

# MCPE MODEL QUESTION PAPER FOR GD OFFICERS

Max Marks: 150

Time: 3 Hrs

## Part A (Total Marks 45)

1. Indian Tide Tables gives tidal prediction for
  - (a) Indian ports
  - (b) Indian and selected foreign ports
  - (c) Indian major ports
  - (d) Indian major and foreign ports
  
2. If pulse length of radar is 20 us, the range discrimination will be
  - (a) 2000 yards
  - (b) 1640 yards
  - (c) 3280 yards
  - (d) 1200 yards
  
3. Which one of the following is not an adjustable error in a sextant?
  - (a) Perpendicularity
  - (b) Centering error
  - (c) Side error
  - (d) Collimation error
  
4. Sun's tide raising force is about \_\_\_\_\_% that of the moon
  - (a) 45 %
  - (b) 50 %
  - (c) 55 %
  - (d) 60 %
  
5. A pilotage claim becomes time-bar if it is not forwarded and submitted within \_\_\_\_\_ months
  - (a) 6
  - (b) 12
  - (c) 32
  - (d) 24

6. While fixing a ship by two bearings of a single object, with a time interval between observations, the point of intersection of the transferred position line and the \_\_\_\_\_ position line is the ship's position at the time of \_\_\_\_\_ observation
- (a) Second, first
  - (b) Second, second
  - (c) First, first
  - (d) First, second
7. While altering your ship's course to port in a foggy weathers. You will sound signals
- (a) Two shot blasts
  - (b) Two short blasts in addition to the sound signals as applicable in restricted visibility
  - (c) Two prolong blasts
  - (d) Two prolong blasts in addition to .....
8. Which one of the following is not a search pattern?
- (a) Rectangular
  - (b) Circular
  - (c) Expanding square
  - (d) Intercepting
9. A sector is to be searched, using normal sector search between bearing of 180 degree and 260 degree and to a depth of 200 miles. If the track spacing is 24, the number of aircraft required will be
- (a) 2
  - (b) 3
  - (c) 4
  - (d) 5
10. Sector Search is mainly used
- (a) by FPVS
  - (b) by aircraft
  - (c) if low probability of contact at the start is needed.
  - (d) number of ships but no aircraft available.

11. A crude oil with less than 10 API will definitely
- (a) Float
  - (b) Sink
  - (c) Evaporate
  - (d) None of these
12. The effect of current and wind on the movement of 'oil spill' is approximately
- (a) 100 % & 3 %
  - (b) 100 % & 30 %
  - (c) 50 % & 30 %
  - (d) 50 % & Nil
13. As a general rule, dispersants are capable of dispersing most liquid oils, liquid, water in oil emulsions with viscosities less than
- (a) 0 – 12000 c st
  - (b) 5000 – 10000 c st
  - (c) more than 2000 c st
  - (d) Less than 2000c st
14. ISRR stands for \_\_\_\_\_
15. Who is the Chairman of 'NMSARB
- (a) DG Shipping
  - (b) DGCG
  - (c) PD(ops) at CGHQ
  - (d) DDG CG.
16. In case of a 'SAR' mission, "A shore unit can never be 'OSC' is a \_\_\_ statement".
- (a) Correct
  - (b) Incorrect
  - (c) Not acceptable
  - (d) None of these

17. The headquarter of the IMO is located at
- (a) London
  - (b) Geneva
  - (c) Paris
  - (d) New York
18. Entry of any vessel, other than specifically engaged, is prohibited within \_\_\_\_\_ meters of an oil rig.
- (a) 500 mtrs
  - (b) 1 Nm
  - (c) 5 Nm
  - (d) 1000 mtrs.
19. The extent of continental shelf is from
- (a) Base line to 24 Nm
  - (b) Base line to 200 Nm
  - (c) Base line to minimum 200 Nm
  - (d) Base line to 12 Nm
20. Which of the following do not have financial powers?
- (a) DGCG
  - (b) DDG
  - (c) COMCG
  - (d) COMDIS
21. Total number of 'ASEAN' member countries is
- (a) 10
  - (b) 11
  - (c) 12
  - (d) 13
22. Public mess traps under the charge of officer' mess should be reflected in the audit sheet as.
- (a) Liability
  - (b) Assets
  - (c) Not be reflected at all
  - (d) None of these

23. The validity of money warrant is
- (a) financial year
  - (b) calendar year
  - (c) assessment year
  - (d) none of these
24. For the purpose of 'ROR' a sea plane is mostly considered as
- (a) a power devoir vessel
  - (b) A WIG
  - (c) A hovercraft
  - (d) None of these
25. The term 'prolonged blast' means a blast of
- (a) 2.4 seconds
  - (b) 3-5 seconds
  - (c) 4-6 seconds
  - (d) 3-6 seconds
26. The term 'Height above the hull' means height above of the \_\_\_\_\_ this height shall be measured from the position vertically beneath the location of light.
- (a) water line
  - (b) upper most continuous deck
  - (c) lower most continuous
  - (d) keel of the ship
27. The DTG on a "Enemy contact report' will be allotted by
- (a) MSO
  - (b) COMCEN
  - (c) Drafter
  - (d) Originator
28. The maximum permissible time for clearance of message of priority
- (a) 15 MIN
  - (b) 2 Hrs
  - (c) 4 Hrs
  - (d) 12Hrs

29. Which of the following is an INMARRAT "M" number?
- (a) 1xxxxxxx
  - (b) 3xxxxxxx
  - (c) 4xxxxxxx
  - (d) 6xxxxxxx
30. DGCG is while visiting ashore, is entitled for the guard.
- (a) 51 men
  - (b) 50 men
  - (c) 21 men
  - (d) None of the above
31. Rate of fire of 40/60 gun is (while elevation is 60 degrees)
- (a) Max 60 rds/min
  - (b) Max 2 rds/min
  - (c) Max 240 rds/min
  - (d) 300rds/min
32. Diesel alternators fitted onboard CG ships are
- (a) Fixed RPM engine
  - (b) Variable fuel engine
  - (c) Fixed fuel rack engine
  - (d) All of the above
33. The major fire fighting system (HALON), being potential threat to the Ozone layer, will be phased out from developing countries by
- (a) 2009
  - (b) 2010
  - (c) 2011
  - (d) 2012
34. The stabilizers fitted on OPVs are of the following type
- (a) Retractable fin
  - (b) Non-retractable fin
  - (c) Semi retractable
  - (d) None of the above

35. If you want to double the range of the radar, power output will have to be increased
- (a) Two times
  - (b) Three times
  - (c) Four times
  - (d) Five times
36. Which of the following is "line of sight" communication?
- (a) HF
  - (b) VHF
  - (c) IN MARSAT
  - (d) None of the above
37. Which one is not the part of sail?
- (a) Shroud
  - (b) Spring hawks
  - (c) Barricades
  - (d) Travelers
38. Which of the control marking will be orange colour?
- (a) X and Y
  - (b) Y and Z
  - (c) Z and A
  - (d) A and M
39. While undergoing 'RAS' the abeam distance between two ships is measured by.
- (a) 108 meters of 8 mm manila rope
  - (b) 108 meters of 12 mm manila rope
  - (c) 102 meters of 12 mm manila rope
  - (d) 102 meters of 8 mm manila rope
40. Which one of the following is the most desirable trait in leader?
- (a) ability to communicate
  - (b) ability to fight
  - (c) ability be delegate
  - (d) None of the above

41. Battle of INCHON was fought between

- (a) Allied force and US
- (b) US and Russia
- (c) Germany, Korea
- (d) None of the above

42. Falkland war was fought between

- (a) Argentina & Italy
- (b) Argentina & UK
- (c) Italy & UK
- (d) None of the above

43. Name the captain of the ship that India lost during 1971 war

- (a) Capt Oberai
- (b) Capt Shekhavat
- (c) Capt Nadkarni
- (d) Capt Mullah

44. Protocol used to receive e-mails on internet is

- (a) Outlook
- (b) TCP/IP
- (c) Internet Explorer
- (d) POP 3

44. Earthing of an electrical equipment is done to ensure safety of

- (a) Equipment
- (b) Personnel
- (c) To economise the bill
- (d) None of the above



## **PART B (TOTAL MARKS 45)**

**(All questions carry 02 marks except Q. No. 23)**

1. List three definite phases of barometer, when a storm is going to pass uncomfortably close to the observer.
2. List the sections of Navigation data Book.
3. Write a short note on Tsunami
4. List the factors affecting 'visual detection' of the contact
5. Differentiate between "Pollution control" and pollution response".
6. Write the working principle of "weir skimmer".
7. Write a short note on "Receiver of the wreck".
8. List components and stages of SAR.
9. List any three powers delegated to CG officers under merchant shipping act 1956
10. Write a short note on "Treatment of POW".
11. Write a short note on Indo – US nuclear cooperation agreement.
12. Write a brief back ground of "Sir Creek" problem between India and Pakistan.
13. Explain the circumstances when a vessel is deemed as overtaking vessel.
14. Write short note on broadcast 'LN'.
15. Write five advantages and disadvantages of diesel engines.
16. Explain the safeties on engines of an OPV. Which one cannot be by passed at all?
17. Draw and explain the propulsion system on board an OPV.
18. List actions in case of a total power failure on board an OPV.
19. Explain 'Broach to and Pooping'.
20. List 'five defects in paint work and explain any two of than.
21. Write a short note on the role of Indian Navy during Kargil war.

22. Define high seas.
23. Write the 'duties' of CO, OOW and NO in blind pilotage organisation.

**PART C (Total marks 60)**  
**(Each question carries 04 marks)**

1. You are the XO and preparing to take another ship in tow. Explain the various preparations and menthol till taking another ship in tow?
2. Write down and explain qualities of an effective leader.
3. (a) Name six important navigational publications  
(b) List six methods of fixing a ship.
3. (a) List eight factors, you will consider while selecting a place for anchoring.  
(b) Write a brief on "Cardinal Marks" used in region B of IALA systems.
5. (a) A light is sighted  $10^{\circ}$  on the bow at an estimated distance of 12 Nm and it is desired to pass 4 Nm from the light. What is the clearance form the light on the present course and what alterations of course are necessary.  
(b) List five steps of blind pilotage execution.
6. List the staff aspects to be considered while planning search by surface craft
7. Explain five important properties of oil that governs its behaviour.
8. (a) Define search, patrol, tracking.  
(b) Explain various communications channels resorted to while a SAR ops in undertaken
9. Explain the duties of "authorized officers" as delegated under MZ1 al 1981.
10. You are the 'MTO' of the CG DHQ. You are given a task to hire a bus for school going children of the CG. Explain procedure.
11. Explain permanent, consumable and quasi permanent stores and their accounting.
12. Define
  - (a) WIG
  - (b) Restricted visibility
  - (c) Side lights
  - (d) Vessel ridiculed in her ability to manoeuvre
13. Write the responsibility of drafting and releasing officers.

14. Expand:-

- (a) ERDD
- (b) DTNR
- (c) LOTS
- (d) PPC
- (e) QRNR
- (f) OEM
- (g) RPC
- (h) RINMAT

15. Write

- (a) 7 point check drill
- (b) Safety rules of small arms

# MCPE MODEL QUESTION PAPER (TECHNICAL)

Part I is common for all technical officers

Duration-03 Hrs

Part II is only for Marine engineer/Air engineer officers

Part III is only for Marine electrical/Air electrical officers

All questions are compulsory

---

## Part I (Common for all technical Officers)

---

### SECTION A (1 MARK EACH)

1. Letters to diplomatic and govt. officials will be
  - (a) Formal letter
  - (b) DO letter
  - (c) Service letter
  - (d) Service noteAns(a)
  
2. A CG court can be convened by
  - (a) Central Government
  - (b) DG ICG
  - (c) Any officer empowered in this behalf by warrant of the DGICG
  - (d) Any one of aboveAns(d)
  
3. A break in VG conduct is mandatory if
  - (a) Character lower than very good is awarded
  - (b) Good conduct badge is intentionally not awarded when due
  - (c) Restoration of GCB has been intentionally delayed
  - (d) All of the aboveAns(d)
  
- (b) What is the mandatory professional qualification required for promotion of U/Ytk (ER) to P/Ytk(ER)
  - (a) UWKC
  - (b) ICEWKC
  - (c) Charge certificate
  - (d) CHERA courseAns(a)

5. Name the high speed memory used in the computer  
(a) RAM (b) Hard Disk (c) BIOS (d) Cache Ans(d)
6. The format used in a Compact Disk.  
(a) NTFS (b) FAT (c) CDI (d) CDR Ans(c)
7. Protocol used to receive e-mails on internet  
(a) Outlook (b) TCP/IP (c) SMTP (d) POP 3 Ans(d)
8. ISO 9000 / 2002 defines  
(a) Quality Standard  
(b) Environment Standard  
(c) Company policy  
(d) All of the above Ans (a)
9. Quality circle is a  
(a) group of employees working at one place who come forward to discuss work related problems  
(b) group of employees appointed by management for quality control  
(c) group of companies with similar quality standards  
(d) None of the above. Ans(a)
10. MIS stands for  
(a) Military Information System  
(b) Management Information System  
(c) Movement Information System  
(c) Multiple Intelligent System Ans(b)
11. What does RIC stand for  
(a) Rough Indicating Cost  
(b) Ration Issue Centre  
(c) Remote Image Camera  
(d) None of the above Ans(a)

12. The six Sigma quality means
- (a) 02 defects per billion
  - (b) Zero defects per billion
  - (c) 2.7 defects per billion
  - (d) 2% defects
- Ans (a)
13. Montreal Protocol deals with
- (a) Controlling marine oil pollution
  - (b) Controlling use of ozone depleting substances
  - (c) Convention of dealing with POW
  - (d) None of the above
- Ans (b)
14. Halon 1301 is being phased out from developing countries by the year
- (a) 2010
  - (b) 2011
  - (c) 2012
  - (d) 2020
- Ans (a)
15. VED analysis stands for
- (a) Very Economic Desirable
  - (b) Vital Efficient Desirable
  - (c) Vital Essential Desirable
  - (d) Vital Essential Distinctive
- Ans (c)
16. SWOT analysis stands for
- (a) Strength Weakness Opportunity and Threat
  - (b) Stamina Will Obesity Threat
  - (c) Subtle Will Opportunity Threat
  - (d) None of above
- Ans (a)
17. Critical path in network analysis is
- (a) Shortest duration path between first to last activities of project
  - (b) Shortest duration path between last two activities
  - (c) Shortest duration path between central & last activities
  - (d) Longest duration path between first & last activities
- Ans (d)

18. Float of an activity in a network analysis is
- (a) Maximum amount of delay that can be permitted
  - (b) Varieties to be considered for an activity
  - (c) Second choice for duration of activity
  - (d) None of the above
- Ans (a)
19. W. Sward Deming contributed total following points in Total Quality Management (TQM).
- (a) 12    (b) 13    (c) 14    (d) 15
- Ans (c)
20. ARD stands for
- (a) Always Ready Duty
  - (b) Always Ready Data
  - (c) Always Ready Delivery
  - (d) Annual Review Demand
- Ans (d)
21. PERT uses following time estimation for duration of an activity
- (a) One time
  - (b) Two times
  - (c) Three times
  - (d) Continuous
- Ans (c)

## **SECTION B**

1. List the punishments which can be awarded by a CG court. 2
2. Give the format of minutes of meeting. 4
3. What are the important provisions in the Industrial factories act 1949? 2
4. Which is the DRDO establishment where you can get your POL tested?  
Name two more DRDO organisation with whom CG has been interacting? 2
5. Describe the material and repair organisation of CG in brief. 2
6. What is hard reset of a computer? When is it used? 1.5
7. What is cache memory? Explain the use of cache memory in computer. 1.5
8. What is ADSL? How an ADSL Modem works? 4
9. What is carbon trading? 2

10. Which are the different types of organization? Which one is more close to Coast Guard Organisation? Justify. 4
11. What is the need for work study? Name five areas where work study finds its application. 4
12. What are the objectives of imparting training to the employees by an organisation? 3
13. What are the aims of value analysis? 3
14. Explain the procedure to regularize the loss of a permanent store item 4
15. What are indirect and direct overheads? 2
16. Describe the importance of JIT in inventory management and critically evaluate its applicability in CG inventory management. 4
17. What are the differences between Material Requirement Planning (MRP), JIT and Supply Chain Management (SCM) 4



## Part II

### (Only for Marine Engineer / Air Engineer Officers)

#### SECTION A( 1 MARK EACH)

1. The disadvantage of using CO<sub>2</sub> for fire fighting is that
  - (a) CO<sub>2</sub> does not cool the fire.
  - (b) They are not effective on class B fire.
  - (c) They are corrosive.
  - (d) Not effective on class C fire.Ans (a)
  
2. When entering a compartment which is on fire
  - (a) You must wear rubber gloves.
  - (b) The flames should be beaten back from door with water fog.
  - (c) A straight stream of water should be used to cool the door.
  - (d) A straight stream of water should be used to cool the fire fighter.Ans (b)
  
3. Metacentric height (GM) cannot be used as an indicator of stability at all angles of inclination as
  - (a) M is not fixed at larger angles.
  - (b) There is no M at larger angles.
  - (c) G is not fixed at larger angles.
  - (d) There is no G at larger angles.Ans (a)
  
4. The value of maximum righting arm is dependent upon the position of the centre buoyancy and the
  - (a) Longitudinal cg
  - (b) Vertical location of cg
  - (c) Transverse cg
  - (d) Metacentric heightAns (b)
  
5. Damage stability of a ship is the stability
  - (a) Which exists when the wind speed is less than 50 kn.
  - (b) Before collision
  - (c) After flooding
  - (d) At survival draftAns (c)

6. What is the usual effect of moving weight from lower decks to upper decks?
- (a) Increase in stability
  - (b) Reduced draft
  - (c) Reduced stability
  - (d) Reduced reserve buoyancy.
- Ans (c)
7. Fire hoses should always be stowed in a manner which will allow
- (a) All sections to be quickly connected.
  - (b) The nozzle end to be run out to fire.
  - (c) All section are quickly drained.
  - (d) Easy carrying of hose to any other location.
- Ans (b)
8. The crank case of many diesel engines are kept under a slight vacuum to
- (a) Improve fuel economy
  - (b) Improve air charge velocity'
  - (c) Reduce the risk of crank case explosion
  - (d) All of the above
- Ans (c)
9. Engine operating conditions may be indicated by the colour of exhaust smoke. Black smoke could indicate
- (a) Insufficient speed droop setting.
  - (b) Overloaded engine.
  - (c) Clogged drain holes in the oil control rings.
  - (d) Complete combustion.
- Ans (b)
10. What is the maximum permissible dilution level of lub oil in a diesel engine
- (a) 3 %                      (b) 5 %                      (c) 8 %                      (d) 10 %                      Ans (b)
11. One of the most common cause of reduction gear failure is gear wear caused by scoring as a result of
- (a) Surface fatigue of gears
  - (b) Inadequate lub oil film
  - (c) Plastic flow of gears
  - (d) Fretting corrosion by presence of water in oil
- Ans (b)

12. If a refrigeration compressor had developed a high suction pressure
- (a) Accumulation of air or non condensable gases in the system.
  - (b) Clogged sub cooler
  - (c) Liquid refrigerant flooding back from cooling coil.
  - (d) High ambient temperature.
- Ans (a)
13. One of the consequences in continuing to operate a centrifugal bilge pump with discharge valve closed is that the
- (a) Motor overload will operate.
  - (b) Relief valve will operate.
  - (c) Pump will overheat.
  - (d) Motor will overheat.
  - (e) All of above.
- Ans (c)
14. The usual symptoms of cavitation in a centrifugal pump are
- (a) Noise and vibration.
  - (b) Increased discharge pressure.
  - (c) Turbulent flow through pipes.
  - (d) Reduced discharge.
- Ans (a)
15. The purpose of an air compressor unloading device is to
- (a) Drain water from the systems.
  - (b) Drain water from the cylinders.
  - (c) Delay the compression process until the motor is upto speed.
  - (d) All of the above.
- Ans (c)
16. Compared to a FPP, a CPP
- (a) More efficiently uses available engine power.
  - (b) Operates at a lower efficiency at a fixed speed.
  - (c) Produces same torque at lower engine speed.
  - (d) Develops its rated power at a lower speed.
- Ans (a)
17. A piece is missing from one of the blades of a four bladed propeller and can result in
- (a) Accelerated stern bearing wear.
  - (b) Excessive shaft vibrations.
  - (c) Unusual noises.
  - (d) All of the above.
- Ans (d)

18. The valve which is most suited for regulating the flow through a pipeline is
- (a) Gate valve.
  - (b) Globe valve.
  - (c) Swing-check valve.
  - (d) Needle valve.
- Ans (b)
19. Improper seating of an air starting check valve in an operating diesel engine is indicated by
- (a) Noise from air starting valve.
  - (b) An over heated air supply pipe to the cylinder head.
  - (c) Continuous operation of air compressor.
  - (d) Zero air pressure in air starting system.
- Ans (b)
20. In a normally operating diesel engine the main source of lub oil contamination in the crank case is a result of the
- (a) Metal particles loosened by wear.
  - (b) Condensation of water vapours.
  - (c) Break down of the lubricating oil itself.
  - (d) Fuel dilution.
- Ans (c)
21. Piping cross-sections ranging from 3 mm to 300 mm in dia are sized by
- (a) Wall thickness
  - (b) Nominal inside dia
  - (c) Outside dia
  - (d) Threaded dia
- Ans (b)
22. Increasing the load on an engine equipped with a constant speed mechanical governor, will cause the engine speed to initially
- (a) Increase
  - (b) Decrease
  - (c) Fluctuate
  - (d) Remain constant
- Ans (b)
23. Which combination of propulsion system will give optimum power output at both cruise and boost power requirement
- (a) CODOG
  - (b) CODAD
  - (c) CODAG
  - (d) CODAL
- Ans (a)

24. During the diesel engine power stroke, the side thrust of a trunk type piston is a result of the angle
- (a) Formed by the connecting rod and cylinder center line
  - (b) Of the bevel on the piston oil rings
  - (c) Formed by the crank arm and crank pin
  - (d) Formed by the master and link connecting rods
- Ans (a)

## **SECTION B**

25. Explain the standard fire fighting and damage control organisation of a CG OPV in harbour. 4 Marks
26. What is the purpose a conducting an inclining experiment? Explain the procedure and obtain the expression. 4 Marks
27. Name five leak stopping devices and its application. 1.5 Marks
28. What is free surface effect? How can it be avoided? 1.5 Marks
29. Briefly explain the role of classification societies in the new construction projects and refit ships. 3 Marks
30. Explain the IC engine power statement as per IS 3046. 2 Marks
31. What is dual certification of a new construction ship? Name five classification societies 2 Marks
32. Explain the seasoning procedure of a new AVCAT fuelling hose prior to installing to any AVCAT system. 2 Marks
33. Which are the occasions on which sea trials are required to be conducted in the case of a CG ship 2 Marks
34. What are the NDT techniques being used by ICG during normal Ops cycle, refits and new construction of ships. 2 Marks
35. What is fatigue life of any engineering component? How maximum fatigue life of ship's propeller shaft can be ensured? 2 Marks
36. What are factors to be considered in selecting the material for any system piping 2 Marks
37. What are super cavitating propellers? 2 Marks
38. What is nominal speed of a governor? 2 Marks

39. What is crankshaft deflation? What are the reasons and how it is measured? 4 marks
40. How preservation of a diesel engine is carried out? 4 marks
41. What is IPMs? Explain. 4 marks
42. What are the design requirement of propeller and shafting? 4 marks
43. Which are the occasions during which deck breakage readings of a ship are taken? Explain one of the methods of measuring the deck breakage readings. 4 marks
44. What is sequential turbo charging of IC engines? Explain the advantages and disadvantages. 4 marks

### PART III

#### (FOR MARINE ELECTRICAL/AIR ELECTRICAL OFFICERS)

#### SECTION A

#### Note each question carry 1 mark (24X1)

1. The difference between primary and secondary cell is that the secondary cell can be
- (a) Recycled
  - (b) Recharged
  - (c) Reused
  - (e) Repaired
- Ans (b)
2. The specific gravity of the charged cell will
- (a) Decrease
  - (b) Remain same
  - (c) Increase
  - (d) None of above
- Ans (c)
3. The equipment is earthed for the safety of
- (a) Equipment
  - (b) Personnel
  - (c) Both
  - (d) None of above
- Ans (b)

4. The normal size of antenna is
- (a)  $\lambda$
  - (b)  $\lambda/2$
  - (c)  $\lambda/4$
  - (d) None of above
- Ans (a)
5. An universal motor is the motor which can be operated with
- (a) DC and single phase AC
  - (b) DC and three phase AC
  - (c) DC and single phase AC with same speed and output.
  - (d) None of above
- Ans (c)
6. The main advantage of stationary armature (rotating field generator) is
- (a) It is easier to insulate stationary armature winding
  - (b) It is easier to rotate the field
  - (c) It is not advisable that the field is to be stationery at higher voltages
  - (d) None of above
- Ans (a)
7. If the rated speed of the primover is reduced the output frequency of the generator will
- (a) Increase
  - (b) Decrease
  - (c) No change
  - (d) None of above
- Ans (b)
8. If A and B are the input of the EX-OR gate; the output will be
- (a)  $A'B + AB'$
  - (b)  $A'B' + AB$
  - (c)  $A' + AB$
  - (d)  $AB + 2 AB$
- Ans (a)
9. Complementary Metal Oxide Semiconductor (CMOS) is primarily used in
- (a) High packing density applications
  - (b) Low power applications
  - (c) Both (b) & (c)
  - (d) None of above
- Ans (b)

10. Arc Time Constant of ACBs is
- (a) It is time required to regain dielectric strength of the medium
  - (b) It is time required to quench the arc of the medium
  - (c) It is time required to charge the capacitor
  - (d) None of above
- Ans (a)
11. The protection level of ICCP is gauged with respect to
- (a) Reference potential
  - (b) Anode potential
  - (c) Hull potential
  - (d) None of above
- Ans (a)
12. Main advantage of Laser Ring Gyro on Conventional Gyro is
- (a) Laser Gyro does not have moving parts
  - (b) It uses laser
  - (c) It is cheap in cost
  - (d) None of above
- Ans (a)
13. Gyro sphere consists of
- (a) One rotor
  - (b) Two rotors
  - (c) Three rotors
  - (d) Combination of (a) & (b)
- Ans (b)
14. 'Muff' couplings are used to connect
- (a) Emergency cables in case of the damage
  - (b) Radio cable used with radars
  - (c) Power cables for shore supply
  - (d) Wires
- Ans (a)
15. The SID is the abbreviation of
- (a) Safe Identification Device
  - (b) Sole Identification Device
  - (c) Support Identification Device
  - (d) None of above
- Ans (a)



16. Frequency range of 'S' Band radar is
- (a) 3110 MHZ – 3200 MHZ
  - (b) 3040 GHZ – 3060 GHZ
  - (c) 3040 MHZ – 3060 MHZ
  - (d) 3110 GHZ – 3200 GHZ
- Ans (b)
17. The gain of unidirectional antenna is more than increases on Omni directional antenna due to
- (a) Increase in power density
  - (b) Decrease in power density
  - (c) Power density remains same
  - (d) None of above
- Ans (a)
18. Laser Range Finder (LRF) fitted on board AOPVs uses
- (a) NDYAG Laser
  - (b) Semiconductor Laser
  - (c) Gas Laser
  - (d) Dye Laser
- Ans (a)
19. Eye Safe Laser means
- (a) One can continuously look into the laser and it will not affect the eye
  - (b) Looking into the laser for small duration will not affect the eye
  - (c) Accidental exposure of eye to the laser will not affect the eye
  - (d) None of above
- Ans (c)
20. Power factor improving devices are located at
- (a) Receiving end of power
  - (b) Transmitting end of power
  - (c) In between receiving and transmitting end of power
  - (d) Both at (a) & (b)
- Ans (b)
21. In Echo sounder AVC will ensure
- (a) Signal strength is constant under all reception conditions
  - (b) Signal strength is to be only amplified from higher depths
  - (c) Signal strength is to be reduced in all conditions
  - (d) None of above
- Ans (a)

22. In case of semiconductor diode barrier potential developed across the junction can be
- (a) Used as a cell
  - (b) Cannot be used as a cell
  - (c) Can be used as a low potential battery
  - (d) None of above
- Ans (b)
23. CCDs are used in TV cameras
- (a) To have high resolution
  - (b) Reduced size
  - (c) Both (a) & (b)
  - (d) None of above
- Ans (c)
24. AELs stand for
- (a) Automotive Energy Lights
  - (b) Accessible Engineering Ledgers
  - (c) Auto Equipment Ledgers
  - (d) None of above
- Ans (a)

### PART III

#### SECTION B

##### Each question carries 4 marks (8x4)

1. In case of emergency MSB watch keeper is required to switch off certain loads from the MSB, explain the sequence of switching off of the loads with colour codes?
2. Explain the procedure of calibration of EM log?
3. Draw simple block diagram of the Echo sounder?
4. Explain effect of each parameter, considered for formulation of the radar range equation on radar range under ideal condition?
5. Draw simple block diagram of Electro-Optic Fire Control System (EOFCS)?
6. Write short notes on
  - (a) IMCS
  - (b) IBS

7. The performance of DGPS is superior on GPS, how it is obtained?
8. Write the principle of wind speed indicator?

## **PART III**

### **SECTION C**

#### **Each question carries 2 marks (12x2)**

1. What is the role of reference electrode in ICCP?
2. Explain various methods to quench the Arc produced in the circuit breakers?
3. Explain, with illustrated examples, the role of converted supplies on board ship?
4. Differentiate between 'D' Flip Flop and JK Flip Flop?
5. Write short note on EMI / EMC?
6. What is expulsion type fuse?
7. Explain role of controller unit in autopilot system?
8. What type of detector is used to detect the mist formation in lub oil sump of the main engine?
9. Why we are using 3 wire system despite 4 wire system has more advantages in power distribution system?
10. What is the role of 25 V 333 HZ power supply in Gyro?
11. Explain PMS (Power Management System) in brief?
12. What is MER (Marine Event Recorder)? Explain in brief.

# MARITIME LAW

(Limited questions placed for preparation by candidates on similar guidelines based on the syllabus.)

## PART I

### OBJECTIVE

01. An act which provides regulations regarding territorial water, continental shelf and exclusive economic zone and other maritime zone of India is know as
  - (a) MZI Act – 1978
  - (b) TW Act – 1978
  - (c) EEZ Act 1976
  - (d) MZI Act 1976
  
02. Palk straight are the historical water between India and which country
  - (a) Bangladesh
  - (b) Sri Lanka
  - (c) Pakistan
  - (d) Maldives
  
03. When of the following does not cover under definition of fish as per MZI Act 1976
  - (a) Aquatic animal
  - (b) Coral
  - (c) Sea weed
  - (d) None of the above
  
04. Which all state have the right to sail ship through it flag on the high sea
  - (a) All coastal state
  - (b) All state with major port
  - (c) All commonwealth state and coastal state organisation
  - (d) Every state, whether coastal or land locked
  
05. State will not have which of the following control over ship flying its flag
  - (a) Administrative
  - (b) Technical
  - (c) Navigational at high sea
  - (d) Social matter
  
06. A war of high sea will have complete immunity form the jurisdiction of any state

- (a) Except flag state
- (b) Except coastal state
- (c) Both of them
- (d) Non of the above

07. Fishing with out license / permit is violation of which section under MZI Act 1981

- (a) S – 3/10
- (b) S – 3/30
- (c) S – 4/40
- (d) S – 2/30

08. Failing to stow fishing gear in the prescribed manner is a violation under which section of MZI Act 1981

- (a) S – 7/14
- (b) S – 7/321
- (c) S – 7/28
- (d) S – 7/35

## **PART II**

### **SHORT ANSWER**

- 01. Define exclusive economic zone?
- 02. Define high seas?
- 03. Define Historic water?
- 04. Define contiguous zone of India?
- 05. Define continental shelf?
- 06. What all documents CG Ship to maintain to preserve the evidence leading to inspection / apprehension of foreign vessel under MZI Act 1981?
- 07. What are the powers given to Coast Guard Officer under MZI Act 1976 and Amended MZI Act 1981?
- 08. What is the definition of warship as pr UNCLOS?
- 09. What is Territorial water and how is it different from EEZ?

## PART III

### LONG ANSWER

01. Explain exploration and survey of an offshore area including various drilling rigs used?
02. Explain exposed location single buoy mooring (ELSBM) and how is the difference from offshore storage system?
03. Explain the details of powers extended to Coast Guard Officers under various section of Merchant Ship Act 1951?