

## This is to recommend the questions on navigation for getting ready for a professional interview within the ONMA and Ukrainian maritime education curriculum applicable for deck cadets:

1. Geographical coordinates. What reference ellipsoid is used in satellite navigation.
2. Range of visibility at sea and its calculation – geographical and optical. Units of distance and speed measurements used in navigation.
3. Magnetic compass. Magnetic declination, deviation and magnetic compass correction. Their nature, definition and calculations.
4. Speed and distance. Calculations of the distance made good and the speed of the vessel. Speed Log correction, Speed Log coefficient, their definition and inclusion in calculations using nautical tables.
5. Navigation charts. Definition, characteristics, and types. Chart projections used in navigation.
6. Speed Logs. Types of Speed Logs and the principle of their operation.
7. Gyro Compasses. Types of gyrocompasses and the principle of their operation. Gyro precession, nature of Gyro Compass Errors. Methods of calculation of gyro-compass. Gyro-compass errors reduction/or compensation prior-to vessel's sailing to sea and during navigation at sea. Astronomical methods of a practical gyro-compass error calculation at sea.
8. Speed deviation of a Gyro Compass, its correction or accounting for the ship's dead reckoning. When does the speed deviation reach the maximum and minimum values, provided that the ship's speed is constant?
9. Numerical and linear scales of nautical chart. Scale accuracy limits.
10. Mercator Projection. Plotting of Rumb Line and Great Circle on a Mercator Chart. Earth surface image distortions and the range of latitudes between which the Mercator projection is acceptable.
11. Vessel's turn and circulation. Parameters of a vessel's turning circle elements, the turning circle tables. Computation and plotting vessel turn on chart.

12. Squat in shallow water. Methods of computation and use in Passage Planning. Static and dynamic draft of the vessel. Pilot Card. Ship's Air draft and overhead clearance.
13. Finding of a course to steer allowing for Tidal Stream or Current and Leeway, drift set plotting on Chart. Finding the direction and strength of tidal stream or current from Chart or Tables. Calculating the actual set rate of tidal stream current from DR and Fixed positions. Symbol used for indication of difference between fix and dead reckoning positions. Time and Speed Log readings computation for Dead reckoning position plotting.
14. Requirements for position fixing accuracy. Frequency of position fixing based on distance to the nearest danger.
15. Ship's position fixed by three bearings. Practical plotting. Position quality of the method. The triangle formed where the bearing lines cross. Causes for triangle existence. How to find a correct position inside/outside the triangle.
16. Combined method of position fixed of the vessel using visual bearings and radar range/s. Plotting the vessel track with account of the coastline and landmarks convenient for position fixes. Radar fixes, procedure, methods, errors of fixing.
17. Principles of navigation in narrows. Planning of passage in narrow waters, channels and canals.
18. Safe navigation in restricted visibility. Definition of restricted visibility as per the COLREG.
19. Vessel position fixing by Celestial Bodies observation, methods and preparing of a sextant for observations. Definition, nature and correction of sextant errors.
20. Determining the position of the vessel by an astronomical observation of the Sun at different times. How do you calculate latitude by Polaris or by meridian altitude of the Sun?
21. Determination of the compass correction at sea: by sunrise / sunset and the North Star.
22. Principles and benefits of astronomical observations of the Polar Star.

23. Economical aspects of a Voyage Planning. Sailing by Great Circle (GC) Methods for GC elements calculation and plotting them on the Mercator Chart. Use of the gnomonic projection charts.
24. Navigation in Traffic Separation Systems (TSS). Principles and regulations.
25. Navigational equipment installed on the Bridge – types, purpose, limitations, restrictions.
26. IALA systems
27. Principles and requirements for Nautical Charts and Publication, maintenance and correction. Temporary and preliminary notices. Chart and Publication correction records. Readiness for PSC inspection.
28. Basics of NAVAREA and NAVTEX systems. Types of NAVAREA/NAVTEX Messages. NAVAREA/NAVTEX Messages recording. Charts updates by NAVAREA/NAVTEX information
29. General information about tides and tidal currents. Elements of the tide. Terminology that refers to the tides. Chart Datum (CD) definition and types of CDs used in hydrography.
30. Finding the Tidal Information from Chart or Tables. Principles of Passage Planning in Tidal Areas
31. Methods for computation of the correction of the magnetic compass. Magnetic compass deviation observation and compensation.
32. Navigation within an area of the Traffic Control System (VTS).
33. Interpretation of COLREG-72 (very close to the text, preferably by heart).
34. Anchoring. Calculation of the safe anchorage area.
35. Standard Commands to a helmsman in English language.
36. Maritime terminology in English according to official duties and management. Understanding VMS in English.
37. Maritime terminology in English – Life saving appliances and Firefighting equipment.

38. Purpose of the Night Order Book. What does the abbreviation CPA, TCPA stand for.
39. Issues of buoyancy and stability of the vessel. Diagrams of a Static stability and a Dynamic stability, a metacentric height and criteria of stability.
40. Maneuverable Tablet for prevention collisions at sea. Speed-vector's triangle. Patterns of change in RMLs.
41. GMDSS
42. Preparation of the vessel for departure, arrival and sailing in stormy conditions. Navigation in ice conditions, the threat of icing the ship.
43. The Revised Guidance to the master for avoiding dangerous situations in adverse weather and sea conditions. Parametric Rolling Motion Diagram
44. Boarding of a pilot from a boat and from a helicopter. IMO Requirements for a pilot boarding arrangements.
45. Load line. Load line seasonal chart
46. GPS, DGPS – principle of operation, position fix quality.
47. MARPOL (Annexes 1-6)
48. Launching of boats equipped with On load or Off load device, FPD.
49. ECDIS vs ECS. IMO requirements, International Standards. Dependence of navigational sensors' data quality. Minimum required navigational sensors to be connected to ECDIS. ECDIS limitations. Maintenance of ECDIS.
50. Difference between ENC and RNC. Quality and principles of hydrographic data display. SCAMIN. IHO Standards applicable to ENC and RNC. ENC/RNC updates and process documentation. Readiness for PSC Inspections.
51. The Revised Guidance to the master for avoiding dangerous situations in adverse weather and sea conditions. Parametric Rolling Motion Diagram.