## NON-PROFIT JOINT-STOCK COMPANY «KARAGANDA TECHNICAL UNIVERSITY NAMED AFTER ABYLKAS SAGINOV»

Academic Council



## THE PROGRAM OF THE ENTRANCE EXAM FOR APPLICANTS TO DOCTORAL STUDIES IN EDUCATIONAL PROGRAM 8D07102 "Transport, transport equipment and technologies"

Department: " Transport equipment and logistics systems " Compiled by: c.t.s, doc. Kabikenov S.Zh. c.t.s, doc. Aubekerova Zh.N. PhD, acting associate professor Kyzylbayeva E.Zh. The program of the entrance examination for the educational program 8D07102 "Transport, transport equipment and technologies" was developed by: c.t.s, doc. Kabikenov S.J.; c.t.s, doc. Aubekerova Zh.N.; PhD, acting associate professor Kyzylbayeva E.Zh.

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Protocol No. 15 of March 28, 2025

Head of the TE and LS Department

Zharkenov N.B.

(signature)

#### Main topics covered in entrance exams

### **1.** Technical operation of transport equipment

1.1. List of topics.

- Organization of maintenance and repairs
- Performance of transport equipment and its provision
- Performance indicators and coefficients
- Diagnostics of technical systems
- Modeling in diagnostics

1.2. Literature

1. Fundamentals of technical operation of transporttechniques / S.Zh. Kabikenov, T.S. Intykov, M.M. Kirievsky, V.V. Shalaev; Karaganda State Technical University. - Karaganda.: Publishing house of KarSTU. 2015.-261 p.

2. Fundamentals of technical operation of transporttechnology / S.Zh. Kabikenov, T.S. Intykov, M.M. Kirievsky, V.V. Shalaev; -Almaty: Evero Publishing House. 2018.-312 p.

3. KuznetsovE.S. Technical operation of cars: Textbook for universities. 4th ed. revised and supplemented / E.S. Kuznetsov, A.P. Boldin, V.M. Vlasov et al. – M: Science. 2001. - 535 p.

4. Optimizationand management during technical operation of vehicles. / Zh.A. Aliyev Zh.A., S.Zh.Kabikenov, M.M. Kirievsky: Textbook: - Karaganda: KarSTU, 2000. - 210 p.

# 2. EvaluationAndforecasting indicatorsreliability of transport equipment

2.1. List of topics.

- Basic concepts, parameters and evaluation methods
- Reliability Prediction: Design, Production, Operation
- Failure models and reliability improvement methods
- Wear processes and types of friction
- Factors Affecting Wear
- Mechanical interaction of working surfaces
- Lubricantsmaterials. Processes and mechanisms of action of lubricants

2.2 Literature:

1. Shishmarev V.Yu. Reliability of technical systems. - M.: Publishing Center "Academy", 2010. - 271 p.

2. Zorin V.A. Fundamentals of performance of technical systems: textbook for students of higher educational institutions. – M.: Publishing center "Academy", 2009.-208 p.

3. Reliability assessment of technical systems: textbook / A.S. Shirshchikov, V.V. Lyandenburgsky, A.M. Belokovylsky. - Penza: PSUAS, 2015. - 240 p.

4. Ludchenko A.A., Ludchenko Ya.A., Primak T.A. Fundamentals of scientific research: Textbook / Ed. A.A. Ludchenko. - 2nd ed., reprinted - K.: Ovo "Knowledge", KOO, 2001. - 113 p.

5. Belyaev N.I., Zaitsev A.N. Tribology: friction, wear and lubrication. — St. Petersburg: Lan, 2015. — 376 p.

6. Klyuev M.S. Automobile operating materials. - M.: Transport, 2001. - 286 p.

#### 3. Organization of scientific research

3.1. List of topics.

- Fundamentals of scientific knowledge
- Research methods
- Analysis and modeling
- Planning and conducting an experiment
- Presentation of results, graphical and mathematical analysis
- 3.2. Literature:
- 1. Fundamentals of Scientific Research: Textbook / V. M. Kozhukhar. M.: Publishing and Trading Corporation "Dashkov and Co.", 2010. 216 p.
- 2. Fundamentals of Scientific Research: Textbook / A.S. Kadyrov. Karaganda: Sanat Polygraphy, 2020. 147 p.
- 3. Fundamentals of scientific research:textbook / F.V. Grechnikov, V.R. Kargin. Samara: Publ.in SSAU, 2015. 111 p.

# List of topicsessay on educational program 8D07102- ''Transport, transport equipment and technologies''

No.	Essay Topics (Russian language))
1	Promisingtypes of transport
2	Intelligent vehicles
3	Alternative fuels for transport
4	Problemsincreasing the capacity of transport infrastructure
5	Prospectsdevelopment of special transport
6	Transitionto the principle of public transport dominance
7	Decreaseroad traffic accidentsstviy
8	Promisingdevelopment of transport tires
9	New energy sourcesfor transport
10	Unmanned transport