# INDIAN MARITIME UNIVERSITY

(A Central University, Government of India)

## Entrance Test for Admission to Ph.D / MS (By Research)

Subject Name: **MARINE ENGINEERING**                    Maximum Marks: **120**

Date:    **19.01.2019**                                              Time: **2 Hours**

## INSTRUCTIONS

1. Prior to the commencement of the examination, Candidate should check that this question paper does not have any unprinted or torn or missing pages or items, etc. If so, he has to get it replaced with a complete test booklet.

2. This Question Paper contains 120 questions. Each correct answer gets 1 mark. There correct answer gets 1 mark. There are no negative marks for wrong answers.

3. Candidate has to mark answers only in the OMR sheet provided. Follow the instructions given on the OMR sheet.

4. You have to bubble all your answer in Blue or Black Pen on the separate OMR Answer Sheet provided. See directions in the Answer Sheet.

5. More than one bubbled answer per question will make the question invalid for evaluation.

6. Please note that it is the candidate's responsibility to fill in the Roll Number carefully on the OMR sheet.

7. You have to enter your Roll Number in the Question Paper in the Box provided alongside.

8. DO NOT write anything else on the Test Booklet.

9. At the end of the examinations both OMR sheet and the Question booklet have to be handed over to the Invigilator.

10. Sheets for rough work are appended in the Question Paper at the end.

11. Essay Test Question is mentioned at the end of this Question Paper.

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*Note: Only one out of four answers is correct. Please read all the alternatives before answering.*

1. A day is celebrated as the National Maritime Day in our country. This is in remembrance of which significant event?
   a. Building of the first Indian Ship
   b. Arrival of the first Indian ship in London
   c. Establishment of the first Indian shipping company
   d. Sailing of first Indian ship

2. In the absence of international shipping
   a. Half the world would freeze
   b. Half the world would starve
   c. Nothing will happen
   d. Half the world would starve and the other would freeze

3. Which is the largest Indian ship owning company?
   a. Essar Shipping
   b. Great Eastern Shipping
   c. Shipping Corporation of India
   d. Shreyes Shipping

4. Which country supplies maximum seafarers to the global shipping industry?
   a. India
   b. Philippines
   c. China
   d. Russia

5. Cargoes while loading on ships may be in following condition?
   a. Packed
   b. Loose
   c. Inliquid form
   d. All of these

6. Which port city is famous for ship scrapping?
   a. Kolkata
   b. Bhavnagar
   c. Vizag
   d. Mumbai

7. Ships are made of which main material?
   a. Steel
   b. Wood
   c. Alloys
   d. Composites

8. Which of these is important for the navigation of a ship while near the coast?
   a. Tide
   b. Current
   c. Wind
   d. All of these

9. Which of these would be in the functions of the Director General of Shipping?
   a. Registry of ships
   b. All of these
   c. Certification of seafarers
   d. Implementation of MS Act on Indian Ships

10. The Indian legislation for commercial ships is called?
    a. Marine Insurance Act
    b. Merchant Shipping Act
    c. Admiralty Act
    d. Maritime Shipping Act

11. Territorial waters of India extend to what distance from baseline?
    a. 10 Nautical miles
    b. 15 Nautical miles
    c. 12 Nautical miles
    d. 20 Nautical miles

12. Port of Kandla is situated in which state?
    a. Gujarat
    b. Maharashtra
    c. Karnatak
    d. West Bengal

13. If it is 4 p.m. in Chennai, time in London will be
    a. Less than 4 pm
    b. More than 4 pm
    c. Noon
    d. 4 am

14. Which system is used for navigating modern ships while in deep seas?
    a. Star
    b. Sun
    c. Satellite
    d. Moon

15. First modern Indian ship was built in s shipyard located in which city?
    a. Mumbai
    b. Visakhapatnam
    c. Kochi
    d. Chennai

16. Who is the only Indian who has headed the International Maritime Organization in London?
    a. Sumati Morarjee
    b. C.P. Srivastava
    c. Ramaswami Mudaliar
    d. Ravi Mehrotra

17. In which city does the Indian Maritime University have two campuses?
    a. Chennai
    b. Mumbai
    c. Kolkata
    d. Kochi

18. Programs at the Indian Maritime University leads to a qualification in which discipline?
    a. All of these
    b. Marine Engineering
    c. Nautical Science
    d. Naval Architecture

19. Sinking of Titanic led to development of which international convention?
    a. MARPOL
    b. STCW
    c. SOLAS
    d. LOADLINE

20. Movement of cargo from Chennai to Kochi by ship will be referred as?
    a. Inland Waterway Shipping
    b. Coastal Shipping
    c. Deepwater Shipping
    d. None of these

21. Breech of cyber security on board ship can effect which activity of the ship
    a. Navigation
    b. Communication
    c. Machinery Operation
    d. None of these

22. Protection of marine environment covers whish of the following areas?
    a. Discharge of pollutants from ship
    b. All of these
    c. Type of paint of the hull of the ship
    d. Type of exhaust gases from the engine of the ship

23. Current quality management standard for certification is?
    a.    ISO 9001:2008
    b.    ISO 9001:2008
    c.    ISO 9001:2015
    d.    ISO 14001:2015

24. Quality management certification is based on the standards set by which international organization?
a. International Organization for Standardization
b. International Standards Organization
c. International Safety Organization
d. International Standards Office

25. Ships travel from one place to another. What is done so that a national identity is provided to a commercial ship?
a. Names of the ships are broadcasted
b. Ships are registered in a country
c. Ships of one country travel together
d. National identity is not required as the ships move in open seas

26. Which of these ships provide assistance to the oil fields in the sea?
    a. Container ships
    b. Offshore supply ships
    c. Chemical tankers
    d. Bulk carriers

27. Cost of transportation per unit is minimum in which mode of transportation?

    a. Aircraft
    b. Train
    c. Ship
    d. Truck

28. Considering the same size, which type of ship will be most expansive?
    a. Gas carrier
    b. Oil tankers
    c. Container Ships
    d. Bulk Carriers

29. Motor cars are transported by which type of ships?
a. Heavy lift ships
b. Supply ships
c. Ro-ro ships
d. Container ships

30. What does ship owner earn to carry cargo from one place to another?
    a. Freight
    b. Fare
    c. Hire
    d. Demurrage

31. Which of these ships carry crude oil?
    a. VLVV
    b. ULCC
    c. Suexmax
    d. All of these

32. Process of refueling the ship is called?
    a. Bunkering
    b. Ballasting
    c. Berthing
    d. Maneuvering

33. What is the function of propeller on ship
    a.   Cooling the engines
    b.   Turning the ship
    c.   Moving the ship
    d.   Ballasting the ship

34. Which fuel is used on board ships?
    a. Heavy Oil
    b. All of these
    c. High Speed Oil
    d. Diesel oil

35. A ship without cargo requires ballast. What material is used for this?
    a. Aluminum ingots
    b. Steel Pipes
    c. All of these
    d. Sea Water

36. Vishwas sold an item for Rs.7,200 and incurred a loss of 20 per cent. At what
    price should he have sold the item to have gained a profit of 20 per cent.
    a)    Rs.10, 800
    b)    Rs.8,950
    c)    Rs.11,200
    d)  Cannot be determined

37. The average age of 20 students of a section is 12 years. The average age of 25 students of another section is 12 years. What is the average age of both the sections combined together?
   a. 11.5 years
   b. 11 years
   c. 11.75 years
   d. 12 years

38. A man runs 3 km per hour in still water. If the river is running at 1 km per hour, it takes 45 minutes to row to a place and back. How far is the place?

   a) 5 kms
   b) 4 kms
   c) 3 kms
   d) None of these

39. A person invested Rs.2 lakhs at 12 percentage per annum interest for one year. If he invests Rs.500 more, he is eligible for 13 percentage per annum interest. How much more interest he would receive if he would have accepted the second option?

   a) Rs.2065
   b) Rs.2165
   c) Rs.2155
   d) Rs.2045

40. If a car takes 40 minutes to cover a distance of 34 kms, what is its speed per hour?

   a) 61 kms
   b) 51 kms
   c) 50 kms
   d) 45 kms

41. What should come in place of the question mark (?) in the following number series?   2  5  11  23  47  ?

   a) 95
   b) 93
   c) 98
   d) 94

42. In a class of 60 students, 40 per cent can speak only Hindi, 25 per cent can speak only English and rest of the students can speak both the languages. Total how many students can speak English?

    a)   32
    b)   28
    c)   36
    d)   15


43. Which of the following is not a correct statement about Infrasound?

    a)  Infrasound has a frequency lower than 5000 Hertz
    b)  Infrasound is produced/detected by elephants and whales
    c)  Infrasound can travel longer distances than high frequency sound waves
    d)  All the above are correct


44. Germany will partner with India to develop which cities as smart cities?

a)  Jaipur, Ahmedabad and Ludhiana
b)  Kochi, Bhubaneswar and Coimbatore
c)  Allahabad, Ajmer and Visakhapatnam
d)  Kakinada, Sholapur and Udaipur


45. A device for measuring the depth of sea is called
    a)  Altimeter
    b)  Fathometer
    c)  Hydrometer
    d)  Manometer


46. A motorboat, whose speed in 15 km/hr in still water goes 30 km downstream and comes back in a total of 4 hours 30 minutes. The speed of the stream (in km/hr) is:

    a)   4
    b)   5
    c)   6
    d)   10

47. One-third of Rahul's savings in National Savings Certificate is equal to one-half of his savings in Public Provident Fund. If he has Rs.1,50,000 as total savings, how much has he saved in Public Provident Fund?
    a) Rs. 30,000
    b) Rs. 50,000
    c) Rs. 60,000
    d) Rs. 90,000

48. In a mixture of 60 litres, the ratio of milk to water is 2:1. If this ratio is to be 1:2, then the quantity of water to be further added to the mixture is:

    a) 20 litres
    b) 30 litres
    c) 40 litres
    d) 60 litres

49. Three times the first of three consecutive odd integers is 3 more than twice the third. The third integer is:
    a)    9
    b)    11
    c)    13
    d)    15

50. The effective annual rate of interest corresponding to a nominal rate of 6% per annum payable half-yearly is:

a)  6.06%
b)  6.09%
c)   6.12%
d)  6.15%

51. Two ships are sailing in the sea on the two sides of a lighthouse. The angle of elevation of the top of the lighthouse is observed from the ships are $30^0$ and $45^0$ respectively. If the lighthouse is 100 m high, the distance between the two ships is:
    a)    173 m
    b)    200 m
    c)    273 m
    d)    300 m

52. Identify the odd man out of following set of numbers: 396, 462, 572, 427, 671, 264

    a) 396
    b) 427
    c) 671
    d) 264

53. In a lottery, there are 10 prizes and 25 blanks. A lottery is drawn at random. What is the probability of getting a prize?
    a)    1/10
    b)    2/5
    c)    2/7
    d)    5/7

54. If log 2 = 0.3010 and log 3 = 0.4771, the value of $\log_5$ (512) is:
    a)    2.870
    b)    2.967
    c)    3.876
    d)    3.912

55. A pump can fill a tank with water in 2 hours. Because of a leak, it took $2\frac{1}{3}$ hours to fill the tank. The leak can drain all the water of the tank in:

    a)    $4\frac{1}{3}$ hours
    b)    7 hours
    c)    8 hours
    d)    14 hours

56. After the division of a number successively by 3, 4 and 7 the remainders obtained are 2, 1 and 4 respectively. What is the number?

    a) 80
    b) 76
    c) 41
    d) 53

57. 6 men and 8 women can do as much work in a given time as 3 men and 13 women. The capacities of a man and a woman are in the ratio

    a) 3:8
    b) 3:5
    c) 5:3
    d) 5:8

58.  The gross income of a person is Rs.25,000. 20% of his income is exempted from income-tax and the rate of income tax is 5%. His net income in rupees is:

    a) 23,500
    b) 24,000
    c) 24,500
    d) None of these

59. The profit earned after selling an article for Rs.1754/- is the same as loss incurred after selling the article for Rs 1492/-. What is the cost price of the article?

    a.  Rs. 1523
    b.  Rs.1623
    c.  Rs.1689
    d.  Rs.3246

60. A tank is connected to pipes. One of those pipes can fill the tank in 15 minutes while the other can empty it in 10 minutes. If the tank is initially 3/5 full and both pipes are simultaneously opened, how much time it will take to fill or empty the tank?
    a)  12 minutes
    b)  15 minutes
    c)  18 minutes
    d)  10 minutes

61. ME-B8/9.3 (Dot 3) engines does have the following
    a. Governor
    b. Starting Air Distributors
    c. A camshaft operated exhaust valve
    d. Regulating Shaft

62. RTflex engines does have the following
    a. Jerk type of fuel pump
    b. Engine driven pumps and operated on cam
    c. Servomotor on camshaft that reverses the engine
    d. Exhaust valve actuation pump

63. Cast iron has the following properties
    a. Castings requires heat treatment
    b. Castings do not require heat treatment
    c. Homogeneity of Strength
    d. Modulus of elasticity is same as that of steel.

64. In a C.I engine clearance volume is
    a. 7.5% to 5 % of stroke volume
    b. 5 % to 3 % of Stroke volume
    c. 5 % to 2 % of Stroke Volume
    d. No relation between Stroke volume and Clearance volume.

65. In a C.I engine mechanical efficiency
    a. increases with load
    b. decreases with load
    c. remains same irrespective of load
    d. decreases steadily

66. The main reason counterweights are added to crankshafts is to
    a. Reduce Piston Thrust
    b. Reduce Crankshaft end Thrust
    c. Provide uniform loading and wear of main bearings
    d. Increase strength of crank web

67. In which year was the International Convention for the Prevention of Pollution from Ships, now known universally as MARPOL adopted?
    a. 1914
    b. 1965
    c. 1973
    d. 1983

68. The ratio of inertia force to viscosity is known as

    a. Biot number
    b. Reynold number
    c. Cauchy number
    d. Euler number

69. The Reynolds number for laminar flow is

    a. more than 2800
    b. more than 2000
    c. less than 2000
    d. between 2000 and 2800.

70. A pipe has a diameter of 0.2 m in which a fluid flows with a velocity of 0.3 m$^3$/s. Determine whether the flow is laminar or turbulent calculating the Reynolds number. Assume kinematic viscosity = $0.5 \times 10^{-4}$ m$^2$ /s.
    a. the flow is laminar having Reynolds number 1200
    b. the flow is turbulent having Reynolds number 2100
    c. the flow is laminar having Reynolds number 2200
    d. the flow is neither laminar nor turbulent

71. Head loss h$_f$ due to friction is given by

    a. $4\,f\,l\,v^2 / g\,d$
    b. $4\,f^2\,l\,v / 2\,g\,d$
    c. $2\,f\,l\,v^2 / 2\,g\,d$
    d. $4\,f\,l\,v^2 / 2\,g\,d$

72. Which formula is used to calculate head loss in valves?

    a. $K^2\,(v / 2\,g)$
    b. $K\,(v / 2\,g)$
    c. $K\,(v^2 / 2\,g)$
    d. none of the above

73. In hydraulic systems,

a. the mechanical energy is transferred to the oil and then converted into mechanical energy
b. the electrical energy is transferred to the oil and then converted into mechanical energy
c. the mechanical energy is transferred to the oil and converted into electrical energy
d. none of the above

74. Positive displacement pump used in hydraulic systems have
a. high viscosity of fluids
b. low efficiency
c. required volume of fluid cannot be discharged
d. all the above

75. Calculate the power absorbed by the pump if, it has a flow rate of 20 cc/rev and develops a maximum pressure of 70 bar, when electric motor runs at a speed of 1200 rpm.
a. 1.9 kW
b. 2.8 kW
c. 2.3 kW
d. none of the above

76. Volumetric efficiency is the ratio of
a. theoretical flow rate to actual flow rate
b. actual flow rate to theoretical flow rate
c. actual fluid power to pump input power
d. none of the above

77. Which of the following is a hydrodynamic pump?
a. vane pump
b. centrifugal pump
c. gear pump
d. piston pump

78. Which type of displacement is observed in gear pumps?
a. both fixed and variable displacement
b. only variable  displacement

c. only fixed  displacement

d. none of the above

79.  What causes suction of fluid into the gear pump?
    a. when pressure drops during disengagement of teeth at the suction side
    b. when pressure increases during disengagement of teeth at the suction side
    c. when pressure drops during engagement of teeth at the suction side
    d. when pressure increases during engagement of teeth at the suction side

80. Aftercoolers are used with air compressors to _____
    a. ensure complete expansion of the compressed air
    b. decrease the density of compressed air o
    c. dampen pressure pulses in the discharge air
    d. reduce the temperature of compressed air

81. What is the color-coding for a storage container of R-134a refrigerant?

    a. green
    b. light blue
    d. purple
    d. grey

82. What is the physical state and pressure condition of refrigerant as it leaves a receiver in a typical refrigeration system?

    a. low-pressure liquid
    b. high-pressure vapor
    c. high-pressure liquid
    d. low-pressure vapor

83. The safety heads of most large reciprocating compressors used in refrigeration systems are held in place by what means?

    a. discharge pressure in the relief valve return line
    b. heavy coil springs
    c. large Teflon gaskets
    d. tack welding on the sides

84. Concerning the charging of refrigerant into a vapor compression refrigerating system, which of the following is true?

    a. when charging as a vapor it should be directly to the receiver only
    b. when charging as a liquid it may be to the low or high side
    c. when charging as a liquid it should be to the low side only
    d. when charging as a liquid it should be to the high side only

85. Which of the following provisions for thermal expansion for shell-and-tube heat exchangers only requires a single tube sheet located at one end?

a. A shell-and-tube heat exchanger featuring a floating tube sheet.
b. A shell-and-tube heat exchanger featuring U-tube type tubes.
c. A shell-and-tube heat exchanger featuring a packed tube sheet.
d. A shell-and-tube heat exchanger featuring bayonet type tube

86.What statement is true concerning the construction of watertight bulkheads?

 a. The strakes of the bulkhead are vertical and the stiffeners are horizontal and the bulkhead must have increasingly greater strength towards the top.
b. The strakes of the bulkhead are horizontal and the stiffeners are vertical and the bulkhead must have increasingly greater strength towards the base.
 c. The strakes of the bulkhead are horizontal and the stiffeners are vertical and the bulkhead must have increasingly greater strength towards the top.
 d. The strakes of the bulkhead are vertical and the stiffeners are horizontal and the bulkhead must have increasingly greater strength towards the base.

87. Which of the following propulsor types represents the proper terminology for a Kort nozzle?

    a. Ducted propellers
    b. Cycloidal propellers
    c. Tandem propellers
    d. Vane wheels

88. Air leakage between the shaft and stuffing box packing in a centrifugal pump is prevented by _____.

    a. the stuffing box gland
    b. a compressed packing gland
    c. a liquid seal
    d. lantern rings between the packing rings

89. If a centrifugal pump were continually operated with the discharge valve closed, the _____.

a. motor controller overload would open
b. pump would eventually overheat
c. relief valve would continuously cycle open
d. motor would overheat

90. What statement represents the ideal gas law?

a. For a given mass of a gas, the volume is directly proportional to its pressure and inversely proportional to its temperature.
b. For a given mass of a gas, the volume is inversely proportional to its pressure and inversely proportional to its temperature.
c. For a given mass of a gas, the volume is inversely proportional to its pressure and directly proportional to its temperature.
d. For a given mass of a gas, the volume is directly proportional to its pressure and directly proportional to its temperature

91. What statement is true concerning the keel arrangements of a double bottomed ship?

a.   A ship with an "I-section keel" has a single continuous transverse girder positioned along the centerline and perpendicular to the flat plate keel, and a ship with a "duct keel" has two continuous transverse girders spaced apart and positioned on either side of the centerline and perpendicular to the flat plate keel.

b.   A ship with an "I-section keel" has a single continuous longitudinal girder positioned along the centerline and perpendicular to the flat plate keel, and a ship with a "duct keel" has two continuous longitudinal girders spaced apart and positioned on either side of the centerline and perpendicular to the flat plate keel.

c.   A ship with a "duct keel" has a single continuous longitudinal girder positioned along the centerline and perpendicular to the flat plate keel, and a ship with an "I-section keel" has two continuous longitudinal girders spaced apart and positioned on either side of the centerline and perpendicular to the flat plate keel.

d.   A ship with a "duct keel" has a single continuous transverse girder positioned along the centerline and perpendicular to the flat plate keel, and a ship with an "I-section keel" has two continuous transverse girders spaced apart and positioned on either side of the centerline and perpendicular to the flat plate keel.

92. Even though bilge keels do provide some improvement in longitudinal strength at the bilge radius, what is the primary purpose of the bilge keels?

 a. Dampen the tendency the ship has to heave.

 b. Dampen the tendency the ship has to yaw. •

 c. Dampen the tendency the ship has to roll.

 d. Dampen the tendency the ship has to pitch.

93. When making welding repairs to a ship's structural member, why is it important to avoid weld faults?

 a. The poor quality weld can lead to points of stress concentration, which in addition to a weak joint, may form the starting points for cracks.

 b. The poor quality weld can lead to points of stress relief, which in addition to a weak joint, may form the starting points for cracks.

 c. The poor quality weld can lead to points of stress relief, which in addition to a weak joint, may cause plate distortion.

 d. The poor quality weld can lead to points of stress concentration, which in addition to a weak joint, may cause plate distortion

94. The alarm of a diesel engine oil mist detector is set at

 a. the lower explosive limit.
 b.  the upper explosive limit.
 c. 50 percent of the upper explosive limit.
 d. about 5 percent of the lower explosive limit.

95. When indicating a small leak in a Freon refrigeration system, the flame color of a halide leak detector torch will change from

 a. pale blue to green.
 b. green to pale blue.
 c. white to violet.
 d. red to green

96. Standard metacentric  height  (GM) for outboard journey of fully loaded containership is

 a. 0.5-1.5
 b. 1.5- 2.2
 c. 0.8-1.0

d. 0.3-0.6

97. Which method is to achieve desired level of stability beside changing Buoyancy
    a. by increasing waterplane area coefficient $C_{wp}$
    b. decreasing the area below the righting lever curve
    c.  Deceasing  reserve buoyancy
    d. decreasing transverse moment inertia of water plane

98. Kort nozzle has the following advantage:

    a. course changing ability improves during astern operation
    b. course stability improves
    c.  Cavitations  occur later
    d.  Fast stop manoeuvres are possible

99. Miller  Cycle  is  concerned  is concerned with
    a. closing the inlet valve earlier
    b.  closing the exhaust  valve earlier
    c.  Crank Shaft bearings cycle
    d.  Keeping the exhaust valve more time

100. Stribeck curve defines

    a.  Three types of lubrication- boundary, Mixed & Elasto hydrodynamic ,  and hydrodynamic
    b.  Two types of Lubrication- Mixed & Elasto hydrodynamic ,  and hydrodynamic
    c.  Mixture of Glide and Blend Refrigerant
    d.  Mixture of Zeotropic and Azeotropic refrigerants.

101. R407A and R407C are

    a. Azeotric refrigerant mixture
    b. High organic Compounds
    c. Zeotropic refrigerant mixture
    d. Glide refrigerant

102. An approximation to a crank angle based diagram can be made with mechanical indicators known as

    a. Indicator card
    b. Draw Card

c. Stroke Based card

d. Sankey Diagram

103.Noise reduction measures in main diesel engines room are

a. Internal insulation of the scavange air receiver

b. Helmholtz resonator lining in the scavange air pipe

c. Internal insulation of the scavange air cooler

d. High noise amplification material to the turbocharger inspection cover

104. Which one is correct for IMO noise limits in dB(A)

a. Machinery spaces ( not continuously manned) ►► 110

b. Navigating Bridge and Chartrooms►►80

c. Machinery control rooms ►► 85

d. Radar rooms    ►►75

105. In case of ship's low sea suction, a water box is to be constructed between the sea suction valve and the top with a minimum distance of  ----?

a. 430 mm

b. 400 mm

c. 330 mm

d. 300 mm.

106.    Ships "MCT1 in"  is useful in calculating  ----------- at which a ship will float for   a given condition of loading

a. Length of the ship

b. Width of the ship

c. Draughts of the ship

d. Loll angle  of the    ship

107.    The phenomenon of atypical motion  of  the   Bulk  Jupitar" (wobbling) with the cargo-------  was found during the  voyage and consequently capsizing of vessel  .

a. Iron Ore

b. Manganese Ore

c. Aluminum ingots

d. Bauxite Fines

108. Slope of the statical stability at the origin is a measure of ------

a. Stability range

b. Angle of heel

c. Initial Stability

d. Draughts

109.  A newly constructed vessel ,when launched to water, tilts to portside by 3 degrees and stays at that inclination. Reason is -----
    a. Loll
    b. Asymmetric loading
    c. Free surface effect
    d.  Less reserve buoyancy

110." Humps and Hollows"  are faced by ships due to
    a. Ships collision
    b. Wave interference
    c. Oil dispersion
    d.  Ships critical speed

111." Analogue Addressable" used in ---------?
    a. Fire alarm system
    b. Refrigeration system
    c. Crankcase relief valve
    d. Starting Air line

112. Typical "LEL" value of crankcase oil mist detector is ---

    a. 60mg/l
    b. 50mg/l
    c. 40mg/l
    d. 30mg/l

113. Which one IMO convention is not related to pollution prevention?

    a. Intervention 1969
    b. OPRC 1990
    c. AFS 2001
    d. CSC 1972

114. "MODBUS"

    a. A serial communication protocol
    b. A parallel communication protocol
    c. RS 232
    d. RS 485

115. Corona effect in high voltage can be identified by

a. bushy sparks
b. faint violet glow
c. red light
d. arcing between conductors and earth.

116. The phenomenon of corona in high voltage is generally accompanied by

a. a hissing sound
b. a bang
c. magnetic hum
d. all of the above.

117. Impulse testing of high voltage transformers is done to determine the ability of

a. bushings to withstand vibrations
b. insulation to withstand transient voltages
c. windings to withstand voltage fluctuations
d. all of the above.

118. Which of the following gas has been used as insulating medium in electrical appliances?

a. Nitrogen
b. Carbon dioxide
c. Sulphur hexafluoride
d. Freon.

119. "Parametric Rolling" is experienced by

a. Bulk Cargo ships
b. Container Ship
c. Chemical Tanker
d. OBO carrier

120. The main difference in different types of Scrubber used to reduce to control $SO_x$ is ---

a. The availability of space
b. The removal of sludge
c. The way of Alkalinity added
d. Single inlet, Multi inlet or Integrated inlet

# ESSAY TEST

**(One Hour)**

Write an essay on the topic of your proposed research covering the following components in not less than 400 words:

- Objective
- Brief background
- Data requirement
- Methodology proposed