

**GDAŃSK UNIVERSITY OF TECHNOLOGY**  
**Faculty of Ocean Engineering and Ship Technology**

**Field of Study: Ocean Engineering , course in English**

<b>Final Examination - Questions</b>	<b>The Related Subject</b>
1. Seaport as an intermodal transport hub, on selected example 2. The impact of containerization on sea transportation	Marine and Intermodal Transport
3. Compare MATLAB environment and general programming language (C, C++, C#) when performing calculations. Please consider efficiency, reliability and expertise level necessary in each case. Describe what are the advantages and disadvantages of using general programming language like C, C++, C# for solving engineering tasks. 4. What are the main advantages of using solid modelling in a CAD/CAM/CAE system. Why parameterization is used when modelling solids in CAD/CAM/CAE system..	Marine Applied Informatics, CAE and Design Tools
5. Describe basic properties of ship structural steel. Where manufacturer can it know from? 6. Compare steel vs aluminium as material for ship structure. How join steel ship hull with aluminium superstructure. 7. Present two mechanism of corrosion of metals.	Material Engineering & Manufacturing Technology (Material Engineering)
8. List and briefly describe the basic equipment of Anchor Handling Tug Supply Vessels. 9. Discuss the method and elements of the anchoring system of semi-submerible platform in the deep sea. 10. List and shortly describe the methods of pipe laying on the sea bed operations. 11. Discuss the steps you take when installing the Jack-up platform. 12. Discuss evacuation equipment and how to evacuate from the oil rig.	Ship and Offshore Processes and Operations
13. Formulate the general equation of motion of floating structure {for 1 Degree of Freedom}. Discuss the individual members of the equation [J.F. Wilson] 14. Formulate the Morison equation. Discuss the members of the equation and coefficients. What is the Keulegan Carpenter (KC) number. Why is this number calculated? [J.F. Wilson, T. Sarpkaya] 15. Discuss (and sketch) the mechanism of restoring force on the example of the TLP. 16. What is the "free decay test"? What is the purpose of this test? [J.M.J. Journee].	Stability & Dynamics of Ship and Offshore Structures
17. Specify and describe briefly four interaction problems in the dynamic analysis of fixed offshore platforms. 18. Define the following notions: Random Variable, Stochastic Process and Random Field. 19. What is the difference between harmonic and spectral analysis of offshore structures. 20. Describe cases of a general dynamic structural system in terms of Input, Output and System Operator	Advanced Mechanics of Marine Structures
21. Methods of risk management in innovative projects. 22. Control of operational and financial activities using the Earned Value Method.	Finance and Economy in Engineering Design
23. Mathematical model and identification; what does it mean; identification methods; linearization; definition and example of linear model; why is it applied 24. Distributed parameter model; reason and possibility of its approximation with lumped parameter model 25. Difference between deterministic and random process modeling	Modeling and Simulation in Ocean Engineering
26. The ALARP rule based risk criteria. 27. The five steps of Formal Safety Assessment method.	Reliability, Safety and Risk Analysis

<p>28. Present Froude method of ship resistance estimation based on the ship's model resistance measured in a towing tank.</p> <p>29. Present a proposal of defining a metric of similarity of the design vessel and the parent ship in the procedure of preliminary ship design.</p> <p>30. Present the influence of the thrust and wake coefficients on the efficiency of the ship's propeller.</p>	Engineering Design
<p>31. The main types of 3D geometry definition in CAD (4), their applications, advantages and disadvantages.</p> <p>32. The main 3D modelling approaches (3), their applications, advantages and disadvantages.</p> <p>33. What are main problems in Computer Aided Ship Design, why standard Mechanical CAD systems have limited usability in naval architecture?</p>	Marine Applied Informatics, CAE and Design Tools
<p>34. The main types of geometry optimization (3), their applications, advantages and disadvantages.</p> <p>35. What is "topology optimization", where can it be used?</p> <p>36. What are main requirements (2) of efficient geometry optimization? Why?</p>	Optimisation in Engineering Design
<p>37. Project scope management – how to plan and control project scope? Who is responsible for it?</p> <p>38. Project time management – how to create project schedule? What is necessary to create it?</p>	Project Management
<p>39. Most typical objectives (technical/economical) in the preliminary design and optimization of ships.</p> <p>40. Main parametric representations of surfaces in computational geometry of ship body forms.</p>	Ship Design and Construction