16. (a) Explain the following : (i) Diurnal and semi-diurnal tides. (ii) Effect of attracting forces due to the moon and the sun.

Or

(b) What is GPS? Describe the segments of GPS.

17. (a) What is the difference between VDR and S-VDR?

(b) What are the information available from the VDR in emergency?

Or

(c) Define the following : (i) Magnitude of stars (ii) Off course alarm (iii) Define NAVSTAR (iv) Standard Port and secondary port.

18. (a) Find the height of tide off Singapore at 1100 hours (ST) on 3rd February. The following extracts from the Tide tables for the date under reference are given below :

Extract from ATT	Off Singapore
Zone time	–0800
Time	Height
Oi23	2.7 m

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Extract from ATT   Off Singapore

0703	0.9 m
1302	2.9 m
1930	0.5 m

Or

(b)   Find the Time at which there will be 7 metres or Water in the afternoon of 27th April on a Shoal Patch, off Darwin, where the chart shows 3 metres soundings. The following extracts from the Tide Tables for the date under reference are given below :

Extract from ATT Off Singapore	
Time	Height
0550	6.6 m
1157	2.5 m
1743	6.3 m

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C–3298	Sub. Code
	11661

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Sixth Semester

MARINE ENVIRONMENTAL PROTECTION

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   Define the term "Oil tanker".

2.   What do you understand by "Sludge tank".

3.   What is the meaning of "IMDG Code"?

4.   Define SOPEP.

5.   Define the term "Clean ballast"?

6.   What is PPM?

7.   What is "Noxious liquid substances"?

8. What do you understand by "Incinerator"?

9. Define the term "Plastic".

10. What is the meaning of "Ozone Depletion"?

Part B (5 × 5 = 25)

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

11. (a) What are the special areas to avoid discharge of oily water as per Annex-I?

    (b) What is MARPOL 73/78?

Or

    (c) What are the discharge criteria for ships other than oil tankers and for machinery spaces of OIL Tanker wef 6/7/1998.

12. (a) What are the measures to be taken prior inspection by PSC under Regulation 16 of MARPOL Annex-II?

Or

    (b) What are the discharge standards under Regulation 13 of MARPOL Annex-II?

13. (a) What does MARPOL Annex – III say?

    (b) Explain, why certain harmful substances are to be landed in limiting the quantity?

Or

    (c) What are the criteria for identification of harmful substances in packaged form?

    (d) What does MARPOL Annex-IV say?

2

C–3298

14. (a) What are the dimensions of flange for discharge connections of Sewage tanks?

(b) What are the purpose of the Annex-V in MARPOL 73/78?

Or

(c) What does the Regulation four say relating to discharge of Garbage?

(d) Define IOPP.

15. (a) What are the areas under the Emission Control as per MARPOL 73/78?

(b) What are the requirements while ships are operating within a Emission Control area?

Or

(c) List all MARPOL certificates to carry on board vessel and table them the duration and validity of those certificates.

Part C (3 × 10 = 30)

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

16. (a) What are the types of vessels exempted to carry endorsement of certificate to prevent the oil from ship under Regulation-3, why?

(b) If there is an accidental discharge of oil during bunkering, what is your action?

Or

3 C–3298

(c)   What are the procedures in dispose of Plastics?

(d)   Define the following :

(i)   Oily bilge water

(ii) Slop tank

(iii) Global warming

17.   (a) What is Garbage Record Book? State the entries to be made.

(b)   What are the special areas which are not disposed Garbage as per MARPOL Annex-V.

Or

(c)   What are the procedures and limitations of disposal of different types of Garbages into sea? Table them.

(d)   What are the emergency plan for Noxious Liquid substances?

18.   (a) What are the procedures for washing oil tanks?

(b)   What is the chemical code?

Or

(c)   Define the following :

(i)   Regulations

(ii) Code

(iii) Ballast water management

(iv) Chemical tanker

(v)   Product tanker.

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C–3298

C–3299	Sub. Code
	11662

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

Sixth Semester

SEAMANSHIP PRACTICES

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** the questions.

1. Define plain lay, shroud lay and water lay.

2. What is whipping?

3. Define A-cockbill.

4. Enumerate the reasons for anchoring a ship.

5. Strands having an odd number of wires are fitted with fibre cores. True/false?

6. When do you rig a combination ladder for pilot embarkation or disembarkation?

7. What do you mean by "flaking' paint defect? How can you prevent it?

8. Define a. Surge cable b. Snub cable

9. Describe and state the purpose of the clove hitch.

10. What do you understand by "Got her cable"?

Part B   (5 × 5 = 25)

Answer **all** questions.

11. (a) Describe the care and maintenance of natural fibre
        ropes.

        Or

    (b) Write a short note on the construction of a rope.

12. (a) What do you mean by surface preparation? Briefly
        describe its procedure.

        Or

    (b) Explain briefly how corrosion can be prevented by
        using cathodic protection system.

13. (a) Explain the marking of anchor chain.

        Or

    (b) Briefly explain SBM.

14. (a) What are the precautions to be taken while using a
        bosun chair?

        Or

    (b) What type of fire extinguishers are used on board?

15. (a) What are the precautions to be taken before
        flooding the engine room with CO_2?

        Or

    (b) How to berth a hip in calm weather?

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Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) Explain the preparation required to be carried out before a dry dock? What are precautions to be taken while entering a dry dock?

Or

(b) What are the duties of the OOW during anchor watch?

17. (a) Explain launching of a life boat by a davit? List out the equipment that are to be contained in the life boat as per SOLAS.

Or

(b) What is SART? Explain its function.

18. (a) Explain the standing and running moor?

Or

(b) Describe the mooring line with a diagram. What are the precautions to be taken while mooring?

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3 **C–3299**

C–3300		Sub. Code
		11663

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

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APRIL 2020 ARREAR EXAMINATION

Sixth Semester

CONVENTIONS AND REGULATIONS

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

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

Answer **all** questions.

1.   What is a convention?

2.   Describe MSC.

3.   What is SART?

4.   What is segregated ballast?

5.   What's the minimum number of abandon ship/fire drills required per month as per SOLAS?

6.   Define continental shelf.

7.   Define baseline and internal waters.

8. Define STCW.

9. Name the special areas under Annex I of MARPOL.

10. What is SMS?

Part B (5 × 5 = 25)

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

11. (a) State the certification issued to the office and to the vessel to evidence compliance with ISM code.

Or

(b) State and describe the objectives of the LSA and FSS codes.

12. (a) What is maritime labour certificate and DMLC? What is their purpose?

Or

(b) Provide a general overview of the contents of MARPOL.

13. (a) What is SMPEP and SOPEP?

Or

(b) What is the discharge criteria from machinery spaces inside special areas under Annex I?

14. (a) Define :
    (i) International straits
    (ii) Land locked states
    (iii) Enclosed and semi-enclosed seas
    (iv) Regime of islands
    (v) Territorial sea.

Or

(b) What is the discharge criteria of residue of substances in category x, y or Z?

2 C–3300

15. (a) Write a short note on loadline convention.

Or

(b) What is SSO, CSO and PFSO? What are their duties?

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

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

16. (a) Define :

   (i) IAPP certificate

   (ii) IEE certificate

   (iii) Attained EEDI

   (iv) SEEMP

   (v) ECA

   (vi) NO_x Technical code

   (vii) Ozone depletion

   (viii) VOCs

   (ix) Sludge Oil

   (x) GRT.

Or

(b) How a convention is developed and adopted and who is involved in this process?

17. (a) Give a brief summary of the history of SOLAS and what its main objectives are?

Or

(b) Explain in detail the structure of IMO. Name and describe its principal conventions in force.

3

C–3300

18. (a) How should a vessel navigate within a TSS as per COLREGS?

Or

(b) How do you determine safe speed of a vessel? What are the factors that are taken into consideration while determining it?

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C–3301	Sub. Code
	11664

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Sixth Semester

MARITIME LAW

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

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

Answer **all** questions.

1.   Define perils of sea.

2.   What is a quasi-contract?

3.   What is the capacity to contact?

4.   What is criminal law?

5.   Define international law.

6.   What is bailment?

7.   Define charter party.

8.   Name two conventions that include regulations for hours of rest.

9. What do you understand by settlement of claims?

10. Define stowaways.

Part B (5 × 5 = 25)

Answer **all** the questions.

11. (a) State the objective of ISPS code.

Or

(b) Define maritime lien and state its characteristics.

12. (a) What is marine insurance? Describe the types of marine insurance.

Or

(b) Write a short note on P and I club.

13. (a) State and describe the certification issued to a vessel to evidence compliance with MLC.

Or

(b) Describe maritime fraud with examples.

14. (a) What are the rights of seaman in respect of wages as per MSA 58?

Or

(b) How and when are the entries to be made in official log book as per MSA 58?

15. (a) Summarize the Indian multi modal transport of goods act 1993.

Or

(b) Describe the various clauses of charter party.

2

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Part C (3 × 10 = 30)

Answer **all** the questions.

16. (a) What are the possible disputes with respect to bill of lading?

Or

(b) As per law, how to deal with stowaways?

17. (a) Differentiate between valid contract and void contract.

Or

(b) What are the pros and cons of Hague and Visby rules?

18. (a) What is arbitration and how is it different from court proceedings?

Or

(b) Mention main regulations dealing with prevention of oil pollution.

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C–3301

C–3302	Sub. Code
	11665

B.Sc. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Sixth Semester

METEOROLOGY AND OCEANOGRAPHY-II

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. How do you measure the density of water? What is the relative density of sea water?

2. What is the use of Anemometer?

3. What do you understand by solar radiation? What is insolation?

4. What are katabatic winds?

5. Name the various classification of air masses.

6. What are isobars?

7. What is ice fog?

8. Define storm surge.

9. What do you understand by "Dangerous Quadrant"?

10. What are the factors affecting the properties of an air mass?

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

Answer **all** questions.

11. (a) What is Stevenson screen? What is the use and where is it located on-board the ship?

Or

(b) What are the types of weather services available for shipping?

12. (a) What is front? What are types of fronts associated with weather?

Or

(b) Explain climatological routeing and weather routeing?

13. (a) Why is weather routeing advisable in spite of the limitation associated with it?

Or

(b) What are the limitations of weather routeing?

14. (a) Explain structure of a TRS with a diagram?

Or

(b) What do you understand by "Tidal wave"?

15. (a) What do you understand by weather reporting from ships and its significance in weather forecasting?

Or

(b) Write a short note on shore based routeing.

2

C–3302

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) State the description and use of a whirling psychrometer and the precautions to be taken while using it.

Or

(b) What are the ideal conditions for the formation of a TRS and what actions are to be taken when the presence of TRS is confirmed?

17. (a) What are the warning signs of an approaching TRS? Why is it a major threat to shipping?

Or

(b) Explain the physical properties of sea water, their relationship and measurement.

18. (a) Why is global warming a social problem? How can we prevent it?

Or

(b) Define:

(i) Anabatic wind

(ii) ITCZ

(iii) Doldrums

(iv) Land breeze

(v) Sea breeze.

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3 **C–3302**

C–3303		Sub. Code
		11666

B.SC. DEGREE EXAMINATION

NAUTICAL SCIENCE

APRIL 2021 EXAMINATION

&

APRIL 2020 ARREAR EXAMINATION

Sixth Semester

NAVIGATION - V

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   Define Coefficient Real A

2.   What is magnetic variation?

3.   What is Radar?

4.   Define DGPS.

5.   What is RACON?

6.   What do you mean by GDOP?

7.   What is S-VDR?

8. Define "SONAR" system.

9. What is "NAVSTAR"?

10. What is "Tranducer"?

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

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

11. (a) What is the angle of dip in earth's magnetic field? Explain with diagram.

Or

(b) What is induced B (iB)?

12. (a) Deviation due to hard iron is 10°E. When heading 090°(C), what will be the deviation on a course 030°(C).

Or

(b) Describe the procedures of switching on/off of a Radar as an OOW.

13. (a) Explain the uses of AIS in collision avoidance.

Or

(b) What is SART? How it is used in emergency?

14. (a) Explain the similarities and difference between GNSS and GPS.

Or

(b) Explain what are the errors affecting the accuracy of soundings of depth by echo sounder.

C–3303

15. (a) Calculate the Value of coefficient A. If the following deviations were known to exist.

Comp Hdg   N   NE   E   SE   S   SW   W   NW

Deviation 8°E 3°F 2°W 5°W 1°W 5°F 2°F E°W

Or

(b) What is phasing?

(c) Explain the operation of an "EPIRB".

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

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

16. (a) Define coefficient C.

(b) Explain ship's Permanent Magnetism with diagram.

Or

(c) During the course of swing through 360 the following compass bearings of a planet were observed and true bearing was calculated as shown below :

Find

(i) Variation

(ii) Coefficient B and C

Comp Co   N   NE   E   SE   S   SW   W   NW

Comp. Brg   069° 064° 064°   065°   063° 063.5° 071° 077°

True Brg   075° 075.5° 076° 076.5° 077° 078° 079° 079.5°

17. (a) Explain the Block diagram of an Echo Sounder and Explain all Controls of the Echo Sounder and functions.

Or

(b) Draw a Block Diagram of a Marine Radar and explain all Controls and Limitations.

C–3303

18. (a) Own course 234°(T) at 14 knots. Target informations as below :

Ship's Time Bearing (T) Range (M)

    2008   300°   6.00

    2014   299°   3.95

Find

(i) CPA range and time

(ii) Course and Aspect of Target

(iii) Aspect at 2014 At 2016, own ship reduced speed to 6 kts,

(iv) The predicted CPA range and time.

Or

(b) Find the following from the given own ship and target information :

Own Vessel Course : 042°(T); Own Vessel Speed: 15 kts. Target information :

Ship's time Bearing (T) Range (M)

    0640   351°   11.0

    0652   355°   07.1

Find

(i) CPA and TCPA

(ii) Course and Speed of Target

(iii) Aspect at 0652

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