

**EXAMINATION QUESTIONS FOR APPLICANTS TO DOCTORAL STUDIES IN THE  
PROFILE OF THE GROUP OF THE EDUCATIONAL PROGRAM  
8D07210 – «OIL AND GAS BUSINESS»**

**LEVEL 1 QUESTIONS:**

1. Describe the features of geological structure of water margins of the World Ocean.
2. List the main factors that complicate the process of offshore fields development.
3. Describe the stages of designing offshore fields.
4. List the factors affecting the process of drilling wells at sea.
5. Describe the main types of offshore drilling rigs.
6. Define the concept of "shelf" and describe the morphological elements of the shelf.
7. List the main types of floating drilling rigs and describe them.
8. List the main types of offshore platforms and describe them.
9. Describe the main elements of the well design.
10. Describe the types of underwater wellhead equipment.
11. Determine the purpose and scope of submersible centrifugal electric pumps.
12. Describe the features of bulk artificial islands.
13. Identify the advantages and disadvantages of underwater oil storage.
14. List the factors that influence the choice of oil storage method in marine conditions.
15. Describe typical scenarios of technical schemes for field development and describe the components.
16. Describe the modes of operation of formations in offshore fields.
17. Describe the prospects for the development of ways to intensify oil production.
18. Describe the complicated operating conditions of wells in the field.
19. Determine the causes of deterioration of the permeability of the bottom-hole zone of wells.
20. Describe the factors affecting the operation of producing wells.
21. Describe the processes occurring in the bottom-hole zone of the formation during hydraulic fracturing.
22. Identify the differences between conventional, selective and focal flooding.
23. Describe the primary, secondary and tertiary methods of increasing oil recovery.
24. Determine the necessary geological and technical conditions of wells for thermogasochemical exposure.
25. Describe the methods of preventing the formation of salt deposits during oil production.
26. Determine the role and place of hydrodynamic methods of enhanced oil recovery.
27. Determine the role and place of physico-chemical methods of enhanced oil recovery.
28. Determine the role and place of wave and thermal methods of enhanced oil recovery.
29. Determine the role and place of gas methods to enhance oil recovery.
30. Determine the role and place of hydraulic fracturing in increasing oil production.
31. Determine the role and place of hydrochloric acid treatment of bottom-hole zones of wells in the process of intensification of oil production.
32. Determine the role of science in society and its main functions.
33. Find the economic and political functions of the study.
34. Determine the relationship between scientific research and the basic rules of their conduct.
35. Describe the goals and main stages of the study.
36. Select a characteristic of the production problem.
37. Describe the research hypothesis and its classification.
38. Describe the stages and programs of the study.
39. Describe the constituent elements of the task justification.
40. Describe the stages of preparing the justification for the assignment.

## **LEVEL 2 QUESTIONS:**

1. Analyze the factors complicating the development of an offshore field.
2. Justify the well placement system in the offshore field.
3. Justify the choice of the well perforation interval.
4. Describe the classification of technical means for the development of offshore fields.
5. Explain the differences between the economic and environmental indicators of offshore field development.
6. Explain the differences between the localization and disposal of oil waste at sea.
7. Justify the methods of well operation on land and at sea.
8. Describe the process of operating offshore wells with jet pumps.
9. Justify the flyover method of field development.
10. Explain the differences between underwater and surface operations of wellhead equipment.
11. Compare the systems for collecting and preparing well products at sea and on land.
12. Explain the differences between the construction technologies of gravity and core offshore structures.
13. Explain the main aspects when choosing offshore structures.
14. Justify the technology of laying underwater pipelines by dragging.
15. Determine the category of hydraulic structures in the development and operation of offshore fields.
16. Justify the classification of oil production intensification technology.
17. Evaluate the criteria for the use of polymers in oil production processes.
18. Justify the effectiveness of the vibro-acoustic method of influencing the bottomhole zone to increase the productivity of the well.
19. Justify the criteria for selecting wells for hydraulic fracturing.
20. Describe the factors that worsen the filtration properties of the formation around the production and injection wells during their construction and operation.
21. Explain the main factors that affect the fracturing pressure.
22. Compare the use of micellar and polymer solutions to intensify oil production.
23. Explain the mechanism of thermogasochemical effect on CCD.
24. Explain the mechanism of the hydraulic fracturing process.
25. Explain the physical processes in the CCD during the opening, development and operation.
26. Explain the mechanism of formation of salt deposits.
27. Explain the reasons for premature flooding of the reservoirs.
28. Justify the preparation of a calendar schedule.
29. Compare primary and secondary data.
30. Analyze the methods of qualitative research.
31. Compare individual in-depth and expert interviews.
32. Analyze the hall tests: the essence and goals.
33. Justify the observation (registration): the essence and types.
34. Justify quantitative research methods: the essence and objectives.
35. Evaluate the technologies and effects that contribute to the improvement and consolidation of knowledge in the form of a discussion.
36. Compare telephone interviews, written and postal surveys.
37. Critically evaluate the panel survey and its varieties.
38. Justify the expert assessment: the essence and classification.
39. Explain the essence and stages of the market forecast.
40. Evaluate the survey techniques, conversations and interviews and their characteristics.

### **LEVEL 3 QUESTIONS:**

1. Evaluate the role of geological information content of drilling methods.
2. Give a direction when choosing a technology for an offshore field development project.
3. Give a direction when choosing the intervals of perforation of wells.
4. Explain the purpose of drilling wells on offshore platforms.
5. Explain the criteria and possibilities of applicability of directional, multi-barrel and branched wells.
6. Evaluate the role of the introduction of smart wells technology.
7. Prove the effectiveness of the dynamic positioning system.
8. Find a solution for the use of hydraulic piston pumping units in the operation of offshore wells.
9. Give direction when choosing structural materials for offshore structures and equipment.
10. Describe the system of oil collection and treatment in marine conditions.
11. Evaluate the role of the operational and technological capabilities of offshore drilling methods.
12. Give direction when choosing schemes for collecting, preparing and transporting offshore well products.
13. Evaluate the role of the initial parameters of the field development design.
14. Make a forecast for the development of offshore fields in the Kazakh sector.
15. Evaluate the areas of application of acidic effects on PP.
16. Evaluate the types and effectiveness of various acid treatment methods.
17. Evaluate the areas of application of various methods of oil production intensification.
18. Suggest effective methods to combat premature flooding of the field.
19. Suggest effective methods to combat asphaltene-resinous paraffin sediments (ARPS) during well operation.
20. Create and explain the diagram of the horizontal and vertical cracks created during hydraulic fracturing.
21. Suggest effective methods to increase oil recovery in reservoirs with hard-to-recover reserves.
22. Evaluate the effectiveness of the controlled impact on the bottom-hole zones of injection wells.
23. Develop a technological plan for the organization and conduct of hydraulic fracturing.
24. Develop a technological plan for the organization and conduct of hydrochloric acid treatments.
25. Assess the degree of influence of the main factors on the state of the CCD.
26. Evaluate the role of factors that reduce the effectiveness of flooding in the development process.
27. Evaluate the criteria and conditions for the application of thermal effects on the deposit.
28. Evaluate the conditions and possibilities of using forced and barrier flooding.
29. Evaluate the criteria and conditions for the use of chemical methods of exposure to the deposit.
30. Evaluate the sources of market analysis information.
31. Evaluate the procedures for comprehensive market research.
32. Give a direction on which methods of research are being conducted.
33. Prove which parts the main part of the final qualifying work consists of.
34. Find a solution to determine the order of registration of the main part of the work.
35. Evaluate and list the necessary requirements for conclusions and job offers.
36. Evaluate the design of the research report.
37. Find a solution for choosing the structure of the research report.
38. Find a solution for choosing the content of a short written report.
39. Find a solution for choosing the stages of presentation of the research results.
40. Evaluate the methodology and methodology for the preparation and protection of scientific papers.