

Sample QP for PhD / MS - Marine Engineering

Maximum Marks: 120

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.
DO NOT write anything else on the Test Booklet.
8. At the end of the examinations both OMR sheet and the Question booklet have to be handed over to the Invigilator.
9. Sheets for rough work are appended in the Question Paper at the end.

Multiple Choice questions in General Aptitude for Ph.D / M.S. (By Research)

1. The monthly incomes of X and Y are in the ratio of 4:3 and their monthly expenses are in the ratio of 3:2. However, each saves Rs. 6000/-per month. What is their total monthly income?
 - (a) Rs. 28,000/-
 - (b) Rs. 42,000/-
 - (c) Rs. 56,000/-
 - (d) Rs. 84,000/-

2. Suppose the average weight of 9 persons is 50 kg. The average weight of the first 5 persons is 45 kg, whereas the average weight of the last 5 persons is 55 kg. Then, the weight of the 5th person will be
 - (a) 45 kg
 - (b) 47.5 kg
 - (c) 50 kg
 - (d) 52.5 kg

3. What is the value of x in the following logarithm equation?
 $\text{Log}(x+2) - \log(x-1) = \log 2$
 - (a) 5
 - (b) 4
 - (c) 3
 - (d) 2

4. "Price is not the same thing as value. Suppose that on a day the price of everything viz., coal, bread, postage stamps, the taxi fare, the rent of houses etc. were to double. Prices then would certainly rise, but values of all things except one would not."
The writer wants to say that if prices of all things were doubled,
 - (a) the values of all things would remain constant.

- (b) the values of the things sold would be doubled.
- (c) the values of all things bought would be halved.
- (d) the values of money only would be halved.

5. During the last summer vacation, John went to a summer camp where he took part in hiking, swimming and boating. This summer, he is looking forward to a music camp where he hopes to sing, dance and learn to play the guitar. Based on the above information, four conclusions as given below, have been made.

Which one of these logically follows from the information given above?

- (a) John's parents want him to play the guitar.
- (b) John prefers music to outdoor activities.
- (c) John goes to some type of camp every summer.
- (d) John likes to sing and dance.

6. The number of deaths among the army personnel is 8 in 1000, but among the civilian population, it is 20 per 100. Which of the following inferences can be drawn from this statement?

- (a) It is better to join the army.
- (b) The relationship is fortuitous.
- (c) Quality of Life Index is very high within the armed forces.
- (d) The groups can't be compared due to their heterogeneity.

7. A person walks 12 km due north, then 15 km due east, after that 19 km due west and then 15 km due south. How far is he from the starting point?

- (a) 5 km
- (b) 9 km
- (c) 12 km
- (d) 15 km

8. The sum of income of A and B is more than that of C and D taken together. The sum of income of A and C is the same as that of B and D taken together. Moreover, A earns half as much as the sum of the income of B and D, whose income is the highest?

- (a) A
- (b) B
- (c) C
- (d) D

9. As per agreement with a bank, a businessman had to refund a loan in some equal installments without interest. After paying 18 installments he found that 60% of his loan was refunded. How many installments were there in the agreement?

- (a) 22
- (b) 24
- (c) 30
- (d) 32

10. A gardener increased the area of his rectangular garden by increasing its length by 40% and decreasing its width by 20%. The area of the new garden is

- (a) has increased by 20%.
- (b) has increased by 12%.
- (c) has increased by 10%.
- (d) remains exactly the same as the old area.

11. In a meeting, the map of a village was placed in such a manner that south-east becomes north, north-east becomes west and so on. What will south become?

- (a) North.
- (b) North-east.
- (c) North-west.
- (d) West.

12. Running at a speed of 60 km per hour, a train passed through a 1.5 km long tunnel in two minutes. What is the length of the train?

- (a) 200 m.
- (b) 300 m.
- (c) 500 m.
- (d) 800 m.

13. Aditya attempted 12 questions in the examination for Science paper and secured full marks in all of them. If he obtained 60% in the test and all the questions carried equal marks, then what is the number of questions in the test?

- (a) 20.
- (b) 22.
- (c) 24.
- (d) 30.

14. Lead, ingested or inhaled, is a health hazard. After the addition of lead to petrol has been banned, what still are the sources of lead poisoning?

- 1. Smelting unit.
- 2. Pens and pencils.
- 3. Paints.
- 4. Hair oils and cosmetics.

Select the correct answer from the choices given below?

- (a) 1 and 3 only.
- (b) 1, 2 and 3 only.
- (c) 2 and 4 only.
- (d) All of above (1, 2, 3 and 4).

15. Rainbow is produced when sunlight falls on drops of rain. Which of the following physical phenomenon are responsible for this?

- 1. Dispersion.
- 2. Refraction.
- 3. Internal reflection.

Select the correct answer from the choices given below?

- (a) 1 and 2 only.
 - (b) 2 and 3 only.
 - (c) 1 and 3 only.
 - (d) All of above (1, 2 and 3).
16. The known forces of nature can be divided into four classes, viz. gravity, electromagnetism, weak nuclear forces and strong nuclear forces. With reference to them, which one of the following statements is not correct?
- (a) Gravity is the strongest of the four.
 - (b) Electromagnetism acts only on particles with an electric charge.
 - (c) Weak nuclear force causes radioactivity.
 - (d) Strong nuclear force holds protons and neutrons inside the nucleus of an atom.
17. Acid rain is caused by the pollution of environment by:
- (a) Carbon dioxide and Nitrogen.
 - (b) Carbon monoxide and Carbon dioxide.
 - (c) Ozone and Carbon dioxide.
 - (d) Nitrous oxide and Sulphur dioxide.
18. Salts of which of the following elements provide colour to the fireworks:
- (a). Zinc and Sulphur.
 - (b). Potassium and Mercury.
 - (c). Strontium and Barium.
 - (d). Chromium and Nickel.
19. Which one of the following is the correct sequence of the given substances in the order of their densities?
- (a). Steel>Mercury>Gold
 - (b). Gold >Mercury> Steel
 - (c). Steel> Gold > Mercury
 - (d). Gold > Steel > Mercury

20. In addition to fingerprint scanning, which of the following can be used in the biometric identification of a person?

1. Iris scanning.
2. Retinal scanning.
3. Voice recognition.

Select the correct answer from the choices given below?

- (a) 1 only.
- (b) 2 and 3 only.
- (c) 1 and 3 only.
- (d) All of above (1, 2 and 3).

21. The principle on which Optical fibre works is:

- (a) Total internal reflection.
- (b) Scattering.
- (c) Refraction.
- (d) Interference.

22. Diffusion of light in the atmosphere takes place due to which of the following:

- (a) Carbon dioxide.
- (b) Dust particles.
- (c) Helium.
- (d) Water vapour.

23. Which of the following is/are the example(s) of chemical change?

1. Crystallization of sodium chloride.
2. Melting of ice.
3. Souring of milk.

Select the correct answer from the choices given below?

- (a) 1 and 2 only.

- (b) 3 only.
- (c) None of above (1, 2 and 3).
- (d) All of above (1, 2 and 3).

24. “If political leadership fails to emerge, there is likelihood of military taking over power in developing countries. Radical student groups or labour may try to raise revolution but they are not likely to compete with the military. Military intervention, rule, and withdrawal from politics is closely related to a society’s level of political development”

In the context of political development, the assumption in the above passage is that Political leadership is not an effective instrument.

- (b) Military fills in political vacuum.
- (c) Military intervention is inevitable for political development.
- (d) None of the above.

25. A military code writes SYSTEM as SYSMET and NEARER as AENRER. Using the same code, FRACTION can be written as:

- (a) CARFTION
- (b) FRACNOIT
- (c) NOITCARF
- (d) CARFNOIT

Maritime Sector

26. The head quarter of the international Maritime Organization is located

- (a) Geneva
- (b) New York
- (c) London
- (d) Washington

27. The International Maritime Organization is an UN body for regulating

- (a) Cargo & defence ships
- (b) Cargo & passenger ships
- (c) Canals & ports
- (d) Ships & ports

28. The largest Indian shipping company in the private sector is

- (a) Great Eastern
- (b) Shipping Corporation of India
- (c) Essar
- (d) Mercator

29. Merchant navy primarily covers

- (a) Defence of the country
- (b) Underwater exploration
- (c) Carriage of goods & passengers
- (d) Managing ports

30. Largest export from India in terms of volume is

- (a) Tea
- (b) Spices
- (c) Iron Ore
- (d) garments

31. Largest import to India in terms of volume is

- (a) Crude Oil
- (b) Grains
- (c) Cement
- (d) Fertilizer

32. Sagarmala is a significant project for

- (a) Connecting Ports
- (b) Improving infrastructure
- (c) Improving logistics
- (d) All of these

33. What is special about an Indian Team which recently circumnavigated the world in a sailing boat?

- (a) All Girl team of 6 Indian Naval officers
- (b) 03 male and 03 female Indian Naval officers
- (c) All men team of 6 Indian Naval officers
- (d) All Girl team of 6 Indian officers, 02 from Navy, 02 from Army and 02 from Air Force.

34. Who became the first Indian woman to receive IMO's Exceptional Bravery Award at Sea?

- (a) Captain S. Nilkeni
- (b) Captain Ruchika Malhotra
- (c) Captain Monika Mehrotra
- (d) Captain Radhika Menon

35. Panama Canal connects

- (a) Atlantic Ocean & Mediterranean Sea
- (b) Atlantic Ocean & Gulf of Mexico
- (c) Pacific Ocean & Atlantic Ocean
- (d) Mediterranean Sea & Red Sea

36. The continent through which all three imaginary lines, e.g. Equator, Tropic of Cancer and Tropic of Capricorn pass through is

- (a) Africa
- (b) Asia
- (c) Europe
- (d) Australia

37. First ship built in an Indian shipyard is

- (a) Loyalty
- (b) Rajendra
- (c) Jal Usha
- (d) Vikrant

38. The accident of Titanic led to the development of which international convention

- (a) SOLAS
- (b) loadline
- (c) MARPOL
- (d) STCW

39. Indian Maritime University has campuses in

- (a) Chennai & Mumbai
- (b) Chennai & Kolkata

- (c) Chennai & Kochi
- (d) All of these

40. For carrying cargo the ship owner earns

- (a) Freight
- (b) Demurrage
- (c) Hire
- (d) Dispatch

41. Bunkering is the process of

- (a) Refueling the ship
- (b) Loading the ship
- (c) Unloading the ship
- (d) Inspecting the ship

42. Rudder is used in ship for

- (a) Moving the ship
- (b) Turning the ship
- (c) Increasing the ship's speed
- (d) Stopping the ship

43. Sea water as ballast is used in ships for

- (a) Maintaining stability of a ship
- (b) when transmitting a distress message
- (c) Cooling of the engines of a ship
- (d) For converting to potable water

44. Main thrust for development and adoption of ISM Code came from the findings of accident involving

- (a) The Herald of Free Enterprise
- (b) Scandinavian Star
- (c) Exxon Valdez
- (d) Amoco Cadiz

45. The ISM Code is mandatory on ships and refers to the

- (a) International Shipping Market
- (b) International Seafarer's Management
- (c) Inter Shipping Management
- (d) International Safety Management

46. Master has the overriding authority and the responsibility to make decisions with respect to

- (a) Pollution prevention
- (b) Safety of the Ship
- (c) Safety and Pollution prevention
- (d) None of these

47. In a radio transmission from a ship 'Roger' means

- (a) I understand you
- (b) I agree with you
- (c) I hear you
- (d) I see you

48. 'Mayday' signal is used in shipping

- (a) when there is more than one emergency
- (b) when transmitting a distress message
- (c) Greeting another passing ship
- (d) Informing the authorities that all is well on board

49. The share of the Indian seafarers in the world is

- (a) 15%
- (b) 12%
- (c) 5%
- (d) 8%

50. Largest shipping company in the world is

- (A) Maersk
- (b) MSC
- (c) Evergreen
- (d) Mitsui OSK

51. The HQ of Directorate General of Shipping is located at

- (a) Chennai
- (b) New Delhi
- (c) Kolkata
- (d) Mumbai

52. Alang is famous for

- (a) Largest Indian Port
- (b) Ship Breaking
- (c) Ship building
- (d) Ship repairing

53. Anchor is used in ship for

- (a) Keeping the ship in one place
- (b) Securing the ship
- (c) Tying the ship with shore
- (d) Decorating the ship

54. Which of the following may be used as fuel in the engines of a ship

- (a) High Speed Oil
- (b) Furnace Oil
- (c) Diesel Oil
- (d) All of these

55. Iron ore is carried in

- (a) Bulk carriers
- (b) Oil Tankers
- (c) Container ships
- (d) General cargo ships

56. Computer are used onboard for

- (a) Marine communication
- (b) ship to shore communication
- (c) shore to ship communication
- (d) All of these

57. Which of the following are the types of ships

- (a) RORO
- (b) Reefer
- (c) Heavy Lift
- (d) All of these

58. Overall command of the ship is with Master who is the

- (a) Ship Manager
- (b) Chief Engineer
- (c) Captain
- (d) Harbour Master

59. The Indian Maritime University was established in

- (a) 2009
- (b) 2008
- (c) 2010
- (d) 2011

60. MS Act stands for

- (a) Merchant Shipping Act
- (b) Merchant Seamen Act
- (c) Marine Surveyors' Act
- (d) Maritime Shipping Act

Multiple Choice Questions in Marine Engineering

61. Modern marine turbochargers use a _____ type of compressor
- a) Radial flow
 - b) Axial flow
 - c) Turbulent flow
 - d) Mixed flow
62. In a direct connected or geared main propulsion diesel engine would be fitted with a
- a) Isochronous hunting governor
 - b) Rotating governor disc
 - c) Variable speed governor
 - d) Constant frequency governor
63. Which of the following functions is done by a cam operating an exhaust valve?
- a) It governs the timing of opening and closing of the valve.
 - b) It governs the speed at which the valve operates
 - c) It governs the amount of opening of the valve
 - d) All of the above
64. Which of the following actions takes place in the control circuit of an automatically fired auxiliary boiler when the desired steam pressure is obtained?
- a) A temperature sensing device opens the circuit breaker in the burner motor.
 - b) The high limit control secures power to the entire oil firing system.
 - c) The stack relay actuates the low limit control which breaks the ignition circuit.
 - d) The stack relay secures power to the high voltage side of the ignition transformer.

65. A diesel engine should not be operated at low loads for long periods of time because

- a) Heavy carbon deposits will buildup on the valves and in the exhaust
- b) Fuel dilution is increased at low load
- c) Exhaust valves may be damaged
- d) all of the above

66. The main function of tie rods in the construction of large, low speed diesel engines is to

- a) Stiffen the bedplate in way of the main bearings to increase the engine's longitudinal strength
- b) Accept most of the tensile loading that results from the firing forces developed during operation
- c) Mount the engine frame securely to the hull to prevent shaft coupling misalignment
- d) Connect the crosshead solidly to the piston rod

67. In order for microbiological growths to thrive in a fuel tank it is necessary for

- a) High temperatures to exist
- b) Low temperatures to exist
- c) Small amounts of water to be present
- d) Large amounts of water to be present

68. Which of the following statements correctly describes the phenomenon of surging in a 2- stroke crosshead type engine?

- a) Due to sudden increase in engine load the exhaust gases may flow back through scavenge ports causing surge
- b) Due to sudden decrease in engine load the turbocharger pressure ratio drops. This causes high pressure downstream of T/C in scavenge trunk causing flow reversal of scavenge air
- c) Due to sudden increase in engine load, the T/C turbine rpm may increase suddenly increasing the compressor pressure ratio to surge

d) Due to sudden decrease in engine load, the turbocharger may stall as the higher pressure downstream in exhaust system may cause reversal of flow of exhaust gases

69. Which of the following will be required to be done in order to reduce sulphur corrosion of Main Engine components

- a) Increasing the atomization pressure of fuel injectors
- b) Fitting exhaust valves with valve rotators
- c) Running engine at or near normal sea load
- d) All of the above

70. In order to reduce thermal loading on the upper part of the liner and increase the effectiveness of Cylinder lubrication, modern 2-stroke marine diesel engines are designed to have

- a) Cermet coated piston rings, bore cooled liners and uniflow scavenging
- b) High top land of piston crown and deeper cylinder cover with top land of crown extending into cylinder cover at TDC
- c) Low top land of the piston crown with bore cooled cylinder liner
- d) Bore cooled cylinder liner and bore cooled piston crown with toroidal shape combustion chamber

71. For simple harmonic motion Acceleration is directly depend upon,

- a) Displacement
- b) Amplitude
- c) Linear velocity
- d) Frequency

72. Critical damping depend upon

- a) Stiffness and amplitude
- b) Mass and stiffness
- c) Stiffness and viscosity of medium
- d) Mass and frequency of system

73. In an isothermal atmosphere, the pressure

- a) Varies with temperature
- b) Varies linearly with density
- c) remains constant
- d) Decrease with elevation

74. Piezometer is used to measure

- a) Low pressure
- b) Gas pressure
- c) Atmospheric pressure
- d) High pressure

75. Ratio of inertia force to surface tension is known as

- a) Weber's Number
- b) Mach number
- c) Froude number
- d) Euler number

76. Center of pressure for an inclined plane is always

- a) At Metacenter
- b) Below the centroid
- c) Above Metacenter
- d) Above the centroid

77. Drag and lift force experienced by an object in a fluid flow is due to

- a) Viscosity and turbulence
- b) Pressure and Turbulence
- c) Pressure and skin friction
- d) Pressure and Viscosity

78. The center of buoyancy is

- A) Centroid of displaced volume of fluid
- B) A point slightly above Metacenter
- C) Center of gravity of the body
- D) None of the above

79. Mixed flow turbines are basically

- a) Radial inward flow turbines
- b) Radial outward flow turbines
- c) Parallel flow turbines
- d) Partly Axial and partly radial turbines

80. Critical speed of turbine is

- a) Speed at which the natural frequency becomes equal to revolution per minute
- b) Speed at which turbine operates
- c) Speed equal to generator speed
- d) Speed at which shaft failure occurs

81. Cavitation can be avoided in centrifugal pump, if

- a) Suction pressure is low
- b) Suction pressure is high
- c) Delivery pressure is low
- d) Delivery pressure is high

82. Which of the following does not change during throttling process

- a) Internal energy
- b) Pressure
- c) Entropy
- d) Enthalpy

83. Atmosphere of a tank or pump room can be tested by using

- a) Explosive meter
- b) Piezometer
- c) Anemometer
- d) Pyrometer

84. Carbon Monoxide Threshold Limit value is

- a) 25 PPM
- b) 40 PPM
- c) 50 PPM
- d) 90 PPM

85. Sprinkler head Quartzoid bulb yellow in color can with stand up to

- a) 68° C
- b) 79° C
- c) 88° C
- d) 99° C

86. Important consideration in the design of Gas Turbine blade is

- a) Air fuel ratio
- b) Outlet temperature
- c) Inlet temperature
- d) Creep

87. Noise level in continuous manned machinery space, should be below

- a) 76 dB
- b) 90 dB
- c) 102 dB
- d) 110 dB

88. In SCABA volume of air contained in a cylinder is atleast

- a) 900 ltrs
- b) 1000 ltrs
- c) 1100 ltrs
- d) 1200 ltrs

89. Flash point of Marine Diesel Oil is

- a) 43° C
- b) 64° C
- c) 71° C
- d) 89° C

90. Opening pressure of crank case door relief valve of Marine IC engine

- a) 0.06 bar above atmospheric pressure
- b) 0.07 bar above atmospheric pressure
- c) 0.7 bar above atmospheric pressure
- d) 1.2 bar above atmospheric pressure

91. Absolute Humidity is usually expressed in

- a) g/cm^3
- b) g/mm^3
- c) g/m^3
- d) mg/m^3

92. Material which exhibits the same elastic properties in all directions is known as

- a) Thixotropic
- b) Heterogenous
- c) Isotropic
- d) Visco - elastic

93. The purpose of Idler Pulley is

- a) To maintain belt tension
- b) For starting motion of pulley
- c) For stopping motion frequently
- d) For changing motion to 90°

94. Rated life of a ball bearing varies as

- a) Square of load
- b) Cube of load
- c) Inversely of cube of load
- d) Inverse of load

95. An instrument used to record the vibration is

- a) Anemometer
- b) Seismometer
- c) Pyrometer
- d) Pyrheliometer

96. EEOI abbreviation for

- a) Engine Energy Operational Input
- b) Economic Engine Orbit Index
- c) Energy Efficiency Operational Index
- d) Ecology Efficient Occurrence Input

97. A device used to store energy of liquid under pressure and make available to Hydraulic machines is called

- a) Hydraulic Accumulator
- b) Hydraulic Intensifier
- c) Hydraulic Ram
- d) Hydraulic Coupling

98. What do you mean by surge limit of a turbocharger?

- a) Characteristic curve of a turbocharger
- b) Portion of compressor characteristic curve which lies on the left side of the point of maximum pressure.
- c) A line joining all the points of maximum pressure on compressor characteristic curves, drawn at various speeds of operation
- d) Maximum rpm limit of T/C above which surging will start

99. The arrangement used to protect overheating of the superheaters under fluctuating loads is called

- a) De-superheater
- b) Attemperator
- c) Steam dumping valve
- d) Feed heater

100. In a naturally aspirated diesel engine, the volume of air intake is directly related to engine

- a) Compression ratio
- b) Valve size
- c) Fuel pressure
- d) Cylinder clearance volume

101. In a VIT equipped jerk type fuel pump:

- a) Raising the barrel delays beginning of injection
- b) Lowering the barrel delays beginning of injection
- c) Raising the barrel delays end of injection
- d) Lowering the barrel delays end of injection

102. Which of the following is an adhesive type wear of a cylinder liner?

- a) Clover- leafing
- b) Scoring
- c) Scuffing
- d) Ovality

103. Duplication of power units, fittings and piping's where each unit is capable of providing 100% steering power, and automatic isolation of one unit in the event of a leakage (single failure) in that unit would constitute 100% redundancy for the steering gear system. Such system is mandatory on

- a) All tankers
- b) Tankers above 10000 GT
- c) Tankers above 100000 Dwt
- d) All ships above

104. Variable geometry turbocharging is the preferred choice over conventional turbochargers because:

- a) T/C efficiency is very high at high engine loads
- b) T/C has good starting characteristics while efficiency at full loads is slightly compromised
- c) T/C efficiency is optimized for different engine loads by changing nozzle ring geometry
- d) T/C is much cheaper and simple to manufacture and is virtually maintenance free

105. The minimum concentration of vapour in air which can form a explosive mixture is called the

- a) Auto- Ignition point
- b) Flammable limit
- c) LEL
- d) LFL

106. Curves of immersed cross-sectional area of a ship, plotted against draught for each transverse section, are known as

- a) Cross curves of Stability
- b) Displacement Curves
- c) Hydrostatic Curves
- d) Bonjean Curves

107. As per conditions of assignments, the minimum height of air pipe openings must be _____ on the freeboard deck

- a) 380 mm
- b) 450 mm
- c) 600 mm
- d) 760 mm

108. Which of the following is true concerning the Poly Phase Synchronous Propulsion motor

- a) The motor is started as an induction motor
- b) Resistance is gradually added to the rotor circuit
- c) The starting current is held below the rated current
- d) The field winding is energized for starting purpose only

109. Intact stability booklet is provided by

- a) SOLAS
- b) MARPOL
- c) Load Line convention
- d) Load Line Protocol

110. The validity of International Energy efficiency certificate is

- a) 3 Years
- b) 5 years
- c) 10 years
- d) Unlimited

111. Under Maritime instrument is a certificate of Financial Responsibility (COFR) Issued

- a) CLC 1992
- b) Fund Convention
- c) LLMC
- d) OPA 1990

112. In Tier III the maximum amount of NO_x for engine speed of less than 130 RPM is

- a) 7.4 gm/kw-hr
- b) 4.4 gm/kw-hr
- c) 3.4 gm/kw-hr
- d) 4.3 gm/kw-hr

113. As per MARPOL Annex V - the Antarctic Area means the Sea Area

- a) South of Latitude 60° S.
- b) South of Latitude 80° N.
- c) North of Latitude 60° S.
- d) North of Latitude 50° N

114. A crankshaft whose center of gravity coincides with its center line is said to be

- a) Dynamically balanced
- b) Statically balanced
- c) Counter balanced
- d) Resonantly balanced

115. Generally Inclining experiment is conducted to determine the

- a) Vertical position of the Center of Gravity
- b) Horizontal position of the Center of Gravity
- c) Vertical position of the Center of Buoyancy
- d) Metacentric Height

116. Appointment of DPA is a requirement under which of the following instruments?

- a) STCW code
- b) ISPS code
- c) MARPOL 73/78
- d) ISM code

117. What is added to Co2 cylinder to avoid from freezing at subzero temp in an inflatable liferaft?

- a) Nitrogen
- b) Silica Gel
- c) Hydrogen
- d) None of the above

118. Diesel engine main and connecting rod precision bearings are made in halves. Each half exceeds one-half the bearing circumference by a small amount. The small amount is termed as

- a) Clearance
- b) Crush
- c) Pitch
- d) Interference

119. What is the crank angle between any two crank throws in the firing order of a four-stroke/cycle, in line, eight cylinder diesel engine?

- a) 45 degree
- b) 60 degree
- c) 90 degree
- d) 100 degree

120. EPC 70 considered an assessment of fuel oil availability to inform the decision to be taken by the Parties to MARPOL Annex VI, and decided that the fuel oil standard (0.50% sulphur limit) shall become effective on

- a) 1 February 2019
- b) 1 August 2020
- c) 1 January 2020
- d) 31 August 2019

Sample QP for PhD/MS CET – Maritime Management

Maximum Marks: 120

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.
DO NOT write anything else on the Test Booklet.
8. At the end of the examinations both OMR sheet and the Question booklet have to be handed over to the Invigilator.
9. Sheets for rough work are appended in the Question Paper at the end.

Multiple Choice questions in General Aptitude for Ph.D / M.S. (By Research)

1. The monthly incomes of X and Y are in the ratio of 4:3 and their monthly expenses are in the ratio of 3:2. However, each saves Rs. 6000/-per month. What is their total monthly income?

- (a) Rs. 28,000/-
- (b) Rs. 42,000/-
- (c) Rs. 56,000/-
- (d) Rs. 84,000/-

2. Suppose the average weight of 9 persons is 50 kg. The average weight of the first 5 persons is 45 kg, whereas the average weight of the last 5 persons is 55 kg. Then, the weight of the 5th person will be

- (a) 45 kg
- (b) 47.5 kg
- (c) 50 kg
- (d) 52.5 kg

3. What is the value of x in the following logarithm equation?
 $\log(x+2) - \log(x-1) = \log 2$

- (a) 5
- (b) 4
- (c) 3
- (d) 2

4. "Price is not the same thing as value. Suppose that on a day the price of everything viz., coal, bread, postage stamps, the taxi fare, the rent of houses etc. were to double. Prices then would certainly rise, but values of all things except one would not."

The writer wants to say that if prices of all things were doubled,

- (a) the values of all things would remain constant.
 - (b) the values of the things sold would be doubled.
 - (c) the values of all things bought would be halved.
 - (d) the values of money only would be halved.
5. During the last summer vacation, John went to a summer camp where he took part in hiking, swimming and boating.

This summer, he is looking forward to a music camp where he hopes to sing, dance and learn to play the guitar. Based on the above information, four conclusions as given below, have been made.

Which one of these logically follows from the information given above?

- (a) John's parents want him to play the guitar.
- (b) John prefers music to outdoor activities.
- (c) John goes to some type of camp every summer.
- (d) John likes to sing and dance.

6. The number of deaths among the army personnel is 8 in 1000, but among the civilian population, it is 20 per 100. Which of the following inferences can be drawn from this statement?

- (a) It is better to join the army.
- (b) The relationship is fortuitous.
- (c) Quality of Life Index is very high within the armed forces.
- (d) The groups can't be compared due to their heterogeneity.

7. A person walks 12 km due north, then 15 km due east, after that 19 km due west and then 15 km due south. How far is he from the starting point?

- (a) 5 km
- (b) 9 km
- (c) 12 km
- (d) 15 km

8. The sum of income of A and B is more than that of C and D taken together. The sum of income of A and C is the same as that of B and D taken together. Moreover, A earns half as much as the sum of the income of B and D, Whose income is the highest?

- (a) A
- (b) B
- (c) C
- (d) D

9. As per agreement with a bank, a businessman had to refund a loan in some equal installments without interest. After paying 18 installments he found that 60% of his loan was refunded. How many installments were there in the agreement?

- (a) 22
- (b) 24
- (c) 30
- (d) 32

10. A gardener increased the area of his rectangular garden by increasing its length by 40% and decreasing its width by 20%. The area of the new garden is

- (a) has increased by 20%.
- (b) has increased by 12%.
- (c) has increased by 10%.
- (d) remains exactly the same as the old area.

11. In a meeting, the map of a village was placed in such a manner that south-east becomes north, north-east becomes west and so on. What will south become?

- (a) North.
- (b) North-east.
- (c) North-west.
- (d) West.

12. Running at a speed of 60 km per hour, a train passed through a 1.5 km long tunnel in two minutes. What is the length of the train?

- (a) 200 m.
- (b) 300 m.
- (c) 500 m.
- (d) 800 m.

13. Aditya attempted 12 questions in the examination for Science paper and secured full marks in all of them. If he obtained 60% in the test and all the questions carried equal marks, then what is the number of questions in the test?

- (a) 20.
- (b) 22.
- (c) 24.
- (d) 30.

14. Lead, ingested or inhaled, is a health hazard. After the addition of lead to petrol has been banned, what still are the sources of lead poisoning?

- 1. Smelting unit.
- 2. Pens and pencils.
- 3. Paints.
- 4. Hair oils and cosmetics.

Select the correct answer from the choices given below?

- (a) 1 and 3 only.
- (b) 1, 2 and 3 only.
- (c) 2 and 4 only.
- (d) All of above (1, 2, 3 and 4).

15. Rainbow is produced when sunlight falls on drops of rain. Which of the following physical phenomenon are responsible for this?
1. Dispersion.
 2. Refraction.
 3. Internal reflection.

Select the correct answer from the choices given below?

- (a) 1 and 2 only.
 - (b) 2 and 3 only.
 - (c) 1 and 3 only.
 - (d) All of above (1, 2 and 3).
16. The known forces of nature can be divided into four classes, viz. gravity, electromagnetism, weak nuclear forces and strong nuclear forces. With reference to them, which one of the following statements is not correct?
- (a) Gravity is the strongest of the four.
 - (b) Electromagnetism acts only on particles with an electric charge.
 - (c) Weak nuclear force causes radioactivity.
 - (d) Strong nuclear force holds protons and neutrons inside the nucleus of an atom.
17. Acid rain is caused by the pollution of environment by:
- (a) Carbon dioxide and Nitrogen.
 - (b) Carbon monoxide and Carbon dioxide.
 - (c) Ozone and Carbon dioxide.
 - (d) Nitrous oxide and Sulphur dioxide.
18. Salts of which of the following elements provide colour to the fireworks:
- (a). Zinc and Sulphur.
 - (b). Potassium and Mercury.
 - (c). Strontium and Barium.
 - (d). Chromium and Nickel.

19. Which one of the following is the correct sequence of the given substances in the order of their densities?

- (a). Steel>Mercury>Gold
- (b). Gold >Mercury> Steel
- (c). Steel> Gold > Mercury
- (d). Gold > Steel > Mercury

20. In addition to fingerprint scanning, which of the following can be used in the biometric identification of a person?

- 1. Iris scanning.
- 2. Retinal scanning.
- 3. Voice recognition.

Select the correct answer from the choices given below?

- (a) 1 only.
- (b) 2 and 3 only.
- (c) 1 and 3 only.
- (d) All of above (1, 2 and 3).

21. The principle on which Optical fibre works is:

- (a) Total internal reflection.
- (b) Scattering.
- (c) Refraction.
- (d) Interference.

22. Diffusion of light in the atmosphere takes place due to which of the following:

- (a) Carbon dioxide.
- (b) Dust particles.
- (c) Helium.
- (d) Water vapour.

23. Which of the following is/are the example(s) of chemical change?

1. Crystallization of sodium chloride.
2. Melting of ice.
3. Souring of milk.

Select the correct answer from the choices given below?

- (a) 1 and 2 only.
- (b) 3 only.
- (c) None of above (1, 2 and 3).
- (d) All of above (1, 2 and 3).

24. “If political leadership fails to emerge, there is likelihood of military taking over power in developing countries. Radical student groups or labour may try to raise revolution but they are not likely to compete with the military. Military intervention, rule, and withdrawal from politics is closely related to a society’s level of political development”

In the context of political development, the assumption in the above passage is that

- (a) Political leadership is not an effective instrument.
- (b) Military fills in political vacuum.
- (c) Military intervention is inevitable for political development.
- (d) None of the above.

25. A military code writes SYSTEM as SYSMET and NEARER as AENRER. Using the same code, FRACTION can be written as:

- (a) CARFTION
- (b) FRACNOIT
- (c) NOITCARF
- (d) CARFNOIT

Maritime Sector

26. The head quarter of the international Maritime Organization is located

- (a) Geneva
- (b) New York
- (c) London
- (d) Washington

27. The International Maritime Organization is an UN body for regulating

- (a) Cargo & defence ships
- (b) Cargo & passenger ships
- (c) Canals & ports
- (d) Ships & ports

28. The largest Indian shipping company in the private sector is

- (a) Great Eastern
- (b) Shipping Corporation of India
- (c) Essar
- (d) Mercator

29. Merchant navy primarily covers

- (a) Defence of the country
- (b) Underwater exploration
- (c) Carriage of goods & passengers
- (d) Managing ports

30. Largest export from India in terms of volume is

- (a) Tea
- (b) Spices
- (c) Iron Ore
- (d) garments

31. Largest import to India in terms of volume is

- (a) Crude Oil
- (b) Grains
- (c) Cement
- (d) Fertilizer

32. Sagarmala is a significant project for

- (a) Connecting Ports
- (b) Improving infrastructure
- (c) Improving logistics
- (d) All of these

33. What is special about an Indian Team which recently circumnavigated the world in a sailing boat?

- (a) All Girl team of 6 Indian Naval officers
- (b) 03 male and 03 female Indian Naval officers
- (c) All men team of 6 Indian Naval officers
- (d) All Girl team of 6 Indian officers, 02 from Navy, 02 from Army and 02 from Air Force.

34. Who became the first Indian woman to receive IMO's Exceptional Bravery Award at Sea?

- (a) Captain S. Nilkeni
- (b) Captain Ruchika Malhotra
- (c) Captain Monika Mehrotra
- (d) Captain Radhika Menon

35. Panama Canal connects

- (a) Atlantic Ocean & Mediterranean Sea
- (b) Atlantic Ocean & Gulf of Mexico
- (c) Pacific Ocean & Atlantic Ocean
- (d) Mediterranean Sea & Red Sea

36. The continent through which all three imaginary lines, e.g. Equator, Tropic of Cancer and Tropic of Capricorn pass through is

- (a) Africa
- (b) Asia
- (c) Europe
- (d) Australia

37. First ship built in an Indian shipyard is

- (a) Loyalty
- (b) Rajendra
- (c) Jal Usha
- (d) Vikrant

38. The accident of Titanic led to the development of which international convention

- (a) SOLAS
- (b) loadline
- (c) MARPOL
- (d) STCW

39. Indian Maritime University has campuses in

- (a) Chennai & Mumbai
- (b) Chennai & Kolkata
- (c) Chennai & Kochi
- (d) All of these

40. For carrying cargo the ship owner earns

- (a) Freight
- (b) Demurrage
- (c) Hire
- (d) Dispatch

41. Bunkering is the process of

- (a) Refueling the ship
- (b) Loading the ship
- (c) Unloading the ship
- (d) Inspecting the ship

42. Rudder is used in ship for

- (a) Moving the ship
- (b) Turning the ship
- (c) Increasing the ship's speed
- (d) Stopping the ship

43. Sea water as ballast is used in ships for

- (a) Maintaining stability of a ship
- (b) when transmitting a distress message
- (c) Cooling of the engines of a ship
- (d) For converting to potable water

44. Main thrust for development and adoption of ISM Code came from the findings of accident involving

- (a) The Herald of Free Enterprise
- (b) Scandinavian Star
- (c) Exxon Valdez
- (d) Amoco Cadiz

45. The ISM Code is mandatory on ships and refers to the

- (a) International Shipping Market
- (b) International Seafarer's Management
- (c) Inter Shipping Management
- (d) International Safety Management

46. Master has the overriding authority and the responsibility to make decisions with respect to

- (a) Pollution prevention
- (b) Safety of the Ship
- (c) Safety and Pollution prevention
- (d) None of these

47. In a radio transmission from a ship 'Roger' means

- (a) I understand you
- (b) I agree with you
- (c) I hear you
- (d) I see you

48. 'Mayday' signal is used in shipping

- (a) when there is more than one emergency
- (b) when transmitting a distress message
- (c) Greeting another passing ship
- (d) Informing the authorities that all is well on board

49. The share of the Indian seafarers in the world is

- (a) 15%
- (b) 12%
- (c) 5%
- (d) 8%

50. Largest shipping company in the world is

- (A) Maersk
- (b) MSC
- (c) Evergreen
- (d) Mitsui OSK

51. The HQ of Directorate General of Shipping is located at

- (a) Chennai
- (b) New Delhi
- (c) Kolkata
- (d) Mumbai

52. Alang is famous for

- (a) Largest Indian Port
- (b) Ship Breaking
- (c) Ship building
- (d) Ship repairing

53. Anchor is used in ship for

- (a) Keeping the ship in one place
- (b) Securing the ship
- (c) Tying the ship with shore
- (d) Decorating the ship

54. Which of the following may be used as fuel in the engines of a ship

- (a) High Speed Oil
- (b) Furnace Oil
- (c) Diesel Oil
- (d) All of these

55. Iron ore is carried in

- (a) Bulk carriers
- (b) Oil Tankers
- (c) Container ships
- (d) General cargo ships

56. Computers are used onboard for

- (a) Marine communication
- (b) ship to shore communication
- (c) shore to ship communication
- (d) All of these

57. Which of the following are the types of ships

- (a) RORO
- (b) Reefer
- (c) Heavy Lift
- (d) All of these

58. Overall command of the ship is with Master who is the

- (a) Ship Manager
- (b) Chief Engineer
- (c) Captain
- (d) Harbour Master

59. The Indian Maritime University was established in

- (a) 2009
- (b) 2008
- (c) 2010
- (d) 2011

60. MS Act stands for

- (a) Merchant Shipping Act
- (b) Merchant Seamen Act
- (c) Marine Surveyors' Act
- (d) Maritime Shipping Act

Multiple Choice Questions in Maritime Management

61. A company following a strategy of advertising the product for a period followed by a period with no advertising is called

- a) Concentration
- b) Flighting
- c) Pulsing
- d) Continuity
- e) None of the above

62. Which of the following is a wrong reason for introducing multiple brands in a category?

- a) Increase shelf presence
- b) Increase internal competition
- c) Attracting variety seeking consumers
- d) To yield economies of scale
- e) None of the above

63. Relationship marketing aims at building mutually satisfying long term relations with

- a) Customers
- b) Managers
- c) Employees
- d) Marketing partners
- e) All of the above

64. A deliberate and careful choice of organization, product, price promotion, place strategies and policies best define the concept of:

- a) Marketing Mix
- b) Product Mix
- c) Market Penetration
- d) Market Segmentation
- e) None of the above

65. Rational motive in buying process are explained as:

- a) Motives based on careful, logical reasoning and self acceptance.
- b) Motives based on sensual satisfaction, fear and entertainment.
- c) Activity buyer adopts to satisfy buying needs
- d) All of the above
- e) None of the above

66. Pepsi Co. launched a hostile take-over of Pepsi Bottling Group after its \$4.2 billion offer was rejected.” Which strategy was used in this case?

- a) Market Penetration
- b) Backward Integration
- c) Horizontal Integration
- d) Forward Integration
- e) None of these

67. Other things being equal, an increase in income leads to a decrease in demand for

- a) Superior Goods
- b) Luxury Goods
- c) Esteem Goods
- d) (A) and (B) only
- e) None of the above

68. In the buying decision process, what is the term used for a person who first suggests buying the product or service?

- a) Influencer
- b) Initiator
- c) Decider
- d) Buyer
- e) None of these

69. A marketing plan is composed of three basic components, namely

- | | | |
|---------------|----------------|--------------|
| 1. Objectives | 2. Policies | 3. Programme |
| 4. Procedure | 5. Design | 6. Decision |
| 7. Product | 8. Periodicity | 9. Diversity |

- a) 1, 2 and 3 only
- b) 1, 7 and 8 only
- c) 5, 7 and 9 only
- d) 1, 5 and 7 only
- e) None of the above

70. In which stage of product life cycle, the company takes decision whether to maintain, harvest or drop the product?

- a) Introduction
- b) Growth
- c) Maturity
- d) Decline
- e) None of these

71. Temporarily reducing prices to increase short-run sales is an example of which one of the following?

- a) Segmented pricing
- b) Promotional pricing
- c) Dynamic pricing
- d) Geographical pricing
- e) None of these

72. Which of the following statement is true?

- a) A brand name is a part of brand which can be vocalized.
- b) A brand is usually composed of a name and mark of a product.
- c) Brand means a name, term and symbol or a mix thereof used to identify the product of a firm and to distinguish.
- d) All of the above
- e) None of the above

73. Toyota's Lexus, Nissan's Infiniti, Maruti Suzuki's Nexa are examples of

- a) Two Way Stretch
- b) Up Market Stretch
- c) Diversification
- d) Down Market Stretch
- e) None of the Above

74. Making profit by taking advantage of different prices prevailing in different markets is referred as

- a) Hedging
- b) Arbitrage
- c) Speculation
- d) Gambling
- e) None of these

75. According to Michael Porter's Generic strategies, the three different basics of gaining competitive advantage by an organization are which of the following?

- a) Integration, diversification and acquisitions.
- b) Growing, building and sustaining.
- c) Cost leadership, differentiation and focus.
- d) Positioning, capturing and changing.
- e) None of these

76. The following is not a major contributor in the development of Control Charts and Sampling plan

- a) F H Dodge
- b) H G Roming
- c) Walter Schewhart
- d) J M Juran
- e) None of these

77. What is the basis of ABC analysis?

- a) Critical Item basis
- b) Scarce Item basis
- c) Annual Consumption basis
- d) Annual Consumption Cost basis
- e) None of the above

78. The number of allocated cells in the optimal solution of a transportation problem having m rows and n columns is

- a) $m + n - 1$
- b) $m + n - 1$ or less
- c) $m + n + 1$
- d) $m + n$
- e) None of the above

79. Which Supply Chain strategy involves the pull approach to production?

- a) Lean Production
- b) Le-Agile
- c) Just in Time
- d) All the above
- e) None of the above

80. Inadequate production capacity ultimately leads to

- a) Poor quality
- b) Poor Customer Service
- c) Poor inventory control
- d) All of the above
- e) None of these

81. Which kind of labour force is required in case of Jobbing Production?

- a) Highly Skilled
- b) Semi skilled
- c) Unskilled
- d) Any of the above
- e) None of these

82. What is the location of lower control limit in the X bar-R control chart?

- a) 3 standard deviations below central line
- b) 2 standard deviations below central line
- c) 1 standard deviations below central line
- d) Any of the above
- e) None of these

83. Which of the following is (are) important consideration(s) concerning activity times?

- a) Activity time should be obtained from the person responsible for the completion of an activity
- b) Activity time must be independent of any influence which the preceding or succeeding activity may have on it.
- c) Activity time may assume that just the normal quantity of resources required to carry out the activity are available.
- d) All of the above
- e) None of these

84. Which of the following is not the characteristic of Project Production?

- a) Continuous flow of material
- b) Highly mechanized material handling
- c) Virtually zero manufacturing cycle time
- d) All of the above
- e) None of these

85. Statistical Quality Control requires determination of

- a) Quality tolerance limit
- b) Quantity measurement
- c) Production leads time
- d) Inventory carrying cost
- e) None of the above

86. Fixed position layout is adopted when

- a) Products are of different variety
- b) Product is very heavy involving assembly of large number of parts
- c) Products are in large numbers
- d) All of the above
- e) None of these

87. The _____ is the defect level for which lots are regarded as bad lots.

- a) Acceptable quality level
- b) Consumer's risk
- c) Producer's risk
- d) Lot Tolerance Percentage Defective
- e) None of these

88. General Electric Matrix is divided into how many cells

- a) 4
- b) 9
- c) 16
- d) 25
- e) None of these

89. Bath tub curve is encountered in

- a) Process control
- b) Acceptance sampling
- c) Both (a) and (b)
- d) Maintenance management
- e) None of these

90. Six sigma quality indicates:

- a) 2.4 defects per thousand
- b) 2.7 defects per thousand
- c) 3.4 defects per thousand
- d) 3.7 defects per thousand
- e) None of these

91. In which of the approach/es, the market value of the firm depends upon the EBIT and the overall cost of capital

- a) Net Income Approach
- b) Net Operating Income Approach
- c) Modigliani-Miller Approach
- d) All of the above
- e) None of the above

92. Working capital refers to the capital mobilised for meeting

- a) Long-term financial needs of the company
- b) To meet day-to-day financial obligations of the company
- c) To meet the future financial requirements of the company
- d) None of the above
- e) All of the above

93. Balance of Payment is

- a) Balance of trade + Net earnings on invisibles
- b) Foreign exchange inflow – Foreign exchange outflow
- c) Balance of current account + Balance of capital account + Statistical discrepancy
- d) Export of goods – Import of goods
- e) None of these

94. Match the correct option for each of the following approaches of Capital structure theories:

- | | |
|--|--|
| a. The Net Income Approach | i. The market value of the firm is not affected by changes in the capital structure |
| b. The Net Operating Income Approach | ii. Declining weighted-average cost of capital |
| c. The Modigliani & Miller Proposition – I | iii. The firms prefer to rely on internal accruals followed by debt finance and external finance |
| d. The Pecking Order Theory | iv. The value of the firm depends on the earnings and risk of its assets rather than the way the assets have been financed |

Codes

a b c d

- a) i iii ii iv
- b) iv ii iii i
- c) ii i iv iii
- d) iii iv i ii
- e) None of the above

95. State the price of the share for the year t , if the rate of growth of the firm is 10%, EPS and DPS for the year $t+1$ are Rs. 3 and Rs. 2 respectively and the investors required rate of return is 20%

- a) Rs. 30
- b) Rs. 20
- c) Rs. 25
- d) Rs. 10
- e) None of these

96. If the existing shareholder does not exercise his/her right or does not sell the right entitlement:

- a) His/her wealth will remain unaffected
- b) His/her wealth will increase
- c) His/her wealth will decrease
- d) His/her wealth will increase or decrease
- e) His/her wealth will increase by 50%

97. Anticipated annual dividend divided by the market price of the stock is referred as

- a) Divided Pay Out
- b) Dividend Yield
- c) Return on Equity
- d) Regular Dividend
- e) None of these

98. 'The optimal pay-out ratio for growth firm is nil and declining firm is 100%' is established by

- a) Gordon Model
- b) Walter Model
- c) M and M Model
- d) Both A and B
- e) None of these

99. Which one of the following is not a feature of 'Preference Shares'?

- a) Prior claim on income / assets of the company over equity shareholders.
- b) Redeemability after certain period.
- c) Possessing voting rights on important issues of the company.
- d) May possess the right to participate in surplus profits of the company.
- e) None of these

100. Which of the following method of incorporation of risk in the capital budgeting decision framework is useful for situations in which decisions at one point of time also affect the decisions of the firm at some later date?

- (a) Certainty Equivalent Approach
- (b) Probability Distribution Approach
- (c) Risk-adjusted Discount Rate Approach
- (d) Decision-tree Approach
- e) None of these

101. In case Mutual Funds invest in the securities whose price variations suggest the general price movement, it is called

- a) Hedge Fund
- b) Index Fund
- c) Growth Fund
- d) Balanced Fund
- e) None of these

102. Net Present Value Method and Internal Rate of Return Method of capital budgeting techniques may give conflicting accept-reject decision due to

1. Disparity in initial investment
2. Disparity in timing of cash flow
3. Disparity in the life of the project

- a) 1 only
- b) 2 only
- c) 1 and 2 only
- d) 1, 2 and 3
- e) None of these

103. Under the Walter Model, if the rate of return is greater than the cost of capital:

- a) Price per share does not vary with the increase or decrease in dividend pay-out ratio.
- b) Price per share increases as the dividend pay-out ratio increases.
- c) Price per share increases as the dividend pay-out ratio decreases.
- d) Price per share decreases as the dividend pay-out ratio decreases.
- e) None of the above.

104. Given the sales volume, which of the following would lead to an increase in contribution margin?

- a) Variable cost remains same.
- b) Variable cost per unit decreases.
- c) Variable cost per unit increases.
- d) Fixed cost increase.
- e) None of these

105. Financial Break-even Level of EBIT is one at which

- a) EPS is one
- b) EPS is infinite
- c) EPS is zero
- d) EPS is negative
- e) None of these

106. The process through which individuals attempt to determine the causes behind others behavior is known as

- a) Perception
- b) Attitude
- c) Attribution
- d) Social Identity theory
- e) None of these

107. Whistle-Blowers are

- a) To be removed from the jobs
- b) To be promoted
- c) To be rewarded for the organisational enrichment
- d) To be protected since they intend to bring out truth
- e) All of the above

108. Which theory of human motivation focuses on personal perceptions of the performance process?

- a) Adam's theory of Inequality
- b) McClelland's Need theory
- c) Vroom's Expectancy Theory
- d) Alderfer's ERG Theory
- e) None of these

109. On-the-job training methods are not based on

- a) Demonstration Methods
- b) Interactive Methods
- c) Vestibule Training methods
- d) Apprentice Training methods
- e) None of these

110. The principles to be followed for Corporate Social Responsibility are:

- a) Involvement of stakeholders.
- b) Maintaining transparency in reporting
- c) Independent verification of policies and outcomes
- d) All of the above
- e) None of the above.

111. Match the following:

List I

- a) Value
- b) Unethical Behaviour
- c) Indian Ethos
- d) Environmental Responsibility

List II

- i) Aham Brahmasmi
- ii) Recycling waste
- iii) Bribery
- iv) Trust Worthiness

Codes: (a) (b) (c) (d)

- a) (i) (iii) (ii) (iv)
- b) (iv) (iii) (i) (ii)
- c) (ii) (iii) (iv) (i)
- d) (i) (iii) (iv) (ii)
- e) (iii) (ii) (iv) (i)

112. Which of the following duties is not a general duty of directors of a company?

- a) Duty of good faith
- b) Duty of care
- c) Duty to attend board meeting
- d) Duty not to delegate
- e) None of these

113. Demand policies targeted to reduce the unemployment become ineffective in presence of the following:

- a) Vertical Philips Curve
- b) Money illusion and ignorance among workers
- c) Horizontal Philips Curve
- d) None of the above
- e) All of the above

114. Consider the following statements:

- i) Sensitivity training was developed by Kurt Lewin
- ii) In basket exercise is a simulated training method
- iii) Depth interview is also known as Directive Interview
- iv) Job evaluation is carried out for promoting job satisfaction

Which of the above statements are true?

- a) Only (i) and (iii)
- b) Only (i) and (ii)
- c) (i),(ii) and (iii)
- d) (ii),(iii) and (iv)
- e) None of the above

115. Which of the following techniques permits the complainant to remain anonymous?

- a) The exit interview
- b) The gripe-box system
- c) The opinion survey
- d) The buddy system
- e) None of the above

116. A personality characteristic indicating one's willingness to do whatever it takes to get one's own way is known as

- a) Locus of Control
- b) Machiavellism
- c) Job Characteristic model
- d) Personality legitimacy
- e) None of these

117. The term 'Grapevine Communication' is related to

- a) Formal Communication
- b) Informal Communication
- c) Written Communication
- d) Vertical Communication
- e) None of these

118. Negotiation of labour contract by Union and Management is referred to as

- a) Industrial Relations
- b) Trade Union
- c) Consumerism
- d) Collective Bargaining
- e) None of the above

119. Porter and Lawler Model is related to

- a) Perception
- b) Attitudes
- c) Motivation
- d) Leadership
- e) None of these

120. Performance appraisal includes

- a) Check reviews done by the supervisors.
- b) review his performance in relation to the objectives and other behaviours.
- c) Promote employees for self appraisal.
- d) All of the above.
- e) None of these

Sample QP for PhD/MS CET – Naval Architecture & Ocean Engineering

Maximum Marks: 120

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.
DO NOT write anything else on the Test Booklet.
8. At the end of the examinations both OMR sheet and the Question booklet have to be handed over to the Invigilator.
9. Sheets for rough work are appended in the Question Paper at the end.

Multiple Choice questions in **General Aptitude** for Ph.D / M.S. (By Research)

1. The monthly incomes of X and Y are in the ratio of 4:3 and their monthly expenses are in the ratio of 3:2. However, each saves Rs. 6000/-per month. What is their total monthly income?

- (a) Rs. 28,000/-
- (b) Rs. 42,000/-
- (c) Rs. 56,000/-
- (d) Rs. 84,000/-

2. Suppose the average weight of 9 persons is 50 kg. The average weight of the first 5 persons is 45 kg, whereas the average weight of the last 5 persons is 55 kg. Then, the weight of the 5th person will be

- (a) 45 kg
- (b) 47.5 kg
- (c) 50 kg
- (d) 52.5 kg

3. What is the value of x in the following logarithm equation?
 $\log(x+2) - \log(x-1) = \log 2$

- (a) 5
- (b) 4
- (c) 3
- (d) 2

4. "Price is not the same thing as value. Suppose that on a day the price of everything viz., coal, bread, postage stamps, the taxi fare, the rent of houses etc. were to double. Prices then would certainly rise, but values of all things except one would not."

The writer wants to say that if prices of all things were doubled,

- (a) the values of all things would remain constant.
- (b) the values of the things sold would be doubled.

- (c) the values of all things bought would be halved.
- (d) the values of money only would be halved.

5. During the last summer vacation, John went to a summer camp where he took part in hiking, swimming and boating.

This summer, he is looking forward to a music camp where he hopes to sing, dance and learn to play the guitar. Based on the above information, four conclusions as given below, have been made.

Which one of these logically follows from the information given above?

- (a) John's parents want him to play the guitar.
- (b) John prefers music to outdoor activities.
- (c) John goes to some type of camp every summer.
- (d) John likes to sing and dance.

6. The number of deaths among the army personnel is 8 in 1000, but among the civilian population, it is 20 per 100. Which of the following inferences can be drawn from this statement?

- (a) It is better to join the army.
- (b) The relationship is fortuitous.
- (c) Quality of Life Index is very high within the armed forces.
- (d) The groups can't be compared due to their heterogeneity.

7. A person walks 12 km due north, then 15 km due east, after that 19 km due west and then 15 km due south. How far is he from the starting point?

- (a) 5 km
- (b) 9 km
- (c) 12 km
- (d) 15 km

8. The sum of income of A and B is more than that of C and D taken together. The sum of income of A and C is the same as that of B and D taken together. Moreover, A earns half as much as the sum of the income of B and D, Whose income is the highest?

- (a) A
- (b) B
- (c) C
- (d) D

9. As per agreement with a bank, a businessman had to refund a loan in some equal installments without interest. After paying 18 installments he found that 60% of his loan was refunded. How many installments were there in the agreement?

- (a) 22
- (b) 24
- (c) 30
- (d) 32

10. A gardener increased the area of his rectangular garden by increasing its length by 40% and decreasing its width by 20%. The area of the new garden is

- (a) has increased by 20%.
- (b) has increased by 12%.
- (c) has increased by 10%.
- (d) remains exactly the same as the old area.

11. In a meeting, the map of a village was placed in such a manner that south-east becomes north, north-east becomes west and so on. What will south become?

- (a) North.
- (b) North-east.
- (c) North-west.
- (d) West.

12. Running at a speed of 60 km per hour, a train passed through a 1.5 km long tunnel in two minutes. What is the length of the train?

- (a) 200 m.
- (b) 300 m.
- (c) 500 m.
- (d) 800 m.

13. Aditya attempted 12 questions in the examination for Science paper and secured full marks in all of them. If he obtained 60% in the test and all the questions carried equal marks, then what is the number of questions in the test?

- (a) 20.
- (b) 22.
- (c) 24.
- (d) 30.

14. Lead, ingested or inhaled, is a health hazard. After the addition of lead to petrol has been banned, what still are the sources of lead poisoning?

- 1. Smelting unit.
- 2. Pens and pencils.
- 3. Paints.
- 4. Hair oils and cosmetics.

Select the correct answer from the choices given below?

- (a) 1 and 3 only.
- (b) 1, 2 and 3 only.
- (c) 2 and 4 only.
- (d) All of above (1, 2, 3 and 4).

15. Rainbow is produced when sunlight falls on drops of rain. Which of the following physical phenomenon are responsible for this?

- 1. Dispersion.
- 2. Refraction.
- 3. Internal reflection.

Select the correct answer from the choices given below?

- (a) 1 and 2 only.
- (b) 2 and 3 only.
- (c) 1 and 3 only.
- (d) All of above (1, 2 and 3).

16. The known forces of nature can be divided into four classes, viz. gravity, electromagnetism, weak nuclear forces and strong nuclear forces. With reference to them, which one of the following statements is not correct?
- (a) Gravity is the strongest of the four.
 - (b) Electromagnetism acts only on particles with an electric charge.
 - (c) Weak nuclear force causes radioactivity.
 - (d) Strong nuclear force holds protons and neutrons inside the nucleus of an atom.
17. Acid rain is caused by the pollution of environment by:
- (a) Carbon dioxide and Nitrogen.
 - (b) Carbon monoxide and Carbon dioxide.
 - (c) Ozone and Carbon dioxide.
 - (d) Nitrous oxide and Sulphur dioxide.
18. Salts of which of the following elements provide colour to the fireworks:
- (a). Zinc and Sulphur.
 - (b). Potassium and Mercury.
 - (c). Strontium and Barium.
 - (d). Chromium and Nickel.

19. Which one of the following is the correct sequence of the given substances in the order of their densities?

- (a). Steel>Mercury>Gold
- (b). Gold >Mercury> Steel
- (c). Steel> Gold > Mercury
- (d). Gold > Steel > Mercury

20. In addition to fingerprint scanning, which of the following can be used in the biometric identification of a person?

- 1. Iris scanning.
- 2. Retinal scanning.
- 3. Voice recognition.

Select the correct answer from the choices given below?

- (a) 1 only.
- (b) 2 and 3 only.
- (c) 1 and 3 only.
- (d) All of above (1, 2 and 3).

21. The principle on which Optical fibre works is:

- (a) Total internal reflection.
- (b) Scattering.
- (c) Refraction.
- (d) Interference.

22. Diffusion of light in the atmosphere takes place due to which of the following:

- (a) Carbon dioxide.
- (b) Dust particles.
- (c) Helium.
- (d) Water vapour.

23. Which of the following is/are the example(s) of chemical change?

1. Crystallization of sodium chloride.
2. Melting of ice.
3. Souring of milk.

Select the correct answer from the choices given below?

- (a) 1 and 2 only.
- (b) 3 only.
- (c) None of above (1, 2 and 3).
- (d) All of above (1, 2 and 3).

24. "If political leadership fails to emerge, there is likelihood of military taking over power in developing countries. Radical student groups or labour may try to raise revolution but they are not likely to compete with the military. Military intervention, rule, and withdrawal from politics is closely related to a society's level of political development"

In the context of political development, the assumption in the above passage is that

- (a) Political leadership is not an effective instrument.
- (b) Military fills in political vacuum.
- (c) Military intervention is inevitable for political development.
- (d) None of the above.

25. A military code writes SYSTEM as SYSMET and NEARER as AENRER. Using the same code, FRACTION can be written as:

- (a) CARFTION
- (b) FRACNOIT
- (c) NOITCARF
- (d) CARFNOIT

Maritime Sector

26. The head quarter of the international Maritime Organization is located

- (a) Geneva
- (b) New York
- (c) London
- (d) Washington

27. The International Maritime Organization is an UN body for regulating

- (a) Cargo & defence ships
- (b) Cargo & passenger ships
- (c) Canals & ports
- (d) Ships & ports

28. The largest Indian shipping company in the private sector is

- (a) Great Eastern
- (b) Shipping Corporation of India
- (c) Essar
- (d) Mercator

29. Merchant navy primarily covers

- (a) Defence of the country
- (b) Underwater exploration
- (c) Carriage of goods & passengers
- (d) Managing ports

30. Largest export from India in terms of volume is

- (a) Tea
- (b) Spices
- (c) Iron Ore
- (d) garments

31. Largest import to India in terms of volume is

- (a) Crude Oil
- (b) Grains
- (c) Cement
- (d) Fertilizer

32. Sagarmala is a significant project for

- (a) Connecting Ports
- (b) Improving infrastructure
- (c) Improving logistics
- (d) All of these

33. What is special about an Indian Team which recently circumnavigated the world in a sailing boat?

- (a) All Girl team of 6 Indian Naval officers
- (b) 03 male and 03 female Indian Naval officers
- (c) All men team of 6 Indian Naval officers
- (d) All Girl team of 6 Indian officers, 02 from Navy, 02 from Army and 02 from Air Force.

34. Who became the first Indian woman to receive IMO's Exceptional Bravery Award at Sea?

- (a) Captain S. Nilkeni
- (b) Captain Ruchika Malhotra
- (c) Captain Monika Mehrotra
- (d) Captain Radhika Menon

35. Panama Canal connects

- (a) Atlantic Ocean & Mediterranean Sea
- (b) Atlantic Ocean & Gulf of Mexico
- (c) Pacific Ocean & Atlantic Ocean
- (d) Mediterranean Sea & Red Sea

36. The continent through which all three imaginary lines, e.g. Equator, Tropic of Cancer and Tropic of Capricorn pass through is

- (a) Africa
- (b) Asia
- (c) Europe
- (d) Australia

37. First ship built in an Indian shipyard is

- (a) Loyalty
- (b) Rajendra
- (c) Jal Usha
- (d) Vikrant

38. The accident of Titanic led to the development of which international convention

- (a) SOLAS
- (b) loadline
- (c) MARPOL
- (d) STCW

39. Indian Maritime University has campuses in

- (a) Chennai & Mumbai
- (b) Chennai & Kolkata

- (c) Chennai & Kochi
- (d) All of these

40. For carrying cargo the ship owner earns

- (a) Freight
- (b) Demurrage
- (c) Hire
- (d) Dispatch

41. Bunkering is the process of

- (a) Refueling the ship
- (b) Loading the ship
- (c) Unloading the ship
- (d) Inspecting the ship

42. Rudder is used in ship for

- (a) Moving the ship
- (b) Turning the ship
- (c) Increasing the ship's speed
- (d) Stopping the ship

43. Sea water as ballast is used in ships for

- (a) Maintaining stability of a ship
- (b) when transmitting a distress message
- (c) Cooling of the engines of a ship
- (d) For converting to potable water

44. Main thrust for development and adoption of ISM Code came from the findings of accident involving

- (a) The Herald of Free Enterprise
- (b) Scandinavian Star
- (c) Exxon Valdez
- (d) Amoco Cadiz

45. The ISM Code is mandatory on ships and refers to the

- (a) International Shipping Market
- (b) International Seafarer's Management
- (c) Inter Shipping Management
- (d) International Safety Management

46. Master has the overriding authority and the responsibility to make decisions with respect to

- (a) Pollution prevention
- (b) Safety of the Ship
- (c) Safety and Pollution prevention
- (d) None of these

47. In a radio transmission from a ship 'Roger' means

- (a) I understand you
- (b) I agree with you
- (c) I hear you
- (d) I see you

48. 'Mayday' signal is used in shipping

- (a) when there is more than one emergency
- (b) when transmitting a distress message
- (c) Greeting another passing ship
- (d) Informing the authorities that all is well on board

49. The share of the Indian seafarers in the world is

- (a) 15%
- (b) 12%
- (c) 5%
- (d) 8%

50. Largest shipping company in the world is

- (A) Maersk
- (b) MSC
- (c) Evergreen
- (d) Mitsui OSK

51. The HQ of Directorate General of Shipping is located at

- (a) Chennai
- (b) New Delhi
- (c) Kolkata
- (d) Mumbai

52. Alang is famous for

- (a) Largest Indian Port
- (b) Ship Breaking
- (c) Ship building
- (d) Ship repairing

53. Anchor is used in ship for

- (a) Keeping the ship in one place
- (b) Securing the ship
- (c) Tying the ship with shore
- (d) Decorating the ship

54. Which of the following may be used as fuel in the engines of a ship

- (a) High Speed Oil
- (b) Furnace Oil
- (c) Diesel Oil
- (d) All of these

55. Iron ore is carried in

- (a) Bulk carriers
- (b) Oil Tankers
- (c) Container ships
- (d) General cargo ships

56. Computers are used on-board for

- (a) Marine communication
- (b) ship to shore communication
- (c) shore to ship communication
- (d) All of these

57. Which of the following are the types of ships

- (a) RORO
- (b) Reefer
- (c) Heavy Lift
- (d) All of these

58. Overall command of the ship is with Master who is the

- (a) Ship Manager
- (b) Chief Engineer
- (c) Captain
- (d) Harbour Master

59. The Indian Maritime University was established in

- (a) 2009
- (b) 2008
- (c) 2010
- (d) 2011

60. MS Act stand for

- (a) Merchant Shipping Act
- (b) Merchant Seamen Act
- (c) Marine Surveyors' Act
- (d) Maritime Shipping Act

Multiple Choice Questions in Naval Architecture & Ocean Engineering

Answer all questions. Each question carries 1 marks. Conventional ship fixed coordinate system shall be used wherever applicable (X: positive forward, Y: positive to starboard, Z: down towards water). Assume fresh water and sea water density as per convention.

61. The following holds true for block coefficient (C_B) of a vessel.

(a) $C_B \leq 1.0$	(c) $C_B = 1.0$
(b) $C_B > 1.0$	(d) None of the above

62. The girth till load water line is measured at several stations along the length of the ship. The integration of girth will give the following parameter:

(a) Midship section area	(c) Vessel's displacement
(b) Waterplane area	(d) Wetted surface area

63. The section area curve for a 8.0 m load water line is drawn. The integration of section area curve will give the following parameter for 8.0 m loadwater line:

(a) Midship section area	(c) Vessel's displacement
(b) Waterplane area	(d) Wetted surface area

64. A vessel is in the form of a triangular prism 32 m long, 8 m wide at the top and 5 m deep. $KG = 3.7$ m. The initial metacentric height when vessel is floating on an even keel at 4 m draft (forward and aft) is:

(a) $GM_T = 0.68$ m	(c) $GM_T = 0.12$ m
(b) $GM_T = 2.69$ m	(d) None of the above

65. A ship of 6000 metric tonnes displacement has $KM_T = 7.3$ m, $KG = 6.7$ m and is floating upright on an even keel. A weight of 60 metric tonnes already on board is shifted 12.0 m transversely. The resultant list will be.

(a) 16.89°	(c) 2.56°
(b) 11.31°	(d) None of the above

66. A ship 120 metres long at the waterline has equidistantly spaced half ordinates commencing from forward as follows: 0, 3.7, 5.9, 7.6, 7.5, 4.6, 0.1 meters, respectively. The area of the waterline and the TPC (Tonnes Per cm Immersion) at this draft are:

(a) 12.37 m ² , 1207 Metric Tonnes	(c) 25.25 m ² , 1806 Metric Tonnes
(b) 1207 m ² , 12.37 Metric Tonnes	(d) None of the above

67. Simpson's $\frac{3h}{8}(y_1 + 3y_2 + 3y_3 + y_4)$ integration rule assumes that the equation of the curve is of the form:

(a) $a_0 + a_1x + a_2x^2 + a_3x^3$	(c) $a_0 + a_1x$
(b) $a_0 + a_1x + a_2x^2$	(d) None of the above

68. The following relation holds true:

(a) Reynolds number = Inertial force/ Viscous force	(c) (a) and (b)
(b) Froude number = $\frac{V * L}{v}$	(d) None of the above

69. The following relation holds true:

(a) (Froude number) ² = Inertial force/ Gravity force	(c) Froude number = Inertial force/ Gravity force
(b) Froude number = $\frac{V}{\sqrt{g * L}}$	(d) (a) and (b)

70. The following is true of a truss structure:

(a) The structural members only take axial force	(c) (a) and (b)
(b) The moment at the pin joints = 0	(d) None of the above

71. It is desired to apply high tensile steel to ship structure to reduce lightship weight and increase longitudinal strength. The preferable locations where the high tensile steel shall be used in midship section is:

(a) Deck structure (away from neutral axis)	(c) Near the neutral axis
(b) Bottom structure (away from neutral axis)	(d) (a) and (b)

72. A rectangular barge is floating in water in even keel. Two objects, each of them of mass m , are shifted away from midship towards the forward and aft end of the barge. There is no change in draft and trim of the vessel. The bending moment acting on the vessel will:

(a) Increase	(c) Insufficient information
(b) Decrease	(d) None of the above

73. In a LNG tanker spherical shaped independent cargo tanks are provided. Will the independent cargo tank's scantlings contribute to midship section modulus of the LNG carrier?

(a) Yes	(c) Insufficient information
(b) No	(d) None of the above

74. The following holds true for Type A and Type B freeboard in the context of load line regulations.

(a) Type A: Oil tanker, Type B: Container carrier	(c) Type A: Bulk Carrier, Type B: Oil tanker
(b) Type A: Oil tanker, Type B: Bulk Carrier	(d) (a) and (b)

75. All transverse and longitudinal bulkheads (watertight and oil tight) used for subdivision of the ship extend until this deck.

(a) Bulkhead deck	(c) (a) and (b)
(b) Freeboard deck	(d) None of the above

76. The term "Floodable length" is used in the context of:

(a) Ballast tank capacity	(c) Intact stability
(b) Cargo capacity	(d) Damage Stability

77. The purpose of slop tank in an oil tanker is:

(a) To store oil and water mixture after crude oil washing of the cargo tank	(c) To store diesel oil for onboard consumption
(b) To store fresh water for drinking purpose	(d) None of the above

78. A vessel's "minimum bow height" requirement is greater than the "freeboard". The vessel's operating requirements does not permit it to have sheer. What alternative design option is available for complying with loadline regulation?

(a) Provide a forecastle	(c) (a) and (b)
(b) Increase the vessel's depth	(d) None of the above

79. The damage stability computation of a loaded oil tanker considers the following aspects:

(a) Oil pollution	(c) Oil shall be assumed to drain out of the damaged cargo tanks
(b) Cargo permeability	(d) (a), (b), and (c)

80. For a loaded double hull oil tanker, a damage situation where oil will not be released out in the sea.

(a) Only breach of outer hull	(c) (a) and (b)
(b) Not possible. All damage cases result in oil outflow.	(d) None of the above

81. The following is correct for Type A, Type B and Type C independent tanks in the context of liquefied gas carriers:

(a) Type A: LPG carrier, Type B; LNG carrier Type C: Pressure vessel	(c) Type A: LNG carrier, Type B; LPG carrier Type C: Pressure vessel
(b) Type A: Pressure vessel, Type B: LPG Carrier, Type C: LNG carrier	(d) None of the above

82. A pure car carrier has a weather tight foldable closing ramp installed on the side shell at the aft. The lowermost opening of the ramp will be above which deck?

(a) Bulkhead deck	(c) (a) and (b)
(b) Freeboard deck	(d) None of the above

83. For which type of ship the concept of "alternate hold loading" is employed?

(a) Bulk carrier	(c) Tug
(b) Passenger ship	(d) None of the above

84. What is sloshing? For which ship type this phenomenon is critical?

(a) Random and free motion of liquid inside tank. Oil tanker.	(c) Random and free motion of liquidified gas inside tank. Gas carrier.
(b) Random and free motion of bulk grain inside cargo hold. Bulk carrier.	(d) (a) and (c)

85. The inert gas is mandatorily used onboard the following ship types:

(a) Container carrier	(c) Passenger ships
(b) Oil tanker and gas carrier	(d) Tugs

86. The term "angle of repose" is relevant for which ship type and which ship structure?

(a) Bulk Carrier. Top side hopper tanks	(c) Oil tanker. Side shell plating.
(b) Bulk Carrier. Tank top plate	(d) Container ship. Engine room bulkhead

87. The terms "skew" and "rake" are used in the design of following item

(a) Tumblehome	(c) Bulbous bow
(b) Sheer strake	(d) Propeller

88. Name the two gases whose emissions are restricted from the ship as per MARPOL regulation.

(a) NO _x , SO _x	(c) N ₂ and O ₂
(b) N ₂ and H ₂	(d) None of the above

89. Grain stability rules are applicable for the following:

(a) While loading containers in a container ship	(c) While loading bulk grain in a bulk carrier
(b) While loading containers in a bulk carrier	(d) Passenger ship

90. The following requirements shall be satisfied by damaged GZ curve of a passenger ship.

(a) Minimum area under damaged GZ curve	(c) Minimum required range of damaged GZ curve
(b) Maximum permissible list after damage	(d) (a), (b) and (c)

91. A vessel has draft lines corresponding to Tropical (T): 23.96 m, Summer (S): 24.48 m, Winter (W): 25 m. If all the numeral values are correct, the following may be the correct draft combination:

(a) T: 23.96 m, S: 24.48 m, W: 25 m.	(c) W: 25 m, T: 24.48 m, S: 23.96 m.
(b) T: 25 m, S: 24.48 m, W: 23.96 m.	(d) None of the above

92. A vessel has a beam: 60 m, depth: 30 m and draft: 24 m. The double hull water ballast tank is 3.0 m wide on the side. A straight air pipe is at a height of 800 mm from the main deck. The air pipe permits water to enter tank when submerged. What will be the minimum down flooding angle for the vessel?

(a) 50.19°	(c) 4.56°
(b) 42.35°	(d) 14.13°

93. As per gas carrier ship regulation, the probability of exceeding permissible stress limit $< 10^{-8}$ for acceptable structural design. The permissible stress for mild steel is 235 N/mm^2 . There are two structural designs. In (a) Probability (stress $\geq 245 \text{ N/mm}^2$) = $10^{-7.8}$, and in (b) Probability (stress $\geq 235 \text{ N/mm}^2$) = $10^{-9.2}$. Which one of the design is acceptable?

(a) Only (b)	(c) Both (a) and (b)
(b) None of (a) and (b)	(d) Only (a)

94. An offshore supply vessel has very low freeboard in its working deck and a buoyant superstructure at the forward. The working deck gets immersed in water for low heel angles. The GZ curve is computed with "free to sink and trim" and "fixed trim" condition. Which one of the GZ curve you will use for designing the vessel.

(a) (b), (c) and (d)	(c) GZ curve computed with "fixed trim"
(b) Both GZ curves will be same	(d) GZ curve computed with "free to sink and trim"

95. As per gas carrier ship regulation, the empty independent tanks must be designed to endure antifloating arrangement. Antifloating arrangement means:

(a) Buoyant force on independent tank > Weight of independent tank	(c) (a) and (b)
(b) Buoyant force on independent tank < Weight of independent tank	(d) None of the above

96. As per MARPOL Crude Oil washing system needs to be provided for the following ship type:

(a) Oil tanker	(c) Tug
(b) Container ship	(d) None of the above

97. The steering gear can turn a rudder from -35° to $+30^\circ$ in 28 seconds. During Zigzag test ($20^\circ/20^\circ$) the time taken for moving rudder from -20° to $+20^\circ$ will be ----- secs.

(a) 17.23	(c) 14.56
(b) 21.32	(d) None of the above

98. During a $20^\circ/20^\circ$ Zigzag test, the ship's initial heading angle was 150° . The first -20° rudder angle command would be executed when the ship's heading angle was -----.

(a) 170°	(c) -170°
(b) 130°	(d) None of the above

99. During a $-10^\circ / -10^\circ$ Zigzag test, the ship's initial heading angle was 135° . The first $+10^\circ$ rudder angle command would have been given when the ship's heading angle was -----.

(a) 115°	(c) 135°
(b) 155°	(d) 125°

100. During a starboard turning circle test, the ship's initial heading angle was 270° . The transverse displacement of the ship (from its initial position) when its heading angle first becomes ----- (degrees) is called -----.

(a) 0° , Transfer	(c) (a) and (b)
(b) 270° , Tactical diameter	(d) None of the above

101. A fighter jet is speeding on the flight deck of an aircraft carrier (in X axis direction of the ship) at a constant speed of 150 km/hour. The ship is steadily yawing to port side at $5^\circ / \text{sec}$. The magnitude of Coriolis acceleration acting on the fighter jet is ----- ? Please ignore all other dynamical effects.

(a) 7.272 m/s^2	(c) 7.8 m/s
(b) 9.8 m/s^2	(d) None of the above

102. The Euler angles used in ship dynamics are orthogonal.

(a) Commutative and orthogonal	(c) Yes
(b) No	(d) None of the above

103. During a sway harmonic test, 3 complete oscillation cycles are required. The carriage is towed at a steady forward speed of 4.0 m/s. The time period of one complete sway oscillation is 10 sec. The minimum tank length required will be ----- m.

(a) 40	(c) 80
(b) 120	(d) None of the above

104. In the 6 DoF motion of the ship, which degrees of freedom have the stiffness or restoring term present?

(a) Roll	(c) Heave
(b) Pitch	(d) (a), (b) and (c)

105. The following procedure will be followed during crash stop maneuver execution in a ship fitted with (i) fixed pitch propeller (ii) controllable pitch propeller.

(a) (i) Stop and reverse main engine (ii) Only reverse the propeller pitch	(c) (i) Give full ahead rpm (ii) Give full ahead rpm
(b) (i) Stop and reverse main engine (ii) Stop and reverse main engine, thereafter reverse the propeller pitch	(d) None of the above

106. The following parameters are measured during crash stop maneuver execution in a ship

(a) Stopping Ability	(c) Track Reach
(b) Head Reach	(d) All of the above

107. The instrument used for measuring heading angle and which does not depend on Earth's magnetic field is called -----.

(a) Gyrocompass	(c) Tachometer
(b) Magnetic compass	(d) Speedometer

108. Explain why a conventional merchant ship heels when the rudder angle is given. Does the direction of heel angle change as the ship's sway + yaw dynamics build up.

(a) Roll moment is induced because rudder is offset from ship's vertical centre of gravity. Yes	(c) Incorrect statement
(b) Pitch moment is induced because rudder is offset from ship's vertical centre of gravity. No	(d) (a) and (b)

109. For a moving ship rudder is more effective at the ----- of a ship.

(a) Forward	(c) Aft
(b) Pitch	(d) (a) and (b)

110. During a sway harmonic test, the hydrodynamic sway force and the ship speed are measured. Assume sway force and sway motion as $Y_H = Y_{\dot{v}} * \dot{v} + Y_v * v + Y_{vv} * (v)^3$ and y (in meters) = $A * \sin\left(\frac{2\pi}{T} t\right)$ respectively. The carriage moves ahead at uniform speed u during the test. To determine $Y_{\dot{v}}$, Y_v and Y_{vv} following analysis is required:

(a) Conformal mapping	(c) Broaching
(b) Impulse response analysis	(d) Fourier analysis

111. For the ship rolling motion equation: $(I'_{xx} + A'_{44})\ddot{\phi}' + b'_{44}\dot{\phi}' + C'_{44}\phi = 0$

(a) A'_{44} : Added mass moment of inertia in the roll axis direction	(c) C'_{44} : Restoring moment coefficient
(b) b'_{44} : roll damping	(d) (a), (b) and (c)

112. To transform the body fixed dynamics of a surface ship u , v and r (surge speed, sway speed and yawing rate) to the NED (North East Down) coordinate system the following parameter is required:

(a) Roll angle	(c) Heading angle
(b) Pitch angle	(d) None of the above

113. A towing carriage is travelling at 4.0 m/s and has wheels of diameter 1000 mm. Assume no slipping of wheel occurs. Determine the angular velocity of the wheels.

a. 76.4 rpm	c. 716.2 rpm
b. 358.9 rpm	d. 25 rpm

114. During propeller open water test, it is necessary to measure the following:

a. Tow force on the open water boat	c. Towing speed
b. Propeller Thrust	d. (b) and (c)

115. A 5 bladed overlapping propeller is kept on a table with its face pointing up. Its outline is then drawn on the table. The resulting shape will be the ----- of the blade.

a. Developed area	c. Projected area
b. Expanded area	d. None of the above

116. The propeller open water efficiency (η_o) is defined as follows:

a. $\frac{T_o * V_A}{2\pi n Q_o}$	c. $\frac{2\pi K_{QO}}{K_{TO} * J}$
b. $\frac{K_{TO} * J}{2\pi K_{QO}}$	d. (a) and (b)

117. Following parameter can be varied for a controllable pitch propeller:

a. Propeller pitch	c. Propeller diameter
b. Propeller chord	d. (a), (b) and (c)

118. Following parameter can be varied in a fixed pitch propeller:

a. Propeller pitch	c. Propeller diameter
b. Propeller chord	d. None of the above

119. For computing propeller mass and the mass moment of inertia about the rotation axis, following parameters are essential:

a. Section area of the propeller blade	c. Propeller rpm
b. Propeller power	d. None of the above

120. The following is one of the design criteria for preventing forward bottom slamming:

a. Waterplane area	c. Midship section area
b. Yield stress of mild steel	d. Minimum draft

Sample QP for PhD/MS CET – Nautical Studies

Maximum Marks: 120

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.
DO NOT write anything else on the Test Booklet.
8. At the end of the examinations both OMR sheet and the Question booklet have to be handed over to the Invigilator.
9. Sheets for rough work are appended in the Question Paper at the end.

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Multiple Choice questions in General Aptitude for Ph.D / M.S. (By Research)

1. The monthly incomes of X and Y are in the ratio of 4:3 and their monthly expenses are in the ratio of 3:2. However, each saves Rs. 6000/-per month. What is their total monthly income?
 - (a) Rs. 28,000/-
 - (b) Rs. 42,000/-
 - (c) Rs. 56,000/-
 - (d) Rs. 84,000/-

2. Suppose the average weight of 9 persons is 50 kg. The average weight of the first 5 persons is 45 kg, whereas the average weight of the last 5 persons is 55 kg. Then, the weight of the 5th person will be
 - (a) 45 kg
 - (b) 47.5 kg
 - (c) 50 kg
 - (d) 52.5 kg

3. What is the value of x in the following logarithm equation?
 $\log(x+2) - \log(x-1) = \log 2$
 - (a) 5
 - (b) 4
 - (c) 3
 - (d) 2

4. "Price is not the same thing as value. Suppose that on a day the price of everything viz., coal, bread, postage stamps, the taxi fare, the rent of houses etc. were to double. Prices then would certainly rise, but values of all things except one would not."

The writer wants to say that if prices of all things were doubled,

- (a) the values of all things would remain constant.

- (b) the values of the things sold would be doubled.
- (c) the values of all things bought would be halved.
- (d) the values of money only would be halved.

5. During the last summer vacation, John went to a summer camp where he took part in hiking, swimming and boating.

This summer, he is looking forward to a music camp where he hopes to sing, dance and learn to play the guitar. Based on the above information, four conclusions as given below, have been made.

Which one of these logically follows from the information given above?

- (a) John's parents want him to play the guitar.
- (b) John prefers music to outdoor activities.
- (c) John goes to some type of camp every summer.
- (d) John likes to sing and dance.

6. The number of deaths among the army personnel is 8 in 1000, but among the civilian population, it is 20 per 100. Which of the following inferences can be drawn from this statement?

- (a) It is better to join the army.
- (b) The relationship is fortuitous.
- (c) Quality of Life Index is very high within the armed forces.
- (d) The groups can't be compared due to their heterogeneity.

7. A person walks 12 km due north, then 15 km due east, after that 19 km due west and then 15 km due south. How far is he from the starting point?

- (a) 5 km
- (b) 9 km
- (c) 12 km
- (d) 15 km

8. The sum of income of A and B is more than that of C and D taken together. The sum of income of A and C is the same as that of B and D taken together. Moreover, A earns half as much as the sum of the income of B and D, whose income is the highest?

- (a) A
- (b) B
- (c) C
- (d) D

9. As per agreement with a bank, a businessman had to refund a loan in some equal installments without interest. After paying 18 installments he found that 60% of his loan was refunded. How many installments were there in the agreement?

- (a) 22
- (b) 24
- (c) 30
- (d) 32

10. A gardener increased the area of his rectangular garden by increasing its length by 40% and decreasing its width by 20%. The area of the new garden is

- (a) has increased by 20%.
- (b) has increased by 12%.
- (c) has increased by 10%.
- (d) remains exactly the same as the old area.

11. In a meeting, the map of a village was placed in such a manner that south-east becomes north, north-east becomes west and so on. What will south become?

- (a) North.
- (b) North-east.
- (c) North-west.
- (d) West.

12. Running at a speed of 60 km per hour, a train passed through a 1.5 km long tunnel in two minutes. What is the length of the train?

- (a) 200 m.
- (b) 300 m.
- (c) 500 m.
- (d) 800 m.

13. Aditya attempted 12 questions in the examination for Science paper and secured full marks in all of them. If he obtained 60% in the test and all the questions carried equal marks, then what is the number of questions in the test?

- (a) 20.
- (b) 22.
- (c) 24.
- (d) 30.

14. Lead, ingested or inhaled, is a health hazard. After the addition of lead to petrol has been banned, what still are the sources of lead poisoning?

- 1. Smelting unit.
- 2. Pens and pencils.
- 3. Paints.
- 4. Hair oils and cosmetics.

Select the correct answer from the choices given below?

- (a) 1 and 3 only.
- (b) 1, 2 and 3 only.
- (c) 2 and 4 only.
- (d) All of above (1, 2, 3 and 4).

15. Rainbow is produced when sunlight falls on drops of rain. Which of the following physical phenomenon are responsible for this?

- 1. Dispersion.
- 2. Refraction.
- 3. Internal reflection.

Select the correct answer from the choices given below?

- (a) 1 and 2 only.
- (b) 2 and 3 only.
- (c) 1 and 3 only.
- (d) All of above (1, 2 and 3).

16. The known forces of nature can be divided into four classes, viz. gravity, electromagnetism, weak nuclear forces and strong nuclear forces. With reference to them, which one of the following statements is not correct?
- (a) Gravity is the strongest of the four.
 - (b) Electromagnetism acts only on particles with an electric charge.
 - (c) Weak nuclear force causes radioactivity.
 - (d) Strong nuclear force holds protons and neutrons inside the nucleus of an atom.
17. Acid rain is caused by the pollution of environment by:
- (a) Carbon dioxide and Nitrogen.
 - (b) Carbon monoxide and Carbon dioxide.
 - (c) Ozone and Carbon dioxide.
 - (d) Nitrous oxide and Sulphur dioxide.
18. Salts of which of the following elements provide colour to the fireworks:
- (a). Zinc and Sulphur.
 - (b). Potassium and Mercury.
 - (c). Strontium and Barium.
 - (d). Chromium and Nickel.

19. Which one of the following is the correct sequence of the given substances in the order of their densities?

- (a). Steel>Mercury>Gold
- (b). Gold >Mercury> Steel
- (c). Steel> Gold > Mercury
- (d). Gold > Steel > Mercury

20. In addition to fingerprint scanning, which of the following can be used in the biometric identification of a person?

- 1. Iris scanning.
- 2. Retinal scanning.
- 3. Voice recognition.

Select the correct answer from the choices given below?

- (a) 1 only.
- (b) 2 and 3 only.
- (c) 1 and 3 only.
- (d) All of above (1, 2 and 3).

21. The principle on which Optical fibre works is:

- (a) Total internal reflection.
- (b) Scattering.
- (c) Refraction.
- (d) Interference.

22. Diffusion of light in the atmosphere takes place due to which of the following:

- (a) Carbon dioxide.
- (b) Dust particles.
- (c) Helium.
- (d) Water vapour.

23. Which of the following is/are the example(s) of chemical change?

1. Crystallization of sodium chloride.
2. Melting of ice.
3. Souring of milk.

Select the correct answer from the choices given below?

- (a) 1 and 2 only.
- (b) 3 only.
- (c) None of above (1, 2 and 3).
- (d) All of above (1, 2 and 3).

24. “If political leadership fails to emerge, there is likelihood of military taking over power in developing countries. Radical student groups or labour may try to raise revolution but they are not likely to compete with the military. Military intervention, rule, and withdrawal from politics is closely related to a society’s level of political development”

In the context of political development, the assumption in the above passage is that

- (a) Political leadership is not an effective instrument.
- (b) Military fills in political vacuum.
- (c) Military intervention is inevitable for political development.
- (d) None of the above.

25. A military code writes SYSTEM as SYSMET and NEARER as AENRER. Using the same code, FRACTION can be written as:

- (a) CARFTION
- (b) FRACNOIT
- (c) NOITCARF
- (d) CARFNOIT

Maritime Sector

26. The head quarter of the international Maritime Organization is located

- (a) Geneva
- (b) New York
- (c) London
- (d) Washington

27. The International Maritime Organization is an UN body for regulating

- (a) Cargo & defence ships
- (b) Cargo & passenger ships
- (c) Canals & ports
- (d) Ships & ports

28. The largest Indian shipping company in the private sector is

- (a) Great Eastern
- (b) Shipping Corporation of India
- (c) Essar
- (d) Mercator

29. Merchant navy primarily covers

- (a) Defence of the country
- (b) Underwater exploration
- (c) Carriage of goods & passengers
- (d) Managing ports

30. Largest export from India in terms of volume is

- (a) Tea
- (b) Spices
- (c) Iron Ore
- (d) garments

31. Largest import to India in terms of volume is

- (a) Crude Oil
- (b) Grains
- (c) Cement
- (d) Fertilizer

32. Sagarmala is a significant project for

- (a) Connecting Ports
- (b) Improving infrastructure
- (c) Improving logistics
- (d) All of these

33. What is special about an Indian Team which recently circumnavigated the world in a sailing boat?

- (a) All Girl team of 6 Indian Naval officers
- (b) 03 male and 03 female Indian Naval officers
- (c) All men team of 6 Indian Naval officers
- (d) All Girl team of 6 Indian officers, 02 from Navy, 02 from Army and 02 from Air Force.

34. Who became the first Indian woman to receive IMO's Exceptional Bravery Award at Sea?

- (a) Captain S. Nilkeni
- (b) Captain Ruchika Malhotra
- (c) Captain Monika Mehrotra
- (d) Captain Radhika Menon

35. Panama Canal connects

- (a) Atlantic Ocean & Mediterranean Sea
- (b) Atlantic Ocean & Gulf of Mexico
- (c) Pacific Ocean & Atlantic Ocean
- (d) Mediterranean Sea & Red Sea

36. The continent through which all three imaginary lines, e.g. Equator, Tropic of Cancer and Tropic of Capricorn pass through is

- (a) Africa
- (b) Asia
- (c) Europe
- (d) Australia

37. First ship built in an Indian shipyard is

- (a) Loyalty
- (b) Rajendra
- (c) Jal Usha
- (d) Vikrant

38. The accident of Titanic led to the development of which international convention

- (a) SOLAS
- (b) loadline
- (c) MARPOL
- (d) STCW

39. Indian Maritime University has campuses in

- (a) Chennai & Mumbai
- (b) Chennai & Kolkata
- (c) Chennai & Kochi
- (d) All of these

40. For carrying cargo the ship owner earns

- (a) Freight
- (b) Demurrage
- (c) Hire
- (d) Dispatch

41. Bunkering is the process of

- (a) Refueling the ship
- (b) Loading the ship
- (c) Unloading the ship
- (d) Inspecting the ship

42. Rudder is used in ship for

- (a) Moving the ship
- (b) Turning the ship
- (c) Increasing the ship's speed
- (d) Stopping the ship

43. Sea water as ballast is used in ships for

- (a) Maintaining stability of a ship
- (b) when transmitting a distress message

- (c) Cooling of the engines of a ship
- (d) For converting to potable water

44. Main thrust for development and adoption of ISM Code came from the findings of accident involving

- (a) The Herald of Free Enterprise
- (b) Scandinavian Star
- (c) Exxon Valdez
- (d) Amoco Cadiz

45. The ISM Code is mandatory on ships and refers to the

- (a) International Shipping Market
- (b) International Seafarer's Management
- (c) Inter Shipping Management
- (d) International Safety Management

46. Master has the overriding authority and the responsibility to make decisions with respect to

- (a) Pollution prevention
- (b) Safety of the Ship
- (c) Safety and Pollution prevention
- (d) None of these

47. In a radio transmission from a ship 'Roger' means

- (a) I understand you
- (b) I agree with you
- (c) I hear you
- (d) I see you

48. 'Mayday' signal is used in shipping

- (a) when there is more than one emergency
- (b) when transmitting a distress message
- (c) Greeting another passing ship
- (d) Informing the authorities that all is well on board

49. The share of the Indian seafarers in the world is

- (a) 15%
- (b) 12%
- (c) 5%
- (d) 8%

50. Largest shipping company in the world is

- (A) Maersk
- (b) MSC
- (c) Evergreen
- (d) Mitsui OSK

51. The HQ of Directorate General of Shipping is located at

- (a) Chennai
- (b) New Delhi
- (c) Kolkata
- (d) Mumbai

52. Alang is famous for

- (a) Largest Indian Port
- (b) Ship Breaking

- (c) Ship building
- (d) Ship repairing

53. Anchor is used in ship for

- (a) Keeping the ship in one place
- (b) Securing the ship
- (c) Tying the ship with shore
- (d) Decorating the ship

54. Which of the following may be used as fuel in the engines of a ship

- (a) High Speed Oil
- (b) Furnace Oil
- (c) Diesel Oil
- (d) All of these

55. Iron ore is carried in

- (a) Bulk carriers
- (b) Oil Tankers
- (c) Container ships
- (d) General cargo ships

56. Computers are used onboard for

- (a) Marine communication
- (b) ship to shore communication
- (c) shore to ship communication
- (d) All of these

57. Which of the following are the types of ships

- (a) RORO
- (b) Reefer
- (c) Heavy Lift
- (d) All of these

58. Overall command of the ship is with Master who is the

- (a) Ship Manager
- (b) Chief Engineer
- (c) Captain
- (d) Harbour Master

59. The Indian Maritime University was established in

- (a) 2009
- (b) 2008
- (c) 2010
- (d) 2011

60. MS Act stand for

- (a) Merchant Shipping Act
- (b) Merchant Seamen Act
- (c) Marine Surveyors' Act
- (d) Maritime Shipping Act

Multiple Choice Questions in NAUTICAL STUDIES

Tick the correct answer

61. Mixed mooring means

- a) Wire rope is connected to synthetic rope tail by joining shackle
- b) Wire and rope are sent in the same direction in mooring
- c) Mooring ropes forward are wires and aft are synthetic ropes
- d) The vessel is made fast with chain and wires

62. The render load of a winch is

- a) the maximum load a winch can heave.
- b) The load at which winch will stop heaving
- c) The load at which winch will turn in the reverse direction
- d) The load when the winch is put in double gear

63. Dumping of land waste is covered by

- a) Annex 5 of MARPOL
- b) Annex 4 of MARPOL
- c) Annex 2 of MARPOL
- d) None of the above

64. Which of the following is not a part of Annex II of MARPOL

- a) Shipboard Marine Pollution Emergency Plan for Noxious Liquid substances
- b) Procedures and Arrangement Manual
- c) Cargo Record Book
- d) International Oil Pollution Prevention Certificate

65. Navtex messages which can be rejected are

- a) Navigational warning
- b) Meteorological warning
- c) Piracy warning
- d) Meteorological forecasts

66. Preferred method of sailing used for long ocean crossing voyages in East – West direction

- a) Mercator sailing
- b) Plane sailing
- c) Great circle sailing
- d) Any of the above

67. Ratio of Departure to D'long is equals to

- a) Sine Latitude
- b) Cosine Latitude
- c) Tan Course
- d) Tan Distance

68. Nautical Almanac gives the following information about Navigation stars

- a) Distance
- b) Size
- c) Brightness
- d) Colour

69. Venus can be seen only in the mornings or evenings because

- a) it is too far from the Earth
- b) it is too close to the Earth
- c) its orbit around the Sun is smaller than that of Earth
- d) its orbit around the Sun is larger than that of Earth

70. The precautions to be taken while using synthetic ropes are

- a) It should be kept out of direct sunlight
- b) Its melting point is below 100° C, hence should be kept in a cool place.
- c) The knots of synthetic ropes slip easily
- d) It does not float in water.

71. . Floors aboard ship are _____.

- a. frames to which the tank top and bottom shell are fastened on a double bottomed ship
- b. transverse members of the ships frame which support the decks
- c. longitudinal beams in the extreme bottom of a ship from which the ship's ribs start
- d. longitudinal angle bars fastened to a surface for strength

72. A fairway buoy if lighted will show

- a) Fixed red light
- b) Green light
- c) Morse (A) white light
- d) Flashing red light

73. A relative vector on the ARPA will have zero vector length of target vessel when

- a) on the same course as your vessel
- b) the target vessel is stationary
- c) on the same course and speed as your vessel
- d) on the reciprocal course and same speed as your vessel

74. The best information on the location of the blocks when dry docking a vessel is contained in the _____.

- a. shell expansion plan
- b. docking diagram

- c. ship's docking plan
- d. general arrangement plan

75. Uneven heating of the earth's surface is caused due to

- a) Lesser amount of sun's heat reaching the poles.
- b) High specific heat of the sea compared to land
- c) Apogee and perigee of the Sun.
- d) Greater reflectivity at the equator as compared to the polar areas

76. If the liquid tanks are slack

- a) The KG increases
- b) The GM increases
- c) The GZ increases
- d) None of the above

77. Formula for calculating FWA in cms is equal to

- a) $1.025A/100$
- b) $(LB^3/12) \times \text{density}$
- c) $W/40TPC$
- d) $W/4TPC$

78. For a Type B-60 ship the freeboard is reduced

- a) upto 60% of freeboard of a type-A ship
- b) upto 60% of the difference of freeboard of type-A and type-B ships
- c) As per freeboard table given for type-B 60 ships
- d) None of the above

79. A vessel with initial negative metacentric height

- a) will have positive GM after angle of loll
- b) will have negative GM at all angles of inclination
- c) will have positive GM before angle of loll
- d) will have positive GM at angle of lurch

80. Enhanced hull survey program is for

- a) Bulk carriers
- b) Combination carriers
- c) oil tankers
- d) all the above.

81. A charterer is unable to complete the loading of a vessel during the lay days specified in the charter party. Under these circumstances, the

- a) vessel operator can collect demurrage
- b) ship is authorized extra time to discharge the cargo
- c) charterer must pay dispatch money
- d) effective period of the charter is extended

82. A disadvantage of using chain lashing on heavy vehicles aboard Ro-Ro vessels is that it .

- a) can wrap around cargo
- b) is easily damaged
- c) is affected by temperature
- d) does not absorb shock

83. A fire has damaged 20 bales of cotton on a freighter loaded with general cargo. This claim would come under

- a) constructive total loss
- b) general average
- c) particular Average
- d) total loss of a part

84. Which of the following can be considered an act of good seamanship?

- a) Using all radars when proceeding at full speed in fog
- b) Using deck and accommodation lights at sea to illuminate the vessel.
- c) Proceeding on the starboard side of a narrow channel to take advantage of a favourable current.
- d) A vessel underway should keep clear of a vessel at anchor

85. You are heading North. You notice light flashing 9 flashes right ahead. You should

- a) alter course to starboard
- b) alter course to port
- c) proceed in the reverse direction
- d) keep clear of the buoy

86. If two mooring lines are to be placed on the same bollard, which method is BEST?

- a) Place the eye from the forward line on the bollard and then place the eye from the second line directly over the first.
- b) It makes no difference how the lines are placed.
- c) Place the eye from either line on the bollard, and then bring the eye of the other line up through the eye of the first, and place it on the bollard.
- d) Place both eyes on the bollard, in any manner, but lead both lines to the same winch head on the vessel and secure them on the winch.

87. While operating a crane, the stress on the topping lift
- a) increases as the jib is lowered
 - b) decreases as the jib is lowered
 - c) remains the same whether the jib is hoisted or lowered
 - d) depends on the direction of pull
88. Cargo securing is done
- a) by a combination of lashing, shoring and providing anti skid.
 - b) by cross lashing to prevent tipping
 - c) by vertical lashing to prevent sliding
 - d) by structural alteration.
89. The stress on lashing will
- a) increase on the cargo loaded from the centre of the hold to the wings
 - b) decrease on the cargo loaded from the centre of the hold to the wings
 - c) decrease as we go from lower hold to tween deck
 - d) remain the same irrespective of where the cargo is stowed
90. If a hydraulic pump on a winch accidentally stops while hoisting, the load will stay suspended because
- a) check valve will close and prevent reverse circulation
 - b) a centrifugal counterweight counteracts the force of gravity.
 - c) the electric pump motor will cut out
 - d) the control lever will move to the stop position
91. Due to bad weather your vessel ranges along the jetty where you are berthed, resulting in damage to shipside but no damage to the jetty, which surveyor / representative will you call:
- a) P and I club surveyor
 - b) Classification Surveyor
 - c) Port State Control inspector
 - d) Flag State Representative

92. The use of the signal consisting of five or more short rapid blasts on the ship's whistle

- a) requires you to slow or stop
- b) replaces directional signals
- c) indicates doubts as to other vessel's action
- d) makes the other vessel the give –way vessel.

93. Which applicant/s cannot apply for Registration of Indian Ships

- a) Any individual
- b) More than one individual or their agent
- c) Company /Co-op Society by its agents
- d) None of the options listed under a,b,c

94. Which document is not in Registrar's custody when Registration of Indian ships has been done

- a) Surveyor's certificate
- b) Builder's certificate
- c) Certificate for Type approval of major Nautical/Engine equipment
- d) Previous sale certificate(if any)

95. A Shipping Casualty is not deemed to occur when there is

- a) Loss of property/ life at a serving seafarer's home in Indian territory
- b) Loss of life caused by any casualty on/near the Indian coast
- c) Loss of material damage to another ship on near the Indian coast
- d) Any ship is lost on/near the Indian coast

96. The term "Salvage operations" does not include:

- a) Destruction or the rendering a ship harmless which is sunk
- b) The removal, destruction or rendering the cargo of a ship harmless.
- c) Saving lives
- d) The measures taken to minimize loss to a ship or its cargo or both

97. The assured cannot limit his liability as provided under section 352B in respect of:

- a) Claims arising from loss of life or personal injury
- b) Claims arising out of other loss resulting from infringement of contractual rights, occurring in direct connection with the operation of the ship.
- c) Claims arising out of loss resulting from delay in the carriage by sea of cargo.
- d) Claims arising out of other loss occurring in direct connection with salvage operations

98. The validity (from the date of its issue), of a cargo ship safety equipment certificate is

- a) 5 years
- b) 2.5 Years
- c) Life of the vessel
- d) 10 years

99. Under the Maritime Labour Convention as amended, The Government may make rules for

- a) the hours of work and rest in a week
- b) Food and water supplied to seafarer
- c) The minimum wages to be paid to seafarers
- d) all of the above.

100. Following amenities have to be provided to seamen on board ships

- a) Sufficient Stores for maintenance
- b) Sufficient fuel for the voyage
- c) Clean accommodation as per specified area
- d) Internet connectivity

101. World Scale is used for

- a) Calculating freight of oil cargo
- b) Calculating freight of bulk cargo
- c) It is the rate scale of shipping index
- d) The highest freight paid in the world

102. Running Down clause of Marine Insurance deals with

- a) Own ship's repair after collision
- b) Three fourth collision liability
- c) Collision liability towards other vessel
- d) The running damage of the engine

103. Dangers can be indicated on the ECDIS

- a) It can be highlighted
- b) It can be shown by Simplified symbols
- c) It can be shown by traditional symbols
- d) It can not be indicated

104. Stainless steel is preferred in the construction of Chemical tanker tanks because

- a) it is compatible with most of the chemicals and sea water.
- b) it is compatible with most of the chemicals but not sea water
- c) it is compatible only with sea water
- d) It provides high tensile strength

105. The reliability of ENC is obtained from

- a) Annual Notice to Mariners
- b) Information is given in the chart below the title
- c) Sailing direction
- d) Table of Zone of Confidence

106. Sloshing means

- a) Liquid moving at high velocity
- b) Free surface effect of liquid
- c) Violent splashing of liquid
- d) Excessive pressure in pipe line

107. Threshold limit value TWA

- a) concentration of harmful gases in air to which a person may be exposed for 8 hours per week
- b) Concentration of gas can be exposed to 15 minutes at a time with break of one hour between exposure
- c) Concentration safe to work continuously
- d) concentration of harmful gases in air to which a person may be exposed for 8 hours per day and 40 hours per week

108. A vessel will have high course directional stability with

- a) the vessel has low Length to beam ratio
- b) the vessel has high Length to beam ratio
- c) the vessel has high beam to draft ratio
- d) the vessel has low beam to draft ratio

109. A balanced rudder

- a) reduces the load on the steering gear
- b) improves the steering ability of the vessel
- c) is effective for turning while going astern
- d) increases the rudder area ratio

110. Liability and Compensation International Convention on Civil Liability for Oil Pollution Damage 1969 is not exempted for

- a) Pollution caused by non commercial vessels
- b) Pollution caused due to Natural Disaster.
- c) Accidental pollution caused due to no fault of the ship
- d) Pollution caused due to Act of War

111. As per MLC 2006, the Minimum hours of rest should be

- a) 72 Hours in any 7 days period
- b) 14 Hours in any 24 hours period
- c) 10 Hours in any 24 hours period and 77 Hours in any 7 days period
- d) 10 Hours in any 24 hours period and 70 hours in any 7 Days period

112. Despatch Money is paid

- a) by charterer to ship owner on a bulk carrier when he exceeds the loading and discharging time
- b) by ship owner to charterer on a tanker when loading and discharging is in a shorter period than agreed
- c) by the terminal to the ship owner when the loading and discharging time is shorter period than agreed
- d) by the ship owner to charterer on a bulk carrier when loading and discharging is in a shorter period than agreed

113. In case of salvage, if the salvor invokes SCOPIC

- a) the ship owner or his insurer must provide 3 million dollars within two working days of invoking SCOPIC
- b) the shipowner or his insurer must provide 4 million dollars within three working days
- c) the shipowner or his insurer must provide 2 million dollars within three working days
- d) the shipowner or his insurer must provide 2 million dollars within three working days

114. In case a salvor invokes SCOPIC clause, he cannot claim under

- a) Article 12 of Salvage convention
- b) Article 13 of Salvage convention
- c) Article 14 of Salvage convention
- d) Under LOF

115. Winter North Atlantic Load Line is required on ships

- a) Less than and equal to 100 m length
- b) More than 100 m length
- c) More than 150 m length
- d) Less than 150 m length.

116. Given summer draft is 9.6 m distance between tropical and winter load line mark equal to

- a) 20 cms
- b) 30 cms
- c) 40 cms
- d) Data insufficient.

117. In draft survey 1st trim correction is applied because

- a) The mean of means draft is not same as draft at the Centre of flotation
- b) The mean of means draft does not consider trim
- c) The mean of means draft does not consider hull deformation
- d) All of the above

118. When X-band radar has failed while approaching port

- a) Inform class, make risk assessment and seek dispensation
- b) Inform flag, make risk assessment and seek dispensation
- c.) Inform technical managers, make risk assessment and seek dispensation
- d) Inform coastal state, make risk assessment and seek dispensation

119. During heavy weather if lifebuoy falls overboard...

- a) Do nothing, just replace with spare
- b) Replace with spare and inform company
- c) Replace with spare and inform MRCC
- d) Replace with spare and inform class

120. Two tugs, are positioned at the forward and after stations. If the ship gives a kick astern which of the tug shall have more effect.

- a) As the pivot point is Aft the Aft tug shall be more effective
- b) As the pivot point is forward the forward tug shall be more effective
- c) As the pivot point is Aft the forward tug shall be more effective.
- d) As the pivot point is forward the Aft tug shall be more effective