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**REVISED CGO**

**CGO /2008**

**PART III**

**OPERATIONAL AND TRAINING**

**MID CAREER PROFESSIONAL EXAMINATION**

**(TR/0183/MCPE)**

Mid Career Professional Examination (MCPE) for officers was introduced w.e.f. 2000 to refresh and update professional knowledge of mid-seniority officers.

**Aim**

1. The aim of the examination is to promote self-study of professional subjects. This will improve and update the professional knowledge of middle level seniority officers. Also, this will prepare them for higher responsibilities.

**Subjects and Syllabi for Examination**

2. The subjects / detailed syllabi for the examination for the GD, Tech (Marine/Air), Law and women officers have been placed as Appendix 'A', 'B', 'C' and 'D' respectively.

**Standard of Knowledge**

3. The standard of knowledge expected from officers on various topics is indicated as 'A', 'B', or 'C' in the respective syllabi, which stands for: -

- 'A' - Thorough Knowledge
- 'B' - Working Knowledge
- 'C' - Knowledge of principles only

**Sample Papers**

4. Sample question papers shall be available on Coast Guard website to provide the general guidance on the pattern of examination to the officers.

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**RESTRICTED****Attempts Permitted**

5. (a) An officer will be permitted maximum of five attempts to qualify in the examination. It is mandatory that officers qualify both in written and oral examination.
- (b) The absence of a candidate after volunteering for the examination without valid reasons would constitute a failure at one attempt. However, if a candidate desires to withdraw his name from the examination without such penalty, due to valid reasons, he should forward his request to the CGHQ through his Administrative Authority.

**Frequency of Examination**

6. The examination will be held in the month of August / September every year unless promulgated otherwise.

**Written Examination Pattern**

7. Composition of the written examination paper is as under

<u>Sl. No.</u>	<u>Section</u>	<u>Types of Questions</u>	<u>Marks(in Percent)</u>
(a)	'A'	Objective type	30
(b)	'B'	Short answer	30
(c)	'C'	Subjective type	40

**Eligibility**

8. Officers between 10 to 18 years of service as on 01 Jan of the year of the examination will only be eligible subject to fulfilling criteria as per para 5. Officers beyond 18 years will not be eligible for applying for Mid Career Professional Examination (MCPE).

**Applicability of MCPE**

9. Qualifying the MCPE in addition to the record of officers reflected in the Confidential Reports would form essential pre-requisite for consideration in the following:-
- Command of an AOPV OPV/PCV etc.
  - Appointments in Key Command & Staff billets.
  - Staff courses in India and deputation abroad.
  - Desirable for command of FPV, IPV, SDB and ACV.

**RESTRICTED****Conduct of Examination**

10. (a) The overall conduct of the MCPE will be overseen by a board at the CGHQ, which will comprise
- |       |                       |   |   |
|-------|-----------------------|---|---|
| (i)   | DDG                   | - | President   |
| (ii)  | PD(HRD)               | - | Permanent Member                                      |
| (iii) | D(MPRT)               | - | Permanent Member                                      |
| (iv)  | D(Mat), D(FM) and CLO | - | Optional members<br>(for Engg/Elect and Law officers) |
- (b) The setting of question papers and evaluation of answer books will be done by officers specially nominated by the board.
- (c) Written examinations will be conducted simultaneously at Mumbai, Chennai and Port Blair by the respective RHQs on the dates promulgated by the CGHQ.
- (d) Commanding Officers of ships / establishments are to forward names of eligible officers desirous of appearing in the MCPE along with the prescribed Performa (placed at Appendix 'E'), duly completed, to their respective administrative authorities by 10 May every year. The administrative authorities are to forward consolidated list of volunteers along with the Performa to the CGHQ by 31 May of that year.
- (e) The CGHQ after scrutiny will promulgate the list of candidates appearing for the examination indicating index number allotted to them.
- (f) Supervisory board for each centre comprising two commandants for every 15 candidates is to be appointed by the authority conducting the examination at a particular centre.
- (g) The required number of question papers will be forwarded in a sealed cover by the CGHQ to the administrative authority. The President, Supervisory Board will collect the same on the day of the examination and open the question papers in the presence of the candidates only.
- (h) Before the commencement of the examination, the President, Supervisory Board will obtain the signatures of the candidates against their index number on a nominal roll. Candidates are to indicate only their index number on all answer books / additional sheets (duly stamped and signed by a member of Supervisory Board) in the space provided for it. They are not to write their names on the answer books / additional sheets.
- (j) All candidates will be identified and seated according to a seating plan, which will be drawn in advance by the President, Supervisory Board. A copy of the seating plan indicating the names of invigilating officers, the periods for which they invigilated, the venue of examination and nominal roll of candidates, are to be

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enclosed with the worked answer books/sheets by the President, Supervisory Board. The worked answer books/sheets are to be arranged in an ascending order of the index number and sealed in an envelope along with the enclosures mentioned above.

(k) At the conclusion of the examination, same day, the envelope containing the worked answer books/sheets together with extra question papers and the other enclosures is to be dispatched in a sealed packet marked '**Personal and Confidential**' to the PD(HRD)/D(MPRT), CGHQ, New Delhi.

**Oral Board**

11. (a) The composition of Oral Board for MCPE shall be broad based and three officers preferably of the rank of DIG shall comprise the board.
- (b) Oral Examinations will only be conducted for GD/PN Officers at Chennai / Mumbai or both places simultaneously depending upon the number of candidates by a board constituted by the CGHQ.
- (c) The candidates who fail to qualify in ROR are to be re-examined after two weeks. In case, the candidates fail in the oral board, then the candidate, if eligible, has to appear again for written examination next year. The candidates who pass in re-examination will be given only pass percentage in the oral board.

**Pass Percentage and Marking**

12. (a) The written examination shall be for 150 marks. Weightage allocated to subjects in written examination for uniformity in assessing the knowledge of General Duty/PN officer appearing in the Examination is placed at Appendix 'F'. Oral Board shall be for 100 marks. The breakdown of marks for oral board is placed at Appendix 'G'.
- (b) Percentage of marks to qualify in the examination will be as follows:-
- |      |               |   |                                   |
|------|---------------|---|-----------------------------------|
| (i)  | Written Paper | - | 55 %                              |
| (ii) | Oral Board    | - | 55 % (Only for GD / P/N Officers) |
- (c) Officers passing in the first attempt would only be granted the actual percentage of the marks obtained by them in written/oral exams. Marks obtained in subsequent attempts shall be brought down to pass percentage i.e. 55%.

**RESTRICTED****Evaluation and Declaration of Results**

13. (a) CGHQ will arrange to get papers evaluated by duly appointed examiners. The results of the written examination will be promulgated after approval of the competent authority.
- (b) The GD/PN officers, who qualify in the written examination, are to appear for the oral board constituted by the CGHQ. The result of the oral examination will be forwarded to the CGHQ. The final results will be promulgated after the approval of the competent authority.

**Review of Results**

14. There is no provision either for review of results / revaluation of answer books or for the perusal of evaluated answer books. However, requests for re-totalling of marks scored by a candidate may be forwarded to the CGHQ by the Administrative Authorities. As this may generate infructuous work / avoidable correspondence, Administrative Authorities may exercise careful scrutiny of such requests before recommending them.

**Requests for Change of Examination Centre**

15. Officers who are unable to take the examinations at the centre notified due to leave / temporary duty / permanent transfer are to apply to their respective Administrative Authorities requesting for a change of centre. The Administrative Authorities may permit change of centre as required, keeping the CGHQ informed. Extra question papers and answer books to the extent of 25 % of the registered strength of the candidates will be provided to each centre to cater for additional requirements (if any). However, in case such requests for change of centre exceed 25 % of the strength, Administrative Authorities may forward demand for additional question papers to the CGHQ at least three weeks prior to the commencement of the examination. No change of centre may be permitted within three weeks of the commencement of the examination, if the centre cannot accommodate additional candidates due to lack of question papers / answer books.

**Grant of Waivers / Relaxation of Eligibility Conditions**

16. Officers should endeavor to appear for examination as soon as they enter into eligibility zone IAW para 8 above. No waivers or relaxation of eligibility conditions will be granted except in rare cases of service exigencies or in case of hospitalization / sick leave, with a specific recommendation from the Administrative Authority.

**RESTRICTED****Cancellation of Previous Order/Policy Letters**

17. The CGO 27/98, 16/99 and the following policy letters issued till date with regard to MCPE will stand cancelled from the date of publication of this CGO.

<u>Sl. No.</u>	<u>Reference</u>
(a)	OF/0941 dated 10 Jun 2003
(b)	TR/0183/MCPE-2005 dated 07 Jun 2005
(c)	OF/0941 dated 22 Aug 2005
(d)	OF/0941 dated 02 Mar 2007

**Reference Manuals**

18. The reference manuals indicated may not be complete.

SYLLABI MCPE

GENERAL DUTY OFFICERS

**RESTRICTED****GENERAL NAVIGATION****Marks – 30**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Type of charts, Information shown on charts, Standard Symbols and Abbreviations used, Distinguishing well-surveyed chart, Correction of charts, Datum shift, ECDIS and electronic charts	A
2	Various Navigational publications	B
3	Methods of obtaining position line, Methods for Fixing ship	A
4	Pilotage, Navigation in Coastal waters, Navigation in canals and in coral waters, Passage planning, Passage in fog and thick weather	A
5	Anchoring – Planning and Execution	A
6	IALA Maritime Buoyage system in Region A	A
7	Aids to Navigation – EM log, Echo sounder, Radar, GPS, Differential GPS, Gyro, magnetic compass, Principles And limitations	B
8	Blind Pilotage with specific reference to bridge organization	A
9	Navigational Instruments - Sextant, Anemometer, Distance meter, Battenberg	B
10	Relative velocity triangle, Problems on opening/closing on a steady bearing and changing station.	A
11	Tides, Tidal Streams and currents. Tide calculation for standard ports	B
12	Tropical Revolving Storms	A
13	NDB, Chart correction log, Navarea log, Ships log book	A
14	Bridge organization and Procedures	A
15	Pilotage claims	B

**Reference Material: -**

- (i) Indian Tide Table – INP 41
- (ii) Admiralty Tide Table – NP 201 to 204
- (iii) Admiralty Manual for Hydrographic Surveying Vol. I & II.
- (iv) Navigation Vol. I & II.

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- (v) ROR Books / ROR Cards
- (vi) Seamanship Volume III
- (vii) ALRS Volumes 1 to 6.
- (viii) CO/EXO PCT docket, ND School docket
- (ix) Navy Order 4/2001
- (x) IHO Publications S-52 & S-57
- (xi) International Maritime Organisation SOLAS regulations
- (xii) The Electronic chart by Herst Hecht, Bernard.
- (xiii) Metrology for Mariners published by HMSO London
- (xiv) Radar & ARPA by AG Bole & WO Pineley
- (xv) Electronic Aids to Navigation by L Tetley & D Calicut.
- (xvi) Naval ship Handling by RS Crenshaw
- (xvii) Guide to Port Entry
- (xviii) IN Guide Book
- (xix) Sailing Directions
- (xx) Nautical Almanac
- (xxi) NP-100 Mariner's Handbook

**ICG TACTICS & SCOUTING OPERATIONS****Marks – 10**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	<b><u>Terminology &amp; Definition.</u></b> Scouting, Search and Patrol, Method of Search And Patrol, Tracking and Reconnaissance, Terms used in Scouting: Track spacing, Sweep width, Coverage factor	B
2	<b><u>Factors affecting and Planning of Scouting Mission.</u></b> Aim, Initiation of Scouting operations, Consideration in search design, Security of search, Economy in use of scouts, Accuracy of Navigation, Effectiveness of search	B
3	<b><u>Area of Search.</u></b> Entry probable area, Calculation of drift factor.	B
4	<b><u>Search and Patrol</u></b> Types of Search: Rectangular search, Expanding square search, Intercepting search. Types of patrol: Fixed station patrol, Linear patrol, Cross over patrol.	B
5	Principles of Boarding operations, Conduct of anti-smuggling/poaching operations. Gradual use of force.	A
6	<b><u>Air Search-</u></b> Aviation Terminology, Operational parameters and limits, R/T procedures, Flight Rules, Aircrew qualifications and Air Regulations	B

**Reference Material: -**

- (i) CGO 7/90
- (ii) Scouting Operations Manual
- (iii) Coast Guard Tactical Guidelines

**POLLUTION RESPONSE AND CONTROL****Marks – 10**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	<b><u>Marine environment</u></b> – Pollution response and pollution control; P3C concept for marine environment; Pollution response action; Indian Coast Guard role; Contingency planning Tier approach for oil spill response.	A
2	<b><u>Oil spill at sea</u></b> – Causes of spill; Behavior of oil; Properties of oil' Air surveillance' Calculation of quantity, direction and speed of slick' Weathering of oil; Oil spill containment; Type of booms; Booms failure; Booms anchoring; Deployment of boom.	A
3	<b><u>Recovery and disposal</u></b> – Various types of skimmers; Principle of skimmer and their operation; Storage devices; Transportation of oil; Disposal of recovered oil and oily waste	A
4	<b><u>Alternative method of disposal of oil spill</u></b> – In-situ burning Bioremediation; Principle of bioremediation; Pros and cons of Bioremediation and in-situ burning.	B
5	<b><u>Oil spill on shore line</u></b> – Migration of oil on shore line. Types of shore line; Effect of oil on shore line.; Methods of shore line clean up; Coordination of agencies involved in shore line clean up.	B
6	<b><u>OSD/Chemical agents</u></b> – Collecting agents; Sinking agents; Dispersant; Types of dispersant' Basic principle of OSD; Basic Guidelines for use of OSD; Window of opportunity for use of OSD.	B
7	<b><u>Legislation</u></b> – NOS-DCP; National & International legislation including merchant shipping Act 1958; Environment protection Act; Indian port Act; Fund convention; MARPOL 73/78 annex-I; IOPC fund; Filing of claims.	B
8	<b><u>CG Pollution equipments</u></b> – Pollution Response equipments with Indian Coast Guard; usage and operation.	B
9	<b><u>Handling of CG vessels for combined oil pollution response</u></b> – Capabilities and limitation. (a) AOPVs/OPVs/PCVs (b) FPVs/IPVs	B

**Reference Material:**

- (i) CGBR-771(i), (ii) CGBR-771(ii), (iii) CGBR-771(iii),

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- (iv) CGBR-771(iv), (v) CGBR-771(A). (vi) CGBR-774,  
 (vii) Guide lines and policy for use of OSD in Indian waters

**SAR OPERATIONS****Marks – 15**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Search & Rescue – Objectives and benefits of SAR; Component of SAR.	A
2	SAR Organisation – Various international conventions; Role of Indian Coast Guard for SAR; National SAR organization; National SAR plan; National SAR Communication system.	A
3	SAR Operation – Various maritime and aeronautical Distress; False alerts and their prevention; Sea-Air coordinated search Techniques; Planning and operations; Rescue planning and Operations; Rescue planning and operations; Mission orders.	A

**Reference Material:**

- (i) NMSAR
- (ii) IAMSAR Manuals I, II & III
- (iii) COLREG
- (iv) ISM Code
- (v) International Safety Net Manual
- (vi) Maritime Safety Information 2003
- (vii) Collision Avoidance Rules, 1993-2001
- (viii) CGO- 07/90, 18/02

**LAW****Marks – 10**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	International Maritime Organisation (IMO) – Organisation and its Role. ISPS Code, Anti Piracy.	B
2	UNCLOS III, High Seas – its meaning, Freedom of the High Seas meaning, Fishing on the High Seas. Right of hot pursuit.	B
3	Fisheries Regulations and Fishing rights, Fishing gear Materials – classification of fishing gears, trawl net-classification of trawl gear, Bull trawl.	B
4	The Merchant Shipping Act, 1958 – General Administration (Part III), Certificates of Officers (Part VI), Collisions, Accidents at sea and liability (Part X and XA), Prevention and containment of pollution of the sea by oil (Part XIA), Wreck and Salvage (Part XIII)	B
5	The Maritime Zones of India (Regulations of Fishing by Foreign Vessels) Act, 1981 and MZI Rules, 1982.	B
6	The Territorial Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act, 1976.	B
7	Coast Guard Law – Procedures relating to Summary Trial of EP, Board of Inquiry, Recording of Evidence, and Abstract of Evidence, hearing of charge and disposal, Character assessment of EP & award of GCBs and disposal of complaint and representation submitted by person subject to Coast Guard Act, 1978	A
8	Powers delegated to Coast Guard persons under different Acts – CGO 5/98	B

**Reference Material:**

- (i) Compendium of Maritime Law
- (ii) Compendium of Major and Minor Acts
- (iii) The Merchant Shipping Act, 1958
- (iv) Coast Guard Act, 1978
- (v) Coast Guard (Discipline) Rules 1983
- (vi) Coast Guard (General) Rules 1986
- (vii) Coast Guard (Condition of service) Rules 1986
- (viii) CGOs and concerned policy letters

**RESTRICTED****ICG ADMINISTRATION****Marks – 05**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	CGHQ organization with duties and function of various Directorates	B
2	Accounting of Public and Non-Public funds.	A
3	Custody, accounting of cash/stores.	A
4	Important policies in force	B
5	Duties of various departments on boards ships	A
6	Basic knowledge of refit, types of refit, security organisation	B
7	Pay & Allowance of CG Personnel, Promotion rules, condition of service, Travel entitlement (Ty/PMT duties).	B
8	CBs, BRs, SPs, CDs – care, custody and accounting, muster, destruction, loss of CB's and safe keys	A
9	Handing/taking over command	A
10	Conventions of service writing, security classification, appendices, enclosures, headings, spacing, abbreviations, code words, nickname's etc.	B
11	Service correspondence, layout, general rules, types of correspondence-service letter, DO, letters to civilians, Govt of India letter, service note, Functional aspects of MoD/ MoF in dealing with CG cases.	B
12	Delegated financial powers rules (DFPR).	A
13	SOPs, CG Development plan and CG Perspective Plan.	C
14	Accommodation orders/Authorized Married Establishment scales for officers/EPs and civilian personnel, Housing/Motor Car/Scooter/Computer Advance	C
15	Key organisation.	B
16	Right to Information Act	B
17	Basic knowledge of Civil Works Procedure	B
18	Ex-servicemen Contributory Health Scheme (ECHS)	B

**Reference Material: -**

- (i) Concerned CGOs and policy letters

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**RESTRICTED****FISHERIES AND ENVIRONMENT****Marks - 05**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Protected marine species	B
2	Offshore oil rigs and management of oil exploration	B
3	SBMs and oil/gas submarine pipeline	B

**Reference materials:**

- (i) Fish Code MCS (1999)
- (ii) Fish Code MCS (2000)
- (iii) Fish Code MCS/LEGAL (2001)
- (iv) Fishery Control System Preliminary Concept
- (v) Fishery Surveillance System (2000)
- (vi) Code of Conduct for Responsible Fisheries

**LOGISTICS****Marks - 05**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Stores – permanent/consumable, demand/supply/survey and loss statement.	C
2	Ship allowance list.	C
3	Local Purchase Procedures and Accounting.	B
4	Classification & categories of uniforms.	A
5	The procurement procedure as per SOP	A
6	Preparation of Statement of Case	B

**Reference Materials: -**

- (i) Pamphlet titled “New Management Strategy (NMS) – Implementation Guidelines Promulgated by Naval Headquarters during Apr 94.
- (ii) Pamphlet titled “New Management Strategy (NMS) – Amplifications on Procedure, Promulgated by Naval Headquarters vide VCNS Memo 09/95.
- (iii) Delegated Financial Powers under DGCG, DDG, COMCGs, Commanding Officers / Officer-in-Charge of various Ranks as updated time to time.
- (iv) CGO 5/89
- (v) INBR- 12

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**SHIP HANDLING AND ROR****Marks – 10**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1.	<b><u>Ship Handling.</u></b> Propulsion and Steering of ship, Handling ship in narrow waters, Handling ship in heavy weather.	A
2.	Ship Borne Helo Operations, Basic capabilities of CG Aircraft (Dornier, Helicopter, ALH) Restrictions imposed on aircraft operations due to weather and role configuration.	A
3.	Handling power boats	A
4.	Ship handling during SKBDL, Towing operations and Pollution response operations	B
5.	<b><u>ROR: International Regulations For Preventing Collisions At Sea, 1972</u></b> Part A to E	

**Reference Material: -**

- (i) The USNI publication titled "Naval Ship Handling" by Crenshaw
- (ii) Admiralty Manual of Seamanship Vol III\_(BR-67 –III)
- (iii) COLREG consolidated edition 2002 by Sterling Book House, Mumbai

**RESTRICTED****COMMUNICATION****Marks - 10**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Area broadcast, ships shore and fixed services/land lines, passage communication – SOP/TOP	A
2	Sailing order, Arrival/departure signal, CHOP timing and Shift of broadcast, Abbreviations used, Records maintained by Communication department	A
3	Security classification and procedures, Handling of exclusive message	A
4	INMARSAT, SAR communication, GMDSS, Air-sea communication	A
5	Internet, Intranet, E-mail, etc.	B

**Reference Materials:-**

- (i) System hand Book: Description, Composite Communication System – CGBR – 561(i)
- (ii) On Scene Communication Hand Book – CGBR- 771(ii)
- (iii) Navy Order Special 1/95 & 4/01
- (iv) NO”S” 7/2003, 17/90
- (v) CGO 05/01, 17/89, 19/89

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**RESTRICTED****GUNNERY****Marks - 05**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Knowledge of 76/62 SRGM, 2A42 30 mm Medak and 40/60 mounting with particular reference to rate of fire and effective ranges, firing precautions and misfire procedure.	A
2	Knowledge of spraying, sprinkling and flooding arrangement	A
3	Capabilities and limitations of small arms, Safety rules of Small Arms	A
4	Accounting, custody, precautions regarding arms, ammunition and explosives. Issue of magazine keys & small arms	B
5	Landing and Boarding party organizations with special emphasis on (i) Boarding Officer's duties (ii) Documents to be carried (iii) Documents to be verified from vessel being boarded	B
6	Responsibilities of Gunnery officer	B
7	List of books and records maintained by Gunnery dept.	B
8	Watch and station Bill, Watch and Quarter Bill, Action messing, Emergency action stations and securing stations	A
9	Coast Guard (Ceremonial) Rules 1988	A

**Reference Materials:-**

- (i) INBR-1834
- (ii) NMER-862
- (iii) Boarding Operations – CGBR-690
- (iv) CGO- 04/81, 02/92, 15/02, 16/02, 42/02, 20/86
- (v) SRGM Manual

**ENGINEERING, NBCD, FIRE FIGHTING AND DAMAGE CONTROL****Marks - 10****(a) Propulsion System of all class of Ships**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Type of main propulsion systems, advantages and disadvantages, methods of obtaining astern power.	B
2	Power transmission arrangement in the ships –working principles.	B
3	Main propulsion system control position arrangement and working principles.	B
4	Factors affecting fuel economy, specific fuel consumption, power speed relationship, types of fuels, transmission losses.	B
5	Precautions for operation of main engines, preparatory procedures and dangers of mal-operation in ships in which serving / served.	B
6	Emergency procedures to be followed for safe operation of machinery in the event of loss of electric power, loss of lubrication, failure of important auxiliaries, in ships in which served / serving.	B

**(b) Auxiliary Machinery**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Functions of important auxiliary and domestic machinery fitted in ships, effects of failure – care in operation.	B
2	Standby capacities of generating plants.	B
3	General knowledge regarding causes of machinery noise/vibration and their effects	C

**RESTRICTED**(c) **Maintenance, Repairs, Refits and Returns**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	On board maintenance philosophy, system of maintenance, repairs and refits of ships.	B
2	Factors affecting operational cycle of ships, refit intervals.	B
3	Role and responsibilities of CGRPS, RHQs.	B
4	Planned preventive maintenance system, implementation of follow-up.	B

**Reference Materials:-**

- (i) CGO 19/85, 29/85 , 5/93, 27/85, 9/93, 6/98, 8/98, 14/98,
- (ii) BR-3000, BR-3001
- (iii) Policy letters in force

(d) **Diesel Engines.** Precautions for safe exploitation of diesel engines need to avoid low – load operation.

(e) **NBCD, Fire Fighting & Damage Control**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Duty watches and security rounds, responsibilities of OOD Duty SOs and DC Patrol.	A
2	Damage Control and Fire Fighting organisation at sea and in harbour. Welding organization on board ships.	A
3.	Parts of ship and departmental organization	B
4	NBCD – States of readiness	A
5	NBCD Organisation and returns	A
6	Precautions to be taken during underwater activities (diving and operation of machinery)	B
7.	Principles of fire fighting and major / minor fire-fighting equipment.	A

**Reference Material: -**

- (i) BR 2170, Vol.- I and II,
- (ii) Hand book on Fire Fighting from BR 4007,
- (iii) NES 119, NO Str 1/96.
- (iv) Policy letters
- (v) INBR 312

**RESTRICTED****ELECTRICAL****Marks - 05**

<b><u>S.NO</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Service requirements of generators, various distribution systems and arrangements on ships.	B
2	Converted supplies and emergency supplies and their applications/service where used. The voltage and frequency standards for converted supplies.	C
3	Precautions/procedures for connecting shore supply	A
4	Arrangement/actions to maintain power supply under damage conditions in ships.	B
5	Electric shock and care of power equipment	B
6	Precautions to be taken during dry docking with specific reference to earthing and bonding of ships.	A
7	Principle of GPS and DGPS	C
8	Philosophy of maintenance followed onboard ships	B
9	ICCP for steel and aluminum hulls, principle and precautions	B
10	Basic radar equation and factors affecting range and accuracy.	C
11	ARPA displays	C
12	Principle and operation UHF/DF and IFF	B
13	Principle and operation of SATCOM	B
14	EMI Hygiene onboard ships	C
15	Layout of SRGM & 30 MM Medak Gun system onboard ship.	A
16	Electro optical fire control system (EOFCS) of SRGM	B
17	Thermal Imagers	C

**Reference Material: -**

- (i) CGO 08/88, 14/98
- (ii) Equipments manuals
- (iii) Policy letters in force
- (iv) BR-3000 and BR-3001

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**INFORMATION TECHNOLOGY****Marks – 05**

- |    |  |   |
|----|--|---|
| 1  | <b><u>Introduction</u></b>                         |   |
|    | (i) Familiarise with basic concepts of computer    | A |
|    | (ii) Basic I/O Systems                             | A |
|    | (iii) IT Tools & Application                       | B |
| 2. | <b><u>Operating System</u></b>                     |   |
|    | (i) Introduction of Operating System               | B |
|    | (ii) Personal Computer Software                    | B |
| 3. | <b><u>Internet</u></b>                             | C |
|    | (i) Introduction to Internet Tools and Application |   |
|    | (ii) IT Security                                   |   |
|    | (iii) E-mail                                       |   |
| 4. | <b><u>LAN and Networking</u></b>                   | B |
|    | (i) LAN and its components                         |   |
|    | (ii) WAN and its components                        |   |
| 5. | <b><u>Introduction to Hardware</u></b>             | B |
|    | (i) Storage Devices                                |   |
|    | (ii) Printers                                      |   |
|    | (iii) Modems                                       |   |
|    | (iv) Scanners                                      |   |
|    | (v) RAM, ROM, EPROM & PROM                         |   |

**Reference Material**

- (i) NHQ letter No. IT/0625/IT Policy dated 28 Sep 98 on IT Policy for Navy.
- (ii) Computer Networks by AS Tanenbaum.
- (iii) Structured Computer Organisation by AS Tanenbaum.
- (iv) Principles of Database System by AS Tanenbaum
- (v) Various books on Computer Database

**RESTRICTED****SEAMANSHIP****Marks - 10**

<b><u>S.NO</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Warships, Merchant Ships and Sailing Vessels	B
2	Handling wire ropes	B
3	Handling hawsers: Berthing hawsers. Fitting, supply and maintenance of hawsers.	A
4	Anchor and Cables: Type of anchors and chain cable. Associated gear, Associated fittings. Maintenance, survey and testing of anchors & cables.	A
5	Anchor Work – Anchoring and weighing	A
6	Towing and taking in Tow: Towing gears. Preparation for towing. Taking in tow, slipping and recovering tow. Precautions when towing or being towed.	A
7	Underway Replenishment at Sea: Methods. General requirements. Fuelling by the astern method.	A
8	Maintenance of safety and survival equipment.	A
9	Seamanship organisation and upkeep: Seamanship organization in warships, seamanship equipment upkeep.	A
10	Handling / Operation of davits, life boats, Gemini and crash boat	B
11	Refit Organisation, CGRPS Organisation, maintenance staff of RHQs, procedure for off-loading jobs in Indian Coast Guard, conducting of refit.	B
12	Ship Husbandry, Planned preventive maintenance – Kalamazoo – cards – documentation.	B
13	Different types of Log Books- Boat log, Life rafts log	B

**Reference Material: -**

- (i) BR 67 Vol.- I, II and III,
- (ii) Ships Husbandry Manual- BR2203,
- (iii) INSI and letters from FOST
- (iv) Policy letters

**RESTRICTED**

**MARITIME STRATEGY AND MILITARY/ NAVAL BATTLES/CAMPAIGNS****Marks – 05**

<b><u>S.NO</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1.	<b><u>Indian Maritime strategy</u></b> – Features of Indian Ocean and its strategic importance; Concept of maritime strategy in 21 century; Indian Coast Guard multi-mission approach to maritime strategy.	B
2.	<b><u>CG and Maritime strategy</u></b> – Role of Indian Coast Guard in constabulary function in EEZ; EEZ surveillance; Security of offshore installation; Ports; Coastal approaches and other areas; Indian Coast Guard as lead agency for maritime security; Sharing of responsibility with other partners viz. Navy, Port, Customs, Police, DG Shipping, Private sector, Public Sectors and District administration; Detection, Prevention, Protection and Deterrence as well as Consequence Management for drug and arms smuggling, Piracy, Terrorist activities and Environmental degradation.	B
3.	Indo-Pak conflicts – 1948, 65 and 71.	B
4.	The Falklands War 1982	B
5.	US campaign on Iraq	B
6.	Kargil and its aftermath	B

**Reference Material: -**

- (i) Journals published by United Service Institution of India, Rao Tula Ram Marg (Opposite Signals Enclave), Post Bag No 8, Vasant Vihar PO, New Delhi – 110 057. (Tel : 26148682 , 26147655/56/74.)
- (ii) Role of Coast Guard in the Maritime Security of India by Dr. Prabhakaran Paleri
- (iii) Maritime Strategy and Continental Wars by RADM Raja Menon
- (iv) Viva Facts on file – Encyclopedia of Wars

## **SYLLABI MCPE**

### **TECHNICAL OFFICERS**

1. The syllabus consists of seven parts as mentioned below :-

Part I	- Administration	} Common for all Technical Officers
Part II	- Technical Management	
Part III	- Information Technology	
Part IV	- For Marine Engineer	
Part V	- For Electrical	
Part VI	-- Common for Air Engineer and Air Electrical officers	
Part VII (a)	-- For Air Engineer	
Part VII (b)	- For Air Electrical	

2. The part I, II & III are common for all Technical officers (Marine Engineering / Air Engineering/ Electrical / Air Electrical).

**RESTRICTED****PART- I: ADMINISTRATION****(Max Marks – 20)****(Common for all Technical Officers)****(a) Staff Duties****Marks –10**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Forms of correspondence and service writing	A
2	Operational and Administrative organisation of the CG in general, material and repair organisation in particular	B
3	Knowledge of organization of the MoD, Army ,Navy and Air force	C
4	Basic knowledge of research Development and inspection Organisation in Ministry of Defence[DNRD,DWP, DPI(N), DRDO, DGQA etc.,	C
5	Basic knowledge of CG Act	C
6.	Decoration and awards in the Indian Coast Guard	C

**(b) Ships Administration****Marks –05**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	A General knowledge of Coast Guard Regulations	B
2	Responsibility of Officers regarding public and Non Public Funds	A
3	Stores-permanent/temporary, demand/Supply Survey and Loss statements	B
4	Security –personnel and material security organisation of ships	C
5	CBs care, Custody and accounting musters, destruction, Loss of CBs/Keys	B
6	Duties of various departments on board ships	B
7	Sailors advancement rules, GCB award, Deprivation-Restoration, welfare agencies, Nomination, Pension, Assessment of character and conduct, leave rules, Release or Discharge rules, Travel entitlements, temporary/permanent	B

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duty, Key organisation etc.

- |   |   |   |
|---|---|---|
| 8 | Summary punishment-warrant and non-warrant punishment, duties and privileges of SO/EP, Board of inquiry/Investigation | B |
| 9 | Action organisation, degree of readiness, watch and station bill, Action messing                                      | B |

(c) **General****Marks –05**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Basic knowledge of civil works procedure	C
2	Industrial factories Act 1949	C
3	Geopolitics –Issues/Developments pertaining to Indian Ocean littoral and their impact on our security (Articles in the IDSA Journal and review would be useful reference)	B

**Reference Material: -**

- (i) Concerned CGOs and Policy letters in force,
- (ii) Compendium of Coast Guard Law,
- (iii) Coast Guard (Ceremonial) Rules, 1988
- (iv) MES Regulations

**PART – II: TECHNICAL MANAGEMENT**

(Common for all Technical Officers)  
(**Max Marks – 40**)

(a) **General Management****Marks –10**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Management-Responsibility and functions, functions and role of good manager, Organisation-Necessity, Classification, type of organisation with reference to(CGHQ, RHQs and store depots)	B
2	Awareness of Indian Social, Political & Economic Environment in the industrial scene	C
3	Montreal protocol	C
4	MARPOL Act	C
5	Pollution, Environment control & Industrial effluent Disposal. Pollution response and pollution control; P3C concept for marine environment; Pollution response action; Indian Coast Guard role; Contingency planning Tier approach for oil spill response. Pollution Response equipments with Indian Coast Guard; Usage and operation	B
6	ISO 9000, ISO 9001, ISO 9002, ISO 9001-2000	C

(b) **Material Management****Marks –10**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Importance of material Management, Inventory, ABC Analysis, SAP Analysis, Material Handling, VED Analysis, Quality control, Duties of Maintenance, Management and Administration of store Depots. Preservation/Stowage of inventory.	B

(c) **Management Techniques****Marks –05**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Work study, Methods Improvement, Time study effect on working conditions and environments	B
2	Operations Research Important managerial applications, Elements of OR technique, simplex method	B
3	Operating systems, function of Information technology systems, Internet, Intranet, LAN, windows, NT, E-mail system, world wide web.	B
4	Value Analysis, Cost reduction and importance of value Analysis.	C
5	Network Analysis, Network as planning and control tool, Elements of critical path method and PERT	B

(d) **Personnel Management****Marks –05**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Functions of personnel management, Training motivation, leadership, Safety management, Management's responsibility for safety Organisation, Disciplinary action against civilian employees	C

(e) **Production and Planning Techniques****Marks –05**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Need for production and planning control organisation, use of Computers and PERT for production and planning	C

(f) **Refit Organizational structure****Marks –05**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Indian PSUs-viz MDL, GSL, GRSE, CSL, HSL upto Asst Manager level procedure for requisition work/spares/stores, Requisition of contractors / subcontractors on approval list, Monitoring of progress of repair work at all levels	B
2	Financial Management, CSTs, PNCs Security/ Clearance of Bills, verification of costing viz. CIFU/FOB/TAXES/DUTIES, Liquidated charges etc. work of CDA/CGDA Organisation, Monitoring of Audit/Sanction of files, Bills, ledgers	B
3	Pre Bid Conference (PBC), TEC and CNC for refit of ships	B

**Reference Material: -**

- (i) Defence management journal published by CDM Secunderabad.
- (ii) Policy letters and concerned CGOs

**PART-III: INFORMATION TECHNOLOGY**

(Common for all Technical Officers)

**Marks –10**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	<b><u>Introduction</u></b>	
(i)	Familiarise with basic concepts of computer Systems Central Processing Unit Computer Organisation and System Software IT Tools & Application Understand utilizes of software packages like word processing, Power Point & Access.	Basic I/O A
2	<b><u>Operating System</u></b>	
(i)	Introduction of Operating System Personal Computer Software	A
3	<b><u>Internet and Networking in Indian Coast Guard</u></b>	
(i)	Introduction to Internet Tools and Application Communicating on the Internet, Internet Security, E-mail	B
4	<b><u>LAN and Networking in Indian Coast Guard</u></b>	
(i)	LAN infrastructure in Indian Coast Guard Various components of LAN and types Overviews of Computer networks	B
5	<b><u>Introduction to Hardware</u></b>	
(i)	Storage Devices, Printers, Modems, Scanners RAM, ROM, EPROM & PROM	C

**Reference Material**

- (i) NHQ letter No. IT/0625/IT Policy dated 28 Sep 98 on IT Policy for Navy.
- (ii) Computer Networks by AS Tanenbaum.
- (iii) Structured Computer Organisation by AS Tanenbaum.
- (iv) Principles of Database System by AS Tanenbaum
- (v) Various books on Computer Database

**PART – IV: MARINE ENGINEERING****(Max Marks – 80)****Section – I : NBCD****Marks –25**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	NBCD organization and returns, States for readiness	A
2	Damage control apparatus and fittings and their uses	A
3	Water tight and Gas tight conditions and Control of openings	B
4	Knowledge of ship's stability, pumping and flooding in respect of ships in which served	A
5	Knowledge of precautions to be observed immediately before, during after the docking and undocking	A
6	Specific knowledge of method of fighting of various types of fires on board ships, Fixed and Portable FF appliances fitted onboard ships and their handling.	A
7	Emergency supply arrangements and principle of load setting during the damaged conditions	B
8	Monitoring duties of technical personnel	B
9	Ventilation	B

**Reference Material**

- (i) NBCD Manual
- (ii) NBCD Standing Orders

**Section – II: MARINE ENGINEERING****Marks –55****(a) Ship Construction and Machinery installation**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Salient features of High speed Interceptor Boats, SDBs, IPVs/FPVs, OPVs, AOPVs, PCVs, ACVs/Hovercraft; their principle Dimensions, capabilities and limitations etc	B
2	Evolutions/activities in a new ship Construction, Machinery installation, commissioning and evolutions like D-448 & guarantee rectification. Responsibilities of classification societies etc	B
3	Selection of engineering machinery/ Equipment/ system for new construction ship. Role of CG technical officers	B
4	Salient features of shafts/GB/ME alignment, inclining experiment, FATs, HATS, Basin trial and SATS. Various types of stern tube arrangement in CG ships.	B
5	Typical Machinery layout in various classes of CG ships	C
6	Dual class certification and damage stability.	C

**(b) Main Propulsion Machinery**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Modes of propulsion of CG ships	A
2	Construction, operation and maintenance of various main propulsion machinery/Diesel Engines, Gas Turbines including out board engines	A
3	Combined main propulsion plants requirements, installation features	B
4	New trends in main propulsion plants in Indian and International markets	C
5	Tests & trials, preventive maintenance and procedures for different types of main propulsion	B
6	Ship building and allied industries in India	C
7	IS 3046 and its application in marine environment	C

**RESTRICTED**(c) **Power Generation**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Salient feature of different types of power generation prime-movers for shipboard use	B
2	Construction, operation and maintenance of various types of power generation plants on board different classes of ships, generators paralleling, loading/unloading	A

(d) **Gearing, Shafting & Propellers**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Principles of construction, operation and maintenance of gearing systems on board ships	A
2	Shafting and associated system for different class of ships; maintenance and operation	A
3	Maintenance and operation of fixed-pitch, controllable pitch propellers and CPP systems on board different classes of CG ships	A
4	Boats and ships with water jets, their installation, maintenance and operation	A
5	Repair of propulsion shafts, re-sleeving and gauging	A

(e) **Auxiliary Machinery**


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1	Construction, operation and maintenance principles of HP Air Compressors, LP Air compressors, Steering Gear, Distilling/RO Plants, motor driven pumps, condenser, heat exchangers, SW coolers, domestic and deck machinery, sewage treatment plants, Oily Bilge water separators, Garbage Disposal units on board CG ships	A
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**RESTRICTED**(f) **Ship's Engineering Systems**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Construction (including materials of construction), Operation and maintenance features of ship board air, water (fresh, sea), lubricating oil, fuel, bilge and ballast, sewage systems on board CG ships	A

(g) **Refrigeration & Air Machinery**

1	Construction, operation and maintenance features of various types of shipboard refrigeration and air conditioning plants/systems	A
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(h) **Machinery Controls**

1	Principles of operation and maintenance of pneumatic, hydraulic, electrical, electro hydraulic and electronic control systems and equipment on board ship Integrated Platform Management System (IPMS) and other systems Viz. Integrated Machinery Control System (IMCS/BDCS) their benefit and essential requirement.	A
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(j) **Engineering Materials & Metallurgy**

1	Salient features of use of different materials of construction of engineering equipment/machinery /systems/including valves, pipeline, glands etc. in different environmental conditions such as high / low temperatures, corrosive liquids, fatigue, humidity etc. Engineering and science of composite materials	A
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(k) **Oil, Fuel and Lubricants**

1	Range of oil, fuel & lubricants in CG service	B
2	Characteristic features/ properties of lubricating oil and fuel	B
3	Avcat system & testing	B
4	Maintenance of POL hygiene	B
5	Accounting of POL	B

**RESTRICTED**(l) **NDT**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Principles of measurement, analysis and application of noise, vibration, shocks, for condition/health monitoring of marine machinery	C
2	Principles of NDT techniques in marine Engineering/inspection	C

(m) **Machinery Operation, Tests & Trials**

1	Salient features of engineering machinery/ equipment, systems Operation, routine and special tests, trials etc.	B
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(n) **Engineering Documentation>Returns**

1	PPM systems, logs, documents and returns connected with Engineering/Electrical Department	B
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(p) **Machinery Spares/Stores**

1	Engineering /Electrical machinery ranging and scaling	B
2	Introduction of new machinery/ equipment in service	B
3	Procurement/replenishment/ supply of machinery equipment, Spares, stores including fuels and lubricating oils	B
4	Standardisation of engineering equipment and its impact on Inventory management	B
5	Procurement of spares/stores through ARD	B

(q) **Preventive Cum Predictive Maintenance Policy for CG Ships**

1	Maintenance philosophy for CG ships and equipment/Machinery	B
2	Responsibility of ships, BMU, CGSMA, CGRPS, store depots with regard to maintenance of ships	B
3	Refit/Refurbishment/Repair of engineering machinery/ equipment in BMUs/Dyds/Trade	B

(r) **Engineering Machinery of New Acquisition/Construction of ships****RESTRICTED**

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- 1 Salient features of engineering machinery / Equipment C  
 pertaining to New acquisition / construction ships
- (s) **Miscellaneous**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Ships upkeep-Hull preservation, Cathodic protection, ICCP and under water paint scheme	B
2	Corrosion prevention, Hull maintenance	A
3	Engineer Officers/Sailors training	B
4	Preservation of machinery/ equipment	B
5	Shelf life	C
6	Evaluation of machinery system under trial	C

**Reference Materials:-**

BR 2000(25)(1), BR 2000 (60), 3003 (i) & (ii), BR 3008, BR 3009, BR 3029, BR 3119 BR 3121, BR 3203, BR 3217, BR 3963, BR 4530, BR 4544, BR 4583, INBR 354, Part IV – Machinery Specification, NES- 20, 324, 360, 507, 524, 626, 704, 733, 763, 765, 797, Hand Book Harrington.

**RESTRICTED****PART – V: ELECTRICAL****(Max Marks – 80)****SECTION – I: Power/Gyro/Nav-Aids****Marks –45**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Service requirements of generators, various distribution systems and arrangements on ships.	A
2	Converted supplies and emergency supplies, and their applications/ service where used. The voltage and frequency standards for converted supplies.	A
3	Care, maintenance and handling of secondary batteries on board ships and their applications. Difference between Tubular, Maintenance Free and Sealed Maintenance Free Batteries.	A
4	Precautions/Procedures for connecting shore supply.	A
5	Importance/necessity of stabilized shore supply for ships. Specifications/fluctuations allowed in stabilized supplies.	A
6	Actions/Arrangements to maintain power supply under damage conditions in ships.	A
7	Three phase supply, its sequence of connections; and Star and delta connections	A
8	Methods of Paralleling/Synchronization of generators and load sharing	A
9	Load trials of alternators and details of acceptance carried out on the main alternators on installation on board new construction ships	B
10	Need for voltage regulators and principle of operation of various types of voltage regulation	B
11	Basic maintenance and care of power equipment	B
12	Electric shock and care of personnel.	B
13	Function of automatic voltage regulators on board ships. Description and working principles of AVRs.	A
14	Remote control and monitoring of power and general machinery in ships. Concept of power automation, Low Fire Hazard (LFH) cables and soft starters.	B
15	Precautions to be taken during dry docking with specific reference to earthing and bonding of ships.	A

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<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
16	Design criteria for ships power systems, diversity factor, utility factor, Load calculations, stability measurement methods.	B
17	Modern trends in frequency and speed control of motors and generators	C
18	Principle of EM Log. Different types of EM Logs in Service. Calibration procedure for EM Logs.	B
19	Free Running Gyro, conversion of a Free Running Gyro to a North Seeking Gyro Compass, Gyro failure alarms, Static Frequency Converters, Gyro supplies and various types of Gyros used in service.	B
20	Method of acceptance of gyro from a repair agency/firm after major overhauls/repairs. Various tests to be carried out together with specifications	A
21	(a) Principle of Ring Laser Gyro. (b) Principle of GPS and DGPS	B
22	Salient features of Integrated Platform Management System/ Integrated Machinery Control System; Power Management System; Navigational Integrated Bridge System.	C
23	Considerations to be taken into account while determining lighting Supplies on board Indian Coast Guard ships.	A
24	Test equipment for carrying out routines/condition based maintenance on board ships.	A
25	Philosophy of maintenance followed on board ships.	A
26	ICCP for steel and aluminums hulls – Principle and precautions.	A
27	Basic Radar equation and factors affecting range and accuracy. Factors affecting choice of scanner for Navigation/Surveillance/Fire Control Radar. Radar horizon.	A
28	Raster Scan displays, Multi function consoles, Advantages and disadvantages of using common antenna for X/S band radars; Multi function radar; ARPA displays. Principle of IFF/Radar Beacons; Principle of operation of RRB /SID and its applications.	A

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29	Concept of In-circuit/Functional PCB Tester	A
30	Concept of MCT Glands.	B
31	Bathy – Thermograph.	B

**SECTION – II: Communication EMI/EMC****Marks –25**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Propagation of radio waves and various factors affecting reception/transmission VLF/MF/HF/VHF and UHF.	B
2	Basic theory of Aerials and arrays.	B
3	Factors affecting sensitivity, selectivity and output of communication equipment	A
4	Principle of SATCOM/INMARSAT	B
5	Principle of frequency hopping and spread spectrum technology.	C
6	Diversity reception (Freq. And space).	B
7	Principle of data link and digital communication	C
8	Fundamentals of EMI/EMC/EMP including types of causes of interference.	C
9	EMI Hygiene on board ships.	C
10	Global Mobile System on communication	C
11	ECCM techniques.	C
12	Internal communication – Main Broad cast, Intercoms, Telephone Exchange, Sound Power Telephone etc.	B

**Reference manuals:**

- (i) Reference books
- (ii) Equipments manuals
- (iii) Electrical Technology by BL Tareja

**SECTION – III: Weapons****Marks –10**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Testing and tuning, HATs and SATs of weapon system.	C
2	Preservation of weapon system, occasion, purpose and procedure.	B
3	Layout of a typical weapon system on board a ship.	B
4	Electro Optical Fire Control System (EOFCS).	B
5	Basics of Vertical Reference Unit (VRU).	C
6	Basics of Short Rapid Gun Mounting (SRGM).	B
7	30 mm Gun.	C
8	Basics of Thermal Imager.	C

**Reference manuals:**

- (i) Reference books
- (ii) SRGM manual
- (iii) EOFCS refernce manual

**PART –VI COMMON FOR AIR ENGINEERING AND AIR ELECTRICAL**

(a)	<b><u>NAMM, INAP-2 AND AVIATION ADMINISTRATION</u></b>	<b>Marks-20</b>
<b>SL</b>	<b>SUBJECT</b>	<b>SOK</b>
1.	Duties and responsibilities of SALO, SAEO Squadron AEO/ALO, SDO,SFSO,FSI in accordance with INAP-2	A
2.	Ground handling of Aircraft, Ground support for helo ops, wind direction indicator, runway lighting and obstruction, aerodrome marking.	E
3	Flight safety organization and flight safety meeting.	A
4	Instruction and investigation relating to aircraft accidents, Repair and disposal regulation, crash and salvage organization.	A
5	Aircraft Technical Administration and AOG occurrences.	A
6	Detail knowledge of NAMM with relevance to Aircraft maintenance procedures.	A
7	Duties of squadron technical personnel authorized to carryout inspection and signing of log books.	A
8	Documentation of aircraft inspection and maintenance classification of aircraft log card, airframe, engine and propeller logbooks forms A700 CA/TA.	A
9	Function of AMCO and the documents maintained.	B
10	Tool control organization.	A
11	Functioning of various M/S HALs and issue of work order	B
12	ASUCO and air store function and stores procedure	B
13	ASE,GSE,SME	B
14	Role and function of DGAQA and CEMILAC.	C

**Reference materials:**

- (i) AP 3456 Vol. A
- (ii) AP 119 T series
- (iii) INBR-2 (Air Stores Procedures)
- (iv) Naval Aircraft Maintenance Manual (NAMM) (INAP 100N- 0140)
- (v) INAP-2

(b) **AERODYNAMICS**

<b>SL</b>	<b>SUBJECT</b>	<b>SOK</b>
1	Earth's atmosphere and different layers, composition of Air.	B
2	Basic knowledge of characteristics of aerofoil, Mach number, Magnus effect, paradox of D Alembert, drag, downwash, phugoid.	B
3	Types of boundary layer, flaps, stability, slits and slats.	A
4	Aero testing facilities (wind tunnels), parameters tested in wind tunnel, stalling, descent, climb, and endurance.	B
5	Types of stability, flight control system.	B
6	Aircraft terminology:- Feathering, Flapping, Hook's joint effect, flapping to equality, phase lag, advance angle, ground effect flap back, units of a helicopter, factors affecting maximum forward speed, Auto rotation, ground resonance and its causes, vortex ring, blade sailing, rotor configuration.	A
7	Propellers classification, propeller efficiency, blades, blade station, solidity, propeller forces and balance, aircraft transmission system, flight control system.	A
8	General knowledge of the terms relating to theory of flight, longitudinal axis, lateral axis and vertical axis, yawing, rolling, pitching, azimuth heading, course, side slip, skidding, stability, angle of attack, chord, stall, lift, drag, thrust.	B

**Reference materials:**

- (i) L Clancy Kermode (AP 3456 Vol. A)

(c) **AIRCRAFT SPECIFIC**

<b>SL</b>	<b>SUBJECT</b>	<b>SOK</b>
1	Basic dimension of Dornier, Chetak, ALH.	B
2	AUW, roles of aircraft, Instrument panel, pedestal panel, warning caution light, Overhead panel.	C
3	Type of POL used and its periodicity of testing	A
4	Knowledge of fuel system, lub oil system, wheel brake system, flying control system.	A
5	Air-conditioning and pitot static system.	A
6	Types of airframe and engine inspection of aircraft in detail, flight servicing procedure.	A
7	Landing gear and hydraulic power supply system including emergency landing gear operation.	A
8	Doors, windows and exits, control locks, seat belts, harness, baggage compartments, windshield wiper, ice protection system.	B
9	Electrical system including AC and DC power supply, lighting system including internal and external system	B
10	Reference speed deviation and stall warning system emergency equipment.	B
11	Optional equipments and its functions.	C
12	Navigation equipment and its functions.	B

**Reference manuals:**

- (i) Reference books
- (ii) Equipment manuals

**RESTRICTED****PART – VII (a)****AIR ENGINEERING OFFICERS****Section – I: AIR ENGINEERING****Marks- 36**(a) **NBCD**

<b><u>SL</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Damage control apparatus and fitting and their uses.	A
2	Knowledge of ships stability, pumping and flooding etc, in respect of ship in which serving/served.	A
3	Knowledge of procedures/ precautions to be observed immediately before, during and immediately after docking and undocking.	A
4	Specific knowledge of methods of fighting various types of fires onboard ships.	A
5	Emergency supply arrangements, handling of ring main and principles of load shedding during damaged condition.	B
6	Monitoring duties of technical personnel.	B
7	Ventilation	B

(b) **Airframe and Materials**

<b><u>SL</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Basic understanding of various types and classification of aircraft structure/ Airframe including control surfaces, types of fuselage structures, aircraft station.	B
2	Types of wings and location, aircraft airworthiness, flight envelope, design and development of aircraft, fail safe and safe life concepts.	B
3	Classification of aircraft damage and Non-destructive techniques.	B
4	Basic knowledge of various alloying elements used in aircraft structures, composites, rubber, plastics, heat treatment of steel and aluminium, types of rivets and joints used in aircraft manufacturing.	B
5	Detailed knowledge of various types of corrosion commonly encountered in aircraft metals, their removal and methods employed to prevent corrosion.	A
6	Types of load and forces acting on aircraft and aircraft system.	A

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**RESTRICTED**(c) **Engines**

<b>SL</b>	<b>SUBJECT</b>	<b>SOK</b>
1	Basic knowledge of the thermo dynamics laws related to gas turbine engines. Advantages and limitation of gas turbine.	A
2	Classification of gas turbines, joule brayton cycle, otto cycle, types of combustion chamber.	B
3	Types of aircraft engine and propellers.	A
4	Engine fuel system its components and indicators, cross feed system, fuel dumping system, pressure refueling and defueling, sources of contamination, methods to check contamination.	A
5	Starting and ignition system, engine accessories, fire detection and extinguishing system.	A
6	Power management system, power plant controls, engine limiting system, factors affecting engine performance.	A
7	Classification and material of the various parts and accessories of engine including induction, exhaust, mounting, anti icing of engine, installation of turbine blades.	B

**Section – II: MARINE ENGINEERING****Marks –24**(a) **Ship Construction and Machinery installation**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Salient features of High speed Interceptor Boats, SDBs, IPVs/FPVs, OPVs, AOPVs, PCVs, ACVs/Hovercraft; their principle Dimensions, capabilities and limitations etc	B
2	Evolutions/activities in a new ship Construction, Machinery installation, commissioning and evolutions like D-448 & guarantee rectification. Responsibilities of classification societies etc	B
3	Selection of engineering machinery/ Equipment/ system for new construction ship. Role of CG technical officers	B
4	Salient features of shafts/GB/ME alignment, inclining experiment, FATs, HATS, Basin trial and SATS. Various types	B

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of stern tube arrangement in CG ships.

- |   |   |   |
|---|---|---|
| 5 | Typical Machinery layout in various classes of CG ships | C |
| 6 | Dual class certification and damage stability.          | C |

(b) **Main Propulsion Machinery**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Modes of propulsion of CG ships	A
2	Construction, operation and maintenance of various main propulsion machinery/Diesel Engines, Gas Turbines including out board engines	A
3	Combined main propulsion plants requirements, installation features	B
4	New trends in main propulsion plants in Indian and International markets	C
5	Tests & trials, preventive maintenance and procedures for different types of main propulsion	B
6	Ship building and allied industries in India	C
7	IS 3046 and its application in marine environment	C

(c) **Power Generation**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Salient feature of different types of power generation prime-movers for shipboard use	B
2	Construction, operation and maintenance of various types of power generation plants on board different classes of ships, generators paralleling, loading/unloading	A

(d) **Gearing, Shafting & Propellers**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Principles of construction, operation and maintenance of gearing systems on board ships	A

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- |   |  |   |
|---|--|---|
| 2 | Shafting and associated system for different class of ships; maintenance and operation   | A |
| 3 | Maintenance and operation of fixed-pitch, controllable pitch propellers and CPP systems on board different classes of CG ships | A |
| 4 | Boats and ships with water jets, their installation, maintenance and operation   | A |
| 5 | Repair of propulsion shafts, re-sleeving and gauging   | A |

(e) **Auxiliary Machinery**

<u>S.NO.</u>	<u>SUBJECT</u>	<u>SOK</u>
1	Construction, operation and maintenance principles of HP Air Compressors, LP Air compressors, Steering Gear, Distilling/RO Plants, motor driven pumps, condenser, heat exchangers, SW coolers, domestic and deck machinery, sewage treatment plants, Oily Bilge water separators, Garbage Disposal units on board CG ships	A

(f) **Ship's Engineering Systems**

<u>S.NO.</u>	<u>SUBJECT</u>	<u>SOK</u>
1	Construction (including materials of construction), Operation and maintenance features of ship board air, water (fresh, sea), lubricating oil, fuel, bilge and ballast, sewage systems on board CG ships	A

(g) **Refrigeration & Air Machinery**

<u>S.NO.</u>	<u>SUBJECT</u>	<u>SOK</u>
1	Construction, operation and maintenance features of various types of shipboard refrigeration and air conditioning plants/systems	A

**RESTRICTED**(h) **Machinery Controls**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
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- |   |  |   |
|---|--|---|
| 1 | Principles of operation and maintenance of pneumatic, hydraulic, electrical, electro hydraulic and electronic control systems and equipment on board ship Integrated Platform Management System (IPMS) and other systems Viz. Integrated Machinery Control System (IMCS/BDCS) their benefit and essential requirement. | A |
|---|--|---|

(j) **Engineering Materials & Metallurgy**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
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- |   |  |   |
|---|--|---|
| 1 | Salient features of use of different materials of construction of engineering equipment/machinery /systems/including valves, pipeline, glands etc. in different environmental conditions such as high / low temperatures, corrosive liquids, fatigue, humidity etc. Engineering and science of composite materials | A |
|---|--|---|

(k) **Oil, Fuel and Lubricants**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
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- |   |   |   |
|---|---|---|
| 1 | Range of oil, fuel & lubricants in CG service                   | B |
| 2 | Characteristic features/ properties of lubricating oil and fuel | B |
| 3 | Avcat system & testing  | B |
| 4 | Maintenance of POL hygiene                                      | B |
| 5 | Accounting of POL   | B |

(l) **NDT**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
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- |   |  |   |
|---|--|---|
| 1 | Principles of measurement, analysis and application of noise, vibration, shocks, for condition/health monitoring of marine | C |
|---|--|---|

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machinery

- 2 Principles of NDT techniques in marine C  
Engineering/inspection

(m) **Machinery Operation, Tests & Trials**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
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- 1 Salient features of engineering machinery/ equipment, B  
systems Operation, routine and special tests, trials etc.

(n) **Engineering Documentation>Returns**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
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- 1 PPM systems, logs, documents and returns connected with B  
Engineering/Electrical Department

(p) **Machinery Spares/Stores**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
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- 1 Engineering /Electrical machinery ranging and scaling B  
2 Introduction of new machinery/ equipment in service B  
3 Procurement/replenishment/ supply of machinery equipment, B  
Spares, stores including fuels and lubricating oils  
4 Standardization of engineering equipment and its impact on B  
Inventory management  
5 Procurement of spares/stores through ARD B

(q) **Preventive Cum Predictive Maintenance Policy for CG Ships**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
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- 1 Maintenance philosophy for CG ships and B  
equipment/Machinery  
2 Responsibility of ships, BMU, CGSMA, CGRPS, store depots B

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with regard to maintenance of ships

- 3 Refit/Refurbishment/Repair of engineering machinery/ equipment in BMUs/Dyds/Trade B

(r) **Engineering Machinery of New Acquisition/Construction of ships**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
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- 1 Salient features of engineering machinery / Equipment pertaining to New acquisition / construction ships C

(s) **Miscellaneous**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
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- 1 Ships upkeep-Hull preservation, Cathodic protection, ICCP and under water paint scheme B
- 2 Corrosion prevention, Hull maintenance A
- 3 Engineer Officers/Sailors training B
- 4 Preservation of machinery/ equipment B
- 5 Shelf life C
- 6 Evaluation of machinery system under trial C

**Reference Materials:-**

BR 2000(25)(1), BR 2000 (60), 3003 (i) & (ii), BR 3008, BR 3009, BR 3029, BR 3119 BR 3121, BR 3203, BR 3217, BR 3963, BR 4530, BR 4544, BR 4583, INBR 354, Part IV – Machinery Specification, NES- 20, 324, 360, 507, 524, 626, 704, 733, 763, 765, 797, Hand Book Harrington.

**VII (b) – AIR ELECTRICAL OFFICERS****Marks – 36****SECTION – I –AIR ELECTRICAL****(a) Electrical system**

<b>SL</b>	<b>SUBJECT</b>	<b>SOK</b>
1	Detailed knowledge of ohms law, Kirchoff's law and Electro Magnetic Induction and their applicability in the aircraft industry.	A
2	Detailed Knowledge of the alternating current, direct current, frequency, amplitude, star and delta connections and calculation of power in three-phase system.	A
3	General knowledge of colour coding of various types of capacitors, resistors, circuit controlling and current protection devices.	B
4	Basic knowledge of construction and principal of operation of lead acid, nickel cadmium, dry cell battery, composition of electrolytes and plates.	B
5	Basic knowledge of the effect of temperature on capacity, specific gravity, electrolyte resistivity, charger and discharger rates.	B
6	Battery charging procedures, precautions, neutralization of electrolytes, ventilation of batteries to determine condition and general battery defects and repairs.	B
7	Knowledge of the construction, principal of operation and characteristics of AC and DC generators and motors.	B
8	Knowledge of voltage regulators and paralleling of generators.	B
9	Detailed knowledge of functional tests, trouble shooting of generators and motors.	A
10	Types and principal of transformer and its applications.	B
11	Knowledge of servo motors causes of hunting and methods of damping, trouble shooting of servo mechanism.	B
12	Knowledge of the various types of test equipments used for aircraft maintenance.	B
13	Basic knowledge of the aircraft wiring system and its precautions. Purpose of bonding and shielding and its precautions.	B

**RESTRICTED**(b) **Instrumentation**

<b><u>SL</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Principal of operation of altimeters, ASI, VSI, pitot heads, pitot static lines.	A
2	Direct reading and remote reading compasses	A
3	AC operated Gyro instruments.	B
4	Knowledge of symbols, truth tables, equivalent circuits for logic gates.	B
5	Knowledge of type and operation of displays (LED, Liquid crystal, CRT and its applications)	B
6	Knowledge of handling of microelectronic circuit devices Electrostatic Sensitive Devices (ESD)	B
7	Purpose and actions of primary control surface, trim tabs and wing flaps.	B
8	Knowledge of function and operation of components in a typical Autopilot system.	B
9	Knowledge of principal of operation and function of the components of inertial Navigation system	B

(c) **Radio and Navigation System**

<b><u>SL</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Modulation and demodulation, amplitude, frequency and phase modulation.	A
2	RF Transmission line, coaxial cables, standing wave and standing wave ratio, wave guides and attenuation in wave guide.	B
3	Interference caused by electrical and ignition system to radio apparatus, method of minimizing of suppressing such interference, bonding and screening.	B
4	Terms connected with construction and identification for various types of antennas.	B
5	VHF/UHF and HF airborne communications, frequency bands allocation, method of propagation and the range expected.	A

**RESTRICTED**

- 6 Knowledge of principal of satellite communication and global positioning system. A
- 7 Function, operations and principles of :- A
- Automatic Direction Finder (ADF) system
  - VHF Omni Directional Range system
  - Instrument Landing system
  - Weather Radar system
  - Radio Altimeter system
  - Distance Measuring Equipments
  - Doppler Navigation system
  - Emergency Locator system
  - IFF system
  - Surveillance Radar system
  - Intercom system

**Reference materials:**

- (i) AP 3456 Vol. A
- (ii) AP 119 T series
- (vi) INBR-2 (Air Stores Procedures)
- (vii) Naval Aircraft Maintenance Manual (NAMM) (INAP 100N- 0140)
- (viii) INAP-2

**SECTION –II: MARINE ELECTRICAL****Marks – 24****(a) Power/Gyro/Nav-Aids**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Service requirements of generators, various distribution systems and arrangements on ships.	A
2	Converted supplies and emergency supplies, and their applications/ service where used. The voltage and frequency standards for converted supplies.	A
3	Care, maintenance and handling of secondary batteries on board ships and their applications. Difference between Tubular, Maintenance Free and Sealed Maintenance Free Batteries.	A
4	Precautions/Procedures for connecting shore supply.	A
5	Importance/necessity of stabilized shore supply for ships. Specifications/fluctuations allowed in stabilized supplies.	A
6	Actions/Arrangements to maintain power supply under damage conditions in ships.	A

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7	Three phase supply, its sequence of connections; and Star and delta connections	A
8	Methods of Paralleling/Synchronization of generators and load sharing	A
9	Load trials of alternators and details of acceptance carried out on the main alternators on installation on board new construction ships	B
10	Need for voltage regulators and principle of operation of various types of voltage regulation	B
11	Basic maintenance and care of power equipment	B
12	Electric shock and care of personnel.	B
13	Function of automatic voltage regulators on board ships. Description and working principles of AVRs.	A
14	Remote control and monitoring of power and general machinery in ships. Concept of power automation, Low Fire Hazard (LFH) cables and soft starters.	B
15	Precautions to be taken during dry docking with specific reference to earthing and bonding of ships.	A
16	Design criteria for ships power systems, diversity factor, utility factor, Load calculations, and stability measurement methods.	B
17	Modern trends in frequency and speed control of motors and generators.	C
18	Principle of EM Log. Different types of EM Logs in Service. Calibration procedure for EM Logs.	B
19	Free Running Gyro, conversion of a Free Running Gyro to a North Seeking Gyro Compass, Gyro failure alarms, Static Frequency Converters, Gyro supplies and various types of Gyros used in service.	B
20	Method of acceptance of gyro from a repair agency/firm after major overhauls/repairs. Various tests to be carried out together with specifications	A
21	(i) Principle of Ring Laser Gyro. (ii) Principle of GPS and DGPS	B
22	Salient features of Integrated Platform Management System/	C

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Integrated Machinery Control System; Power Management System; Navigational Integrated Bridge System.

23	Considerations to be taken into account while determining lighting Supplies on board Indian Coast Guard ships.	A
24	Test equipment for carrying out routines/condition based maintenance on board ships.	A
25	Philosophy of maintenance followed on board ships.	A
26	ICCP for steel and aluminums hulls – Principle and precautions.	A
27	Basic Radar equation and factors affecting range and accuracy. Factors affecting choice of scanner for Navigation/Surveillance/Fire Control Radar. Radar horizon.	A
28	Raster Scan displays, Multi function consoles, Advantages and disadvantages of using common antenna for X/S band radars; Multi function radar; ARPA displays. Principle of IFF/Radar Beacons; Principle of operation of RRB /SID and its applications.	A
29	Concept of In-circuit/Functional PCB Tester	A
30	Concept of MCT Glands.	B
31	Bathy – Thermograph.	B

(b) **Communication EMI/EMC**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Propagation of radio waves and various factors affecting reception/transmission VLF/MF/HF/VHF and UHF.	B
2	Basic theory of Aerials and arrays.	B
3	Factors affecting sensitivity, selectivity and output of communication equipment	A
4	Principle of SATCOM/INMARSAT	B
5	Principle of frequency hopping and spread spectrum technology.	C
6	Diversity reception (Freq. And space).	B
7	Principle of data link and digital communication	C

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8	Fundamentals of EMI/EMC/EMP including types of causes of interference.	C
9	EMI Hygiene on board ships.	C
10	Global Mobile System on communication	C
11	ECCM techniques.	C
12	Internal communication – Main Broad cast, Intercoms, Telephone Exchange, Sound Power Telephone etc.	B

(c) **Weapons**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Testing and tuning, HATs and SATs of weapon system.	C
2	Preservation of weapon system, occasion, purpose and procedure.	B
3	Layout of a typical weapon system on board a ship.	B
4	Electro Optical Fire Control System (EOFCS).	B
5	Basics of Vertical Reference Unit (VRU).	C
6	Basics of Short Rapid Gun Mounting (SRGM).	B
7	30 mm Gun.	C
8	Basics of Thermal Imager.	C

**Reference materials:**

- (i) Electrical Technology by BL Tareja
- (ii) Equipment manual
- (iii) SRGM, EOFCS, VRU manuals

Appendix 'C'  
(Refers to Para 2)

SYLLABI MCPE

LAW OFFICERS

**PART – I : ICG ADMINISTRATION****Marks –25**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	CGHQ Organisation with duties and function of Various Directorates	B
2	Information Technology	B
3	Various important Policies in force	B
4	Duties of various departments onboard ships	B
5	Basic knowledge of refit, types of refit, Security Organisation	C
6	Pay & Allowances of CG Personnel, Promotion rules, travel entitlement (Ty/PMT duties)	A

**PART - II****(a) COAST GUARD LAW****Marks –80**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Coast Guard Act 1978	A
2	Coast Guard (Discipline) Rules, 1983	A
3	Coast Guard (Condition of Service) Rules, 1986	A
4	Coast Guard (General) Rules, 1986	A
5	Coast Guard (Seniority and Promotion) Rules, 1987	A
6	Coast Guard (Ceremonial) Rules, 1988	A

**RESTRICTED**(b) **CIVIL LAW****Marks –15**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Indian Penal Code 1860 – Salient provisions and Offences.	A
2	Indian Evidence Act, 1872 – Salient Provisions	A
3	Constitutions of India- Salient provisions of Parts III, IVA, XIVA including Article 32 & 226 and Schedules.	A
4	Prevention of Corruption Act, 1988	A
5	RTI Act, 2005	A
6	Criminal Procedure Code-1973	A

(c) **MARITIME LAW****Marks –30**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	The Territorial Waters, Continental Shelf, Exclusive Economic Zone and Other Maritime Zones Act, 1976.	A
2	The Maritime Zones of India (Regulations of Fishing by Foreign Vessels) Act, 1981 and Rules framed there under (MZI Rules, 1982)	A
3	The Merchant Shipping Act, 1957 – Collisions, Accidents at sea and liability (Part X), Limitation of Liability (Part XA), Civil Liability for oil pollution damage (Part XB), Prevention and containment of pollution of the sea by oil (Part XIA), Wreck and Salvage (Part XIII)	A
4	The Suppression of unlawful Acts against Safety of Maritime Navigation & Fixed Platforms on Continental Shelf Act, 2002.	A
5	The Environment (Protection) Act, 1986 – Definitions, General Powers of the Central Government, Prevention, Control and Abatement of Environmental Pollution, and Miscellaneous provisions.	A
6	Third UNCLOS – Salient provisions.	A
7	Maritime Conventions relating to maritime environment and prevention and control of marine pollution ratified by India, MARPOL 73/78, OPRC 90	A

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**MCPE SYLLABUS FOR**  
**COAST GUARD WOMEN OFFICERS**



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**RESTRICTED****LOGISTICS AND COAST GUARD ADMINISTRATION**

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1. **GENERAL ADMINISTRATION****A**

- (a) Seniority and promotion
- (b) Reservations and Concessions in Appointments
- (c) Departmental Promotion Committee
- (d) Pay
- (e) DA, HRA and CCA
- (f) Allowances
  - (i) Transport Allowance
  - (ii) Fee and Honorarium
  - (iii) Conveyance Hire for local journey
  - (iv) Conveyance Allowance
- (g) Central Government Health Scheme
- (h) CG Accommodation Rule /Orders
- (j) Deputation and Foreign Service
- (k) Joining Time
- (l) Retirement of Superannuation
- (m) Quitting Service-Other than Superannuation
- (n) Resignation, Removal and Dismissal
- (p) Special Voluntary Retirement Schema for Surplus Central Government Employees
- (q) Discipline Rules
- (r) Welfare Measures
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- (t) Income Tax

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- (b) General Organization and Working of Central Treasuries
- (c) Receipt of Government Money and Payment of such Money into the Government Account
- (d) Custody of Moneys relating to or standing in the Government Account
- (e) Withdrawal from the Government Account
- (f) Personal claims of Government servants
- (g) Contingent Charges
  
- (h) Pension Payments

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- (j) Purchase of Stores, Works Expenditure and Miscellaneous Payments
- (k) Special Rules Applicable to Particular Departments
- (l) Deposits
- (m) Loans and Advances
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- (a) Rules
  - (i) Short title , commencement and applicability
  - (ii) Definitions
  - (iii) Location of moneys credited to government Account
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- (b) Receipt of Government Revenues, Dues, ETC, and crediting them into the Government Account
- (c) Withdrawal from the Government Account
- (d) Personal claims of Government servants
- (e) Contingent charges
- (f) Purchase of Stores
- (g) Works Expenditure & Miscellaneous Payments
- (h) Loans and Advances
- (j) Public Debt. Provident, ETC, Funds, Deposits, ETC
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4. **HRA** **A**
- (a) HRA and CCA General Rules and Orders
5. **TRAVELING ALLOWANCES** **A**
- (a) T.A admissible for different classes of journey
- (b) T.A Admissible when means of transport are supplied free
- (c) Controlling Officers
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  - (ii) Grades of Government servants
  - (iii) Different kinds of T.A and their rates
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  - (vi) Journeys of Transfer
  - (vii) TA on Retirement
  - (viii) TA to the family of a deceased Government
  - (ix) TA Miscellaneous
  - (x) Leave Travel Concession
  - (xi) Joining Time
6. **FUNDAMENTAL RULES** **A**
- (a) Fundamental Rules- Their Origin and scope
- (b) Definitions
- (c) Lien
- (d) General Conditions of service
- (e) Deputation out of India
- (f) Retirement
- (g) Dismissal, Removal, Compulsory Retirement and Suspension
- (h) Combination of Appointments
- (j) Foreign Service
- (k) Fixation of Pay
- (l) Fixation of Initial Pay of Re-employed Pensioners
- (m) Pay
- (n) Additions to pay
- (p) Deputation within India
- (q) Joining Time
- (r) Deputation/Delegation abroad
- (s) Incentives under Hindi Teaching Scheme

**7. PENSION****A**

- (a) General Conditions
- (b) Qualifying Service
- (c) Emoluments and Average Emoluments
- (d) Pension and Gratuity
- (e) Family Pension 1964
- (f) Pensions- Class and Conditions
- (g) Authorization of Pension
- (h) Payment of Pensions
- (j) Re-employed Pensioners
- (k) Commutation of Pension
- (l) Miscellaneous
  - (i) Benefits for Temporary Employees
  - (ii) Payment of advances to families of Government servants
  - (iii) Who die while in service
  - (iv) Central Government Employee Group Insurance Scheme 1980
  - (v) Special Voluntary Retirement Scheme for surplus Central Government Employees
  - (vi) Extraordinary Pension Rules

**8. GPF RULES****A**

- (a) Constitution of the Fund
- (b) Conditions of eligibility
- (c) Nominations
- (d) Subscriber's Account
- (e) Conditions of subscriptions
- (f) Rates of subscription
- (g) Transfer to Foreign Service or deputation out of India
- (h) Realization subscription
- (j) Interest
- (k) Advances from the Fund
  - (l) Recovery of advances
  - (m) Wrongful use of advance
  - (n) Withdrawals from the fund
- (p) Conditions for withdrawal
  - (r) Conversion of an advance into a withdrawal
  - (s) Final withdrawal of accumulations in the Fund

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- (t) Retirement of subscriber
- (u) Procedure of death of a subscriber
- (v) Deposit linked Insurance Scheme
- (w) Manner of payment of amount in the Fund
- (x) Procedure on transfer of a Government from one Department to another
- (y) Procedure on transfer to Government service of a person from the service under a body corporate owned or controlled by Government or an Autonomous organization, registered under the societies Registration Act. 1860
- (z) Transfer of amount to the Contributory Provident Fund (India)
  - (aa) Relaxation of the provisions of the rules in individuals cases
- (ab) Number of account to be quoted at the time of the payment of subscription
- (ac) Annual statement of accounts to be supplied to subscriber

9. **LTC RULES****A**

- (a) Definitions
- (b) Extent of Application
- (c) Change of Home Town
- (d) Declaration of place of visit under leave travel Concession to any place
- (e) Admissibility if Leave Travel Concession
- (f) Types of leave travel concession
- (g) Counting of Leave travel concession against particular blocks
- (h) Carry over of leave travel concession
- (j) Place to be visited by Government servant and members of his family under leave travel concession to any place in India
- (k) Entitlement
- (l) Reimbursement
- (m) Forfeiture of claim
- (n) Grant of advance and adjustment
- (p) Fraudulent claim of leave travel concession
- (q) Power to relax



**10. ADVANCES****A**

- (a) General Rules
- (b) Advance of Pay on Transfer
- (c) Advance of TA on Tour
- (d) Advance of TA on Transfer
- (e) Advance of TA Retirement
- (f) Advance of TA to the family of a deceased Government servant
- (g) Festival Advance
- (h) Advance in the event of Natural Calamity, Flood/Drought, etc.
- (j) Advance for LTC
- (k) Advance of First Appointment/ Deputation and leave ex-India
- (l) Advance of Leave Salary
- (m) Advance in connection with legal proceedings
- (n) Advance from GPF
- (p) Advance for medical treatment
- (q) Advance for immediate relief on death of Government servants
- (r) Advance for trainees in Hindi Prabodh, Praveen and Pragya through correspondence course organized by Central Hind Directorate
- (s) Advance for payment of fees for training in Hindi Typewriting and Hindi Stenography at the private training institutions
- (t) Advance for purchase of Cycle
- (u) Advance for purchase of Motor Cycle/Scooter Moped
- (v) Advance for purchase of Motor Car
- (w) Advance for purchase of Personal Computer
- (x) Advance for purchase of Table Fan
- (y) Advance for purchase of Warm Clothing
- (z) Advance to postal and RMS Inspector for purchase of Typewriter
- (aa) House Building Advance

**11. GENERAL FINANCIAL RULES****A**

- (a) General System of Financial Management
  - (i) General Principal relating to expenditure and payment of money
  - (ii) Defalcation and losses
  - (iii) Submission of records and information
- (b) Budget Formulation and Implementation
- (c) Control of Expenditure Against Budget
- (d) Government Accounts
  - (i) Preparation and presentation of Accounts
  - (ii) Form of Accounts
  - (iii) Principles of Accounting

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- (iv) Cash based Accounting
  - (v) Period of Accounts
  - (vi) Authority to open a new Head of Account
  - (vii) Conformity of budget heads with rules of classification
  - (viii) Responsibility of Departmental Officers
  - (ix) Classification should be recorded in all the bills and challans by drawing Officers
  - (x) Charged or Voted Expenditure
  - (xi) Plan or Non plan Expenditure
  - (xii) Banking Arrangements
  - (xiii) Capital ON Revenue Expenditure
- (e) Annual Accounts
    - (i) Appropriation Accounts
    - (ii) Finance Accounts
    - (iii) Presentation of Annual accounts
  - (f) Capital and Revenue Accounts
    - (i) Capital Expenditure
    - (ii) Principal for allocation of expenditure between capital and Revenue
    - (iii) Allocation between capital and revenue expenditure
    - (iv) Receipts and recoveries representing recoveries of expenditure previously debited to capital Major Head
    - (v) Conversion of outstanding loans into equity investments or grants-in-aid

**12. PROCUREMENT OF GOODS AND SERVICES****A**

- (a) Definition of Goods
- (b) Fundamental principle of public buying
- (c) Authorities competent to purchase goods
- (d) Procurement of goods required on mobilization
- (e) Powers for procurement of goods
- (f) Rate Contract
- (g) Registration of suppliers
- (h) Enlistment of India Agents
- (j) Reserved items
- (k) Purchase of goods without quotation
- (l) Purchase of goods by purchase committee
- (m) Purchase of goods directly under rate contract
- (n) Purchase of goods obtaining bids
- (p) Advertised Tender Enquiry

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- (q) Limited Tender Enquiry
- (r) Two bid system
- (s) Late Bids
- (t) Single Tender Enquiry
- (u) Contents of Bidding Document
- (v) Maintenance Contract
- (w) Bid Security
- (x) Performance Security
- (y) Advance payment to supplier
- (z) Part payment to suppliers
- (aa) Transparency, competition fairness and elimination of arbitrariness in the procurement process
- (ab) Efficiency, Economy and Accounting in public procurement system

13. **PROCUREMENT OF SERVICES**

**A**

- (a) Identification of Work /Services required to be performed by consultants
- (b) Preparation of scope of the required work /service
- (c) Estimating reasonable expenditure
- (d) Identification of likely sources
- (e) Short-listing of consultants
- (f) Preparation of Terms of Reference (TOR)
- (g) Preparation and issue of Request for Proposal
- (h) Receipt and opening of proposals
- (j) Late Bids
- (k) Evaluation of Technical Bids
- (l) Evaluation of Financial Bids of the technically qualified bidders
- (m) Consultancy by nomination
- (n) Monitoring the Contract

14. **OUTSOURCING OF SERVICE**

**A**

- (a) Identification of likely contractors
- (b) Preparation of Tender enquiry
- (c) Invitation Bids
- (d) Late Bids
- (e) Evaluation of Bids Received
- (f) Outsourcing by Choice
- (g) Monitoring the Contract

**15. INVENTORY MANAGEMENT****A**

- (a) Receipt of goods and Material from private suppliers
- (b) Receipt /issue of goods and material from internal divisions
- (c) of the same organization
- (d) Custody of goods and material
- (e) Lists and Accounts
- (f) Hiring out of Fixed Assets
- (g) Physically Verification of Fixed Assets
- (h) Verification of Consumables
- (j) Procedure for Verification
- (k) Buffer Stock
- (l) Physical verification of Library books
- (m) Transfer of charge of goods materials etc
- (n) Disposal of Goods
- (p) Modes of Disposal of Goods
- (q) Modes of Disposal
- (r) Disposal through Adverted Tender
- (s) Disposal through Auction
- (t) Disposal at scrap value or by other modes
- (u) Powers to write off
- (v) Losses due to depreciation
- (w) Losses not due to depreciation
- (x) Demand/ custody/ accounting of -
  - (i) Naval stores
  - (ii) Victualling
  - (iii) Clothing
  - (iv) Mess traps
  - (v) Stationery
  - (vi) Machinery spares
- (y) Survey-
  - (i) Necessity of survey
  - (ii) Procedure of survey
  - (iii) Types of survey
- (z) Audit by PCDA/NLAO staff-
  - (i) Requirement of Audit
  - (ii) Local audit
  - (iii) Test audit
- (aa) Coast Guard Store Depots - Work procedure at CGSDs
- (ab) Non public funds- Maintenance of NPF

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16. **CONTRACT MANAGEMENT** **A**
- (a) General Principal for contract
  - (b) Management of Contracts
17. **GRANTS-IN AID AND LOANS** **A**
- (a) Principals and Procedure for award of Grants in-aid
  - (b) Audit of Accounts of Grants-in-Aid
  - (c) Utilization Certificates
  - (d) Register of Grants
18. **MISCELLANEOUS SUBJECTS ESTABLISHMENT** **A**
- (a) Adjustment in Appointments
  - (b) Transfer of Charge
  - (c) Date of Birth
  - (d) Service Book
  - (e) Retrospective claim due from date of sanction
  - (f) Due date of TA claim
  - (g) Due date of leave Travel Concession claim
  - (h) Due date of Over time Allowance claims
  - (j) Due date of withheld increment
  - (k) Arrears Claims
  - (l) Procedure for dealing with time barred
  - (m) Time barred claims of persons not in Government services
  - (n) Retrospective sanctions
  - (p) Currency of sanction of Provident Fund advance/Withdrawal
19. **REFUND OF REVENUE** **A**
- (a) Sanction of refunds of revenue
  - (b) Communication of refund sanctions to audit
  - (c) Suitable note of refund in original cash book entry and other documents
  - (d) Remission of revenue before collection is not refund
  - (e) Refunds not regarded as expenditure for allotment
  - (f) Competent authority in case of credits wrongly classified
  - (g) Compensation for accidental loss of property

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20. **DEBT AND MISCELLANEOUS OBLIGATIONS OF GOVERNMENT** **A**  
 (a) Public Debt  
 (b) Provident Funds  
 (c) Crediting of Interest
21. **SECURITY DEPOSITS** **A**  
 (a) Furnishing of security by Government servants handing cash  
 (b) Retention of Security
22. **TRANSFER OF LAND AND BUILDING** **A**  
 (a) Transfer of land
23. **DESTRUCTION OF RECORDS CONNECTED WITH ACCOUNTS** **A**
24. **LEAVE RULES** **A**  
 (a) Definitions  
 (b) Government servants on temporary transfer or on foreign service  
 (c) Transfer from services or posts governed by other leave rules  
 (d) Transfer to industrial establishment  
 (e) General Conditions  
     (i) Right to leave  
     (ii) Regulation of claim to leave  
     (iii) Effect of dismissal removal or resignation on leave at credit  
     (iv) Commutation of one kind of leave into another  
     (v) Combination of different kinds of leave  
     (vi) Maximum amount of continuous leave  
     (vii) Acceptance of service or employment while on leave  
 (f) Grant and Return from leave  
     (i) Application for leave  
     (ii) Leave account  
     (iii) Verification of title to leave  
     (iv) Leave not to be granted in certain circumstances  
     (v) Grant of leave on medical certificate to Gazetted and non Gazetted Government servants  
     (vi) Leave to a Government servant who is unlikely to be fit to return to duty  
     (vii) Commencement and termination of leave  
     (viii) Combination of holidays with leave  
     (ix) Recall to duty before expiry of leave  
     (x) Return from leave  
     (xi) Absence after expiry of leave

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- (g) Kinds of leave due and admissible
  - (i) Calculation of earned leave
  - (ii) Earned leave
  - (iii) Half pay leave
  - (iv) Commuted leave
  - (v) Leave Not due
  - (vi) Extraordinary leave
  - (vii) Leave to probationer, a person on probation and an apprentice
  - (viii) Persons re-employed after retirement
  - (ix) Leave preparatory to retirement
  - (x) Encashment of Earned leave along with leave Travel Concession while in service
  - (xi) Cash equivalent of leave salary in case of death in service
  - (xii) Payment of cash equivalent of leave salary in case of death etc of Government servant
  - (xiii) Cash equivalent of leave salary in case of invalid from service
  - (xiv) Cash equivalent of leave salary in case of permanent absorption in public sector Undertakings/Autonomous Body wholly or substantially owned or controlled by the central/State Government
  - (xv) Leave Salary
  - (xvi) Drawl of leave salary
  - (xvii) Advance of leave salary
  
- (h) Special Kinds of Leave other than Study Leave
  - (i) Maternity leave
  - (ii) Paternity leave
  - (iii) Child Adoption child
  - (iv) Special disability leave for injury intentionally inflicted
  - (v) Special disability leave for accidental injury
  - (vi) Hospital leave
  - (vii) Seamen's sick leave
  - (viii) Departmental leave
  
- (j) Study Leave
  - (i) Conditions for grant of study leave
  - (ii) Maximum amount of study leave
  - (iii) Application for study leave
  - (iv) Sanction of study leave
  - (v) Accounting of study leave and combination with leave of other kinds
  - (vi) Regulation of study leave extending beyond course of study

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- (vii) Leave salary during study leave
- (viii) Conditions for grant of study allowance
- (ix) Rates of study allowance
- (x) Procedure for payment of study allowance
- (xi) Admissibility of allowances in additions to study allowance
- (xii) Travelling Allowance during study leave
- (xiii) Cost of fees for study
- (xiv) Resignation or retirement after study leave or non completion of the course of study
- (xv) Interpretation
- (xvi) Power to relax
- (xvii) Repeal and savings

25. **CONTRIBUTORY PROVIDENT FUND RULES****A**

- (a) Conditions of the fund
- (b) Conditions of eligibility
- (c) Nominations
- (d) Subscriber's account
- (e) Conditions of subscriptions
- (f) Rates of subscription
- (g) Transfer to foreign service or deputation out of India
- (h) Realization of subscriptions
- (j) Contribution by Government
- (k) Interest
- (l) Advances from the fund
- (m) Recovery of advances
- (n) Wrongful use of advance
- (p) Withdrawal from the fund
- (q) Conditions for withdrawal
- (r) Conversion of an advance into a withdrawal
- (s) Final withdrawal of accumulations in the fund
- (t) Retirement of subscriber
- (u) Procedure on death of a subscriber
- (v) Deposit linked insurance revised scheme
- (w) Deductions
- (x) Manner of payment of amount in the fund
- (y) Procedure on transfer to pensionable service
- (aa) Number of account to be quoted at the time of the payment of subscription
- (ab) Annual statement of accounts to be supplied to subscriber
- (ac) Relaxation of the provisions of the rules in individual case

**26. DELEGATION OF FINANCIAL POWERS RULES****A**

- (a) Delegation
- (b) General limit on power to sanction expenditure
- (c) Primary units of appointment
- (d) Appropriation and re appropriation
- (e) Powers of subordinate authorities
- (f) Insurance of Government property
- (g) Delegation of powers to in expenditure
- (h) Remission of disallowances by audit and writing off of overpayments made to Govt. servants
- (j) Power to release funds
- (k) Powers to write off losses

**27. OFFICE PROCEDURE AND CONDUCT RULES****A**

- (a) Good Administration
- (b) Leadership, Motivation Attitude and communication
- (c) Office management
- (d) Attendance non attendance Register
- (e) Addresses of officers and staff
- (f) Office rooms
- (g) Maintenance of order in the section
- (h) Organisation and methods
- (j) Desk officer system
- (k) Forms report and returns
- (l) Promptness and courtesy
- (m) Observance of Government's policies
- (n) Gifts
- (p) Dowry
- (q) Movable, immovable and valuable property
- (r) Investments, lending and borrowing
- (s) In solving and habitual in datedness
- (t) Vindication of acts and character of Govt.
- (u) Prevention of corruption
- (v) Criticism of Govt.
- (w) RTI Act

**Reference Materials:-**

- (i) Pamphlet titled “ New management Strategy” (NMS) – Implementation Guidelines Promulgated by Naval Headquarters during Apr 94.
- (ii) Pamphlet titled “ New management Strategy” (NMS) – Amplification on Procedure, Promulgated by Naval Headquarters vide VCNS Memo 09/95.
- (iii) Delegated Financial Powers under DGCG, DDG, COMCGs, Commanding Officers/ Officer-in-Charge of various Rank as updated time to time.
- (iv) Relevant CGOs

**RESTRICTED****LEADERSHIP**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1.	<b><u>Concept of Leadership, Management and Command</u></b> – Definition of Leadership; military Leadership; relationship and Management; Approach to Leadership etc.	B
2.	<b><u>Traits</u></b> – Leadership Traits; Are Leaders born; in-born traits; examples; Traits positively to be found in leaders; traits of Military Leaders; Ethics and morals in the Military etc.	B
3.	<b><u>Style</u></b> – Authoritarian; democratic Leadership; grid approach etc.	B
4.	<b><u>Indicator of Leadership</u></b> – Symbolic behaviour; decision making behaviour; concern for task etc.	B
5.	<b><u>Characteristics of Leader</u></b> – Mental ability; Courage; maturity social orientation; Perception; Motivation etc.	B
6.	<b><u>Group Dynamics</u></b> – Function of groups; Understanding of goals; Sense of responsibility; Needs for autonomy; Interest and Motivation etc.	B
7.	<b><u>Inter personnel Relations</u></b> - Transactional Analysis	B
8.	<b><u>Biographies of following leaders:-</u></b>  (a) Mac Arthur  (b) Rommel  (c) Mountbatten  (d) Field Marshal Manekshaw	C

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**INDIAN COAST GUARD AND MARITIME LAW**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
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**Indian Coast Guard Law****A**

1. Nature of Coast Guard Law, important definitions and general terms and statutory duties of Coast Guard.
2. Offences under the Coast Guard Act – salient ingredients
3. Arrest & proceedings before trial
4. Introduction to charges and Charge Sheet
5. Investigation of offences including recording of evidence and abstract of evidence
6. Coast Guard Court – Powers, procedure and Judicial review
7. Summary Trial of officers below Comdt rank and EPs – Powers and procedures
8. Board of Inquiry – General provisions
9. Grounds and procedure for dismissal, removal, discharge and release of Personnel – Chapter IV of CG (General) Rules
10. Complaints and representations
11. Board of Inquiry – conduct and procedures
12. Trial of Persons Subject to Armed Forces laws of the Union(Exercise of Jurisdiction) Rule, 1978
13. Powers delegated to Coast Guard personnel under various Acts.
14. Coast Guard (Condition of Service) Rules, 1986- Rule 3 to 18
15. Coast Guard (Seniority & Promotion) Rules, 1987 - Salient provisions
16. Coast Guard (Ceremonial) Rules, 1988

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17. Character assessment of EP's and award of Good Conduct Badge
18. Service privilege and deductions from pay and allowances – Rule 45 to 58 of Coast Guard (Condition of Service) Rules 1986

**Maritime Law****A**

19. MZI Act, 1976
20. MZI Act, 1981
21. MZI Act, 1982

**Miscellaneous****B**

22. Merchant Shipping Act, 1958 – salient provisions
23. Third UN Convention on Law of the Seas – general provisions
24. The Narcotics, Drugs and Psychotropic Substances Act, 1958- General provision
25. Customs Act, 1962 - General provision
26. Passport Act, 1967 - General provisions including salient provisions of Indian passport  
(Entry into India)
27. Indian Penal Code, 1860 – Provisions related to general exceptions, private, defence and offences affecting human body and property.
28. Indian Evidence Act, 1872 –
  - (a) Relevancy of facts (sec 5 to 15)
  - (b) Admission and Confession (Sec 17 to 29)
  - (c) Admissibility of documents (Sec 35, 36, 38, 74 to 77)
  - (d) Third person opinion when required (Sec 45 to 50)
  - (e) Examination and cross examination of witness (Sec 137 to 155)
  - (f) Reporting memory (Sec 159)
29. Code of criminal procedure, 1973 – Sections 6, 26, 28 to 30, 41 to 50, 61, 62, 70, 125, 154, 162, 164, 188, 320, 436 to 438, 468 and 475.

**RESTRICTED****GENERAL NAVIGATION**

<b><u>S.NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Type of charts, Information shown on charts, Standard Symbols and Abbreviations used	B
2	Various Navigational publications	B
3	Aids to Navigation – EM log, Echo sounder, Radar, GPS, Differential GPS, Gyro, magnetic compass, Principles And limitations	B
4	Navigational Instruments - Sextant, Anemometer, Distance meter, Batternberg	B
5	Tides, Tidal Streams and currents. Tide calculation	B
6	NDB, Chart correction log, Navarea log, Ships log book	B
7	Bridge organization	B
8	Pilotage claims	B

**Reference Material: -**

- (xxii) Indian Tide Table – INP 41
- (xxiii) Admiralty Tide Table – NP 201 to 204
- (xxiv) Admiralty Manual for Hydrographic Surveying Vol I & II.
- (xxv) Navigation Vol I & II.

**TACTICS & SCOUTING OPERATIONS**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1.	<b><u>Terminology and Definition</u></b>  Scouting, Search, Patrol, difference between search and patrol, method of search and patrol, relative search, relative patrol, tracking and reconnaissance, factors for selection of scout.	<b>B</b>
2.	<b><u>Factors Affecting Planning of Scouting Mission</u></b>  Aim, initiation of scouting operation, consideration in search design, security of search, economy in use of scouts, accuracy of navigation, factors affecting visual detection, factors affect radar detection, effectiveness of a search.	<b>B</b>

**FISHERIES**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1.	Types of Fishing Boats	C
2.	Methods of fishing - Important Fishing Grounds	C
3.	Identification of Fishing gear and types of net	C
4.	Fisheries resources in India	C
5.	Disaster management	B

**Reference Materials:-**

Docket of CIFNET

**RESTRICTED****SEAMANSHIP**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1.	Type of Ships:- Warships, Merchant Ships and sailing Vessels	B
2.	Types of ropes & hawsers and their identification. Types of Knots & usage.	B
3.	Seamanship general terms & definitions	B
4.	Seamanship glossary terms	B
5.	Anchors & cables; type of Anchor and chain cable, Associated gear, Associated fittings.	B
6.	Maintenance of safety and survival equipment	B
7.	Ship Husbandry, Planned preventive maintenance	B
8.	Awnings	B
9.	Paint work	B

**Reference materials**

Seamanship Vol- I to III

**GUNNERY AND BOARDING OPERATIONS**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
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**Gunnery**

- |    |   |   |
|----|---|---|
| 1. | Small Arms safety Rules   | A |
| 2. | Types of Small arms available in Coast Guard & their technical specifications.                                  | B |
| 3. | Types of main Armament onboard Coast Guard ships & general technical specifications                             | C |
| 4. | Accounting, Custody, precautions regarding arms, ammunition and explosive. Issue of Magazine Keys & small arms. | A |

**Boarding Operations****B**

- |    |   |   |
|----|---|---|
| 5. | Review of Indian Coast Guard Authority and Jurisdiction.  |   |
| 6. | <u>International Law</u> - Elements of Jurisdiction over a vessel as it applies to International Law. |   |
| 7. | <u>Pre-Boarding Tactics</u>   | (a) Composition of Boarding Party<br>(b) Pre-Boarding questions<br>(c) Boat Launch and approach   |
| 8. | <u>Use of force</u>   | (a) Threat Assessment<br>(b) Appropriate level of Force to be used when dealing with un-cooperative and/or aggressive people<br>(c) <u>Basic Tactics</u> (i) Crowd Control<br>(ii) Stance<br>(d) Physical control tactics<br>(e) Boarding Team safety<br>(f) Weapon retention |

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9. Search Procedure
  - (a) Sweep
  - (b) Equipment Inspection
  - (c) Techniques for conducting high risk searches on a vessel
  - (d) High risk search practice
  
10. Fisheries Boarding Procedures
  - (a) Document, Fish log and permit examination
  - (b) Gear Inspection
  - (c) Hold Inspection
  - (d) Hold Volumetric Analysis and comparison with Fish Log
  
11. Contraband Section
  - (a) Narcotics identification
  - (b) Gold and Silver Smuggling
  - (c) Arms Smuggling
  - (d) Methods for finding contraband on a vessel
  
12. Apprehension Arrest and Safe keeping of Prisoner
  - (a) Personnel Search
  - (b) Hand Cuffs
  - (c) Prisoner control
  - (d) Custody Crew
  - (e) Escort to port
  - (f) How to lodge FIR
  
13. Fisheries Boarding Practical
  - (a) Trawler Orientation & Inspection
  - (b) Mock Boarding-
    - (i) Fisheries
    - (ii) Contraband
  
14. Seizure Package Preparation
  - (a) Seize Logs and Charts
  - (b) Seize samples of catch or contraband
  - (c) How to photograph evidence
  - (d) Log entries
  - (e) Evidence required to be produced before court

**RESTRICTED****COMMUNICATION**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1.	Types of Area Broadcast, SOP/TOP	B
2.	Sailing Order, Arrival/Dispatch Signal	B
3.	Handling of exclusive message	A
4.	Security classification & Procedure	A
5.	LOGREQ	A
6.	INMARSAT, Internet, Intranet, E-mail, SAR Communication, GMDSS	B
7.	Flags and their meaning	B
8.	CB's, CD's, SP's – care, custody and accounting, muster, destruction, loss of CB's & safe Keys.	A

**Reference Materials:-**

- (i) Navy Order Special 1/95 & 4/01
- (ii) Seamanship Volume I
- (iii) Regs Navy Part I
- (iv) NO "S" 7/2003
- (v) CGO 17/89

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**NBCD, FIRE FIGHTING & DAMAGE CONTROL**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1.	NBCD states of readiness	B
2.	NBCD Organisation	B
3.	Principles of Fire Fighting	A
4.	Types of Fire	B
5.	Duty watches & security rounds, responsibilities of OOD, Duty SOOD & DC Patrol	A
6.	Damage control & Fire Fighting Organisation at Sea & in Harbour.	B
7.	Precautions to be taken during underwater activities (Diving and operation of machinery)	B
8.	Major & Minor fire fighting Equipments onboard/ashore.	B

**Reference Material:-**

- (i) BR 2170 Vol I & II, INBR 312
- (ii) Hand book on Fire Fighting from BR 4007
- (iii) NES 119, NO Str 1/96

**POLLUTION RESPONSE**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
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**Pollution Response****B**

1. (a) Pollution response and pollution control - Environment pollution - air and water - pollutants - response actions - Indian Coast Guard role.  
 (b) Contingency plans - occupational hazards - Management of Pollution response.
2. Legislation on Pollution Control
  - (a) National and International legislations - Pollution Control Boards
  - (b) Coast Guard's Position
3. Oil Spill Containment
  - (a) Purpose - Containment - Booms - Construction of boom - Floating booms and their components.
  - (b) Advantages and disadvantages of booms , Limitations of booms, Deployment of floating booms - Earthen dams.
4. Recovery and Removal
  - (a) Skimmers - various types of skimmers - Principle of operation of skimmers.
  - (b) Pollutant characteristics and methods of removal
  - (c) Chemical and biological agents.
5. Migration of Hydrocarbons in Soil
  - (a) Soil mechanics - sea bed - leaching problem - water table - ground water
  - (b) Behavior of spilled oil in soil and penetration into water table and sea.
  - (c) Detection of migration problem - Recovery and disposal

6. Operation Response Actions

Various phases of response actions - special considerations.

7. Shore Line Clean up

- (a) Shore line protection - Types of shore line - shore line clean up - identifying pollutants on shore line - clean up and disposal
- (b) Legislative aspects.

8. Disposal of Oily Refuse

Factors for consideration - oily waste classification. Methods of disposal - Contingency plans regarding disposal of oily waste.

9. Aerial Detection

Monitoring and surveillance - appearance of oil at sea - phases of monitoring and surveillance - Aerial monitoring and surveillance equipment - LAR , IR/UV scanners , Camera system , DSDG , ATPS , quantification and categorization equipment.

10. Application of Chemical Agents for Oil Clean up operation

- (a) Chemical agents - Properties - effectiveness of chemical agents, Precaution.
- (b) Aerial and surface application, Air craft and ship operation while combating oil pollution.

11. Coast Guard Pollution Response Equipment

- (a) Coast Guard Response team
- (b) Containment Equipment
- (c) Recovery Equipment
- (d) Disposal Equipment
- (e) Auxiliary Equipment

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<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1.	Marine environment protection and Coast Guard role	A
2.	Forms of marine pollution	B
3.	Oil pollution from vessels and offshore platforms	B
4.	International legislations and its principle aim – MARPOL 73/78 OPRC 90, CLC 92 and FUND 92	C
5.	National legislation – Merchant Shipping Act 1958	B
6.	National Oil Spill – Disaster Contingency Plan	B
7.	Fate of oil on water – Dispersion, evaporation, degradation etc.	B
8.	Oil spill dispersants and its effectiveness	C
9.	Pollution Response Teams and its role	B
10.	Sequence of actions to be taken at ops center after an oil spill till its completion	A
11.	Cleanup cost calculation and compensation	B

**ELECTRICAL**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1.	Power Distribution Systems	C
2.	Types of supplies (Voltage & frequency) onboard.	C
3.	ICCP system, principle & precautions.	C
4.	NAVAIDS in CG Ships	C
5.	Electric shock and care of power equipment.	B

**RESTRICTED****ENGINEERING**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1	Propulsion System of all class of Ships (a) Types of Engines  (b) Type of main propulsion systems advantages and disadvantages	C
2.	Auxiliary Machinery (a) Functions of important auxiliary and domestic machinery fitted in ships.  (b) Standby capacities of generating plants	C
3.	Maintenance, repairs, Refit and Returns (a) Factors affecting operational cycle of ships.  (b) Refit cycle  (c) Role and responsibilities of CGRPS, RHQs.	C

**Reference Materials:-**

CGO 19/85, 29/85, 27/85, 5/93, 9/93, 6/98, 8/98, 14/98

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**INFORMATION TECHNOLOGY**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1.	<u>Introduction</u>  Familiarise Basic I/O System IT Tools & Application	A
2.	<u>Operating System</u>  Introduction of Operating System Personal Computer Software	A
3.	<u>Internet</u>  Introduction to Internet Tools and Application IT Security E-mail	A
4.	<u>LAN and Networking</u>  LAN and its components WAN and its components	A
5.	<u>Introduction to Hardware</u>  Storage Device Printers Modems Scanners RAM, ROM, EPROM & PROM	A

**Reference Material:-**

- (i) NHQ letter No. IT/0625/IT Policy dated 28 sep 98 on IT Policy for Navy
- (ii) Computer Networks by AS Tanenbaum
- (iii) Structured Computer Organisation by AS Tanenbaum
- (iv) Principles of Database System by AS Tanenbaum

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**CURRENT AFFAIRS**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1.	Areas of World dispute with particular reference to South Asia/West Asia and the Indian Ocean region.	
2.	International and regional organizations UNO, UNESCO, FAO, ICAO, WHO, Arab League, the Warsaw Pact, NATO, SAARC etc.	
3.	East West relations: The rise and decay of regional pacts and military alliances: role of neutral and uncommitted nations. The third World, North-South/South-South dialogue. The Unipolar World relevance and NAM.	
4.	National and International terrorism including low intensity conflicts.	
5.	India's neighbours Pakistan, Nepal, Bhutan, Bangladesh, Myanmar, Sri Lanka, Maldives.	
6.	Countries of South East Asia, ASEAN, recent political/military changes & repercussions on India.	
7.	Indian Affairs. The five year plans and resources to implement them. Development projects and their achievements. Indian Constitution and the roles of Central and State Governments.	
8.	Defence budget, Defence PSUs, DRDO labs & their organization.	

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**RESTRICTED****WORKS**

<b><u>S. NO.</u></b>	<b><u>SUBJECT</u></b>	<b><u>SOK</u></b>
1.	MES Organisation and set up and functions	A
2.	Defence Works Procedure- 2007	A
3.	Scales of Accommodation for Defence Services	B
4.	Scales of Furniture for Defence Services	B
5.	Introduction on Key Location Plan, Master Plan	B
6.	Allotment, Booking and maintaining of funds	B
7.	Introduction on preparation of Board Proceedings for construction of Accommodation	B
8.	Function of Defence Estate Organisation	B
9.	Procedure for Land Acquisition, Land management by Defence Estate Officer	B

**Reference materials**

- (i) DWP-2007
- (ii) Scales of Accommodation for Defence Services
- (iii) Scales of Furniture for Defence Services
- (iv) Regulations for MES (RMES)

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**RESTRICTED****Appendix 'E'**

{Refers to Para 10(d)}

**PROFORMA FOR VOLUNTEERING FOR THE  
MID CAREER PROFESSIONAL EXAMINATION**

(All entries should be in block letters)

1. Rank, Name & No. :
2. Branch :
3. Ship /Establishment :
4. Total Service as on 01 Jan \_\_\_\_\_: \_\_\_\_\_ years \_\_\_\_ months
5. Whether first attempt :
6. If 'No' state number of attempts  
so far made with years : Attempt Year Result

(Also include absence / withdrawal  
after volunteering. If absence was  
condoned quote authority)

7. Centre of Examination : Mumbai / Chennai / Port Blair  
(Strike out if not applicable)

-----  
(Signature of the Candidate)

II

Forwarded

Commanding officer

III

Recommended

Administrative Authority

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**BREAKDOWN OF MARKS – WRITTEN****GD OFFICERS**

<b>SL.</b>	<b>SUBJECT</b>	<b>MARKS</b>
1.	General Navigation	30
2.	ICG Tactics and Scouting Operations	10
3.	Pollution Response and Control	10
4.	SAR Operations	15
5.	Law	10
6.	ICG Administration	05
7.	Fisheries and Environment	05
8.	Logistics	05
9.	Ship Handling and ROR	10
10.	Communication	10
11.	Gunnery	05
12.	Engg, NBCD, FF & DC	10
13.	Electrical	05
14.	Information Technology	05
15.	Seamanship	10
16.	Maritime Strategy	05
<b>TOTAL</b>		<b>150</b>

**BREAKDOWN OF MARKS – ORAL BOARD****GD OFFICERS**

<b>SL.</b>	<b>SUBJECT</b>	<b>MARKS</b>
1.	Navigation	20
2.	Ship handling	10
3.	ROR	05
4.	SAR	10
5.	Pollution Response	10
6.	Seamanship	15
7.	Communication / Gunnery	10
8.	NBCD / Firefighting	05
9.	Aviation	05
10.	Maritime Law	10
<b>TOTAL</b>		<b>100</b>