

# Independent work topics

## Self-study topics

1. The principle of operation of injection engines
2. Tractor engine crankshaft and gas distribution mechanisms.
3. Crankshaft and gas distribution mechanisms of V-shaped engines of tractor engines.
4. Engine lubrication system
5. Engine cooling system
6. Drainage-compensating device in the cooling system. "Dry" crankcase lubrication system.
7. Diesel fuel supply system
8. Carburetor engine power system
9. Gas engine power system
10. Electrical equipment of tractors and cars. Starting and ignition systems for tractor engines
11. Battery charging and storage methods. Maintenance-free batteries.
12. Contactless transistor ignition systems. Shooting with magneto and magneto
13. Indicator circuit of two-stroke engines
14. Features of the operating cycle of engines with air pressure
15. Comparison of process performance in different engines
16. Ways to Improve Engine Life Cycle Performance
17. Methods for the formation of compounds in diesel engines and the construction of the corresponding T-diagrams
18. Mixtures in carburetor engines and clusters in carburetor systems
19. Forces and moments acting on the crank mechanism.
20. Engine balancing
21. Collecting information on environmental regulations for combustible gases
22. The influence of the external environment on the operation of engines
23. Calculation and balance of engine heat
24. Engine characteristics
25. New engine types
26. Preparation of control work on the design of engines Preparation of control work
27. About calculating engine heat
28. Read information on the topics of laboratory and practical exercises and prepare a report
29. Hydraulic tractors and cars.
30. The principle of operation of a hydrodynamic transmission. Hydraulic transmission diagrams.
31. Axial piston pumps with variable pressure and capacity. Design, characteristics, advantages and disadvantages.
32. Application of hydraulic couplings and torque converters
33. Advantages and disadvantages of the hydraulic clutch design, operating principle. Torque converter device.
34. Application of rubber chains on chain tractors.
35. Comparison of frame, semi-frame and frameless walking parts of tractors and cars
36. Suspensions, their types, shock absorbers, springs, springs.
37. Mounting angles of guide wheels (deflection, tapering). Tire wear monitoring
38. Various types of vehicles, tractor tires, their application (simple, narrow, wide, special).
39. Suspended mechanisms - two- and three-point connection, the advantages and disadvantages of their design
40. Control of planetary and frictional rotation mechanisms (mechanical and hydraulic boosters, servomechanisms).
41. Tactical and technical characteristics of tractors and cars (technical, economic, general, general, fuel

- efficiency, maneuverability, productivity, durability).
42. Physical and mechanical properties of the soil - volumetric compaction, shear resistance, pressure of wheeled and tracked tractors on the soil and the influence of ul on traction dynamics.
  43. Build a theoretical description of gravity.
  44. Theoretical calculation of traction of motor tractors of constant power. Compare this to a description of a simple tractor engine.
  45. Tractor driving with a sledgehammer. Engine load, speed, number of gears, fuel consumption, driving dynamics.
  46. Car power balance. Engine power, distribution, uneven and even movements. Variable indicators. Power balance graph.
  47. Fuel economy of the tractor and factors affecting it. Modes of operation: technical condition of the engine, aggregation, movement, soil and road conditions, qualifications, speed, carrying capacity.
  48. Kinematics of turning of wheeled tractors and cars. Types of turns, directional stability, torsion, torsion radii, speed and torsion, centrifugal forces.
  49. Vibration of tractors and cars. Labor productivity, fuel consumption, occupational diseases are ways to reduce it. Working conditions.
  50. Preparation of control works on the construction of tractors and cars
  51. Draw road signs
  52. Bed and vertical lines and requirements for their application
  53. Driver actions when driving in difficult conditions
  54. Documents that the driver must have with him while driving a vehicle
  55. Review the requirements for overtaking, stopping, and stopping vehicles.
  56. Obligations of pedestrians and passengers
  57. Road traffic accidents and their analysis
  58. Pedestrian crossings and stops of vehicles of the indicated direction
  59. Car rental
  60. Drawing up the technical characteristics of this vehicle
  61. Brakes and indicators used in vehicles
  62. Forces and moments acting on this vehicle
  63. The names of the leading companies and manufacturers of the global automotive industry
  64. Warning and warning signs, tasks for their implementation in practice
  65. Conditions prohibiting the use of the vehicle.
  66. Railroad crossings, steep slopes and highways on motorways
  67. The theory of vehicle motion, acting forces. The center of gravity is its location. Drive. Acceleration concept. Vehicle stability, handling
  68. Drive. Acceleration concept. Vehicle stability, handling
  69. Vision and its role. Information gathering, evaluation, decision making and execution, visual acuity in normal and low light
  70. Road traffic accidents and their causes. Ensuring traffic safety when driving in various conditions.
  71. First aid for road accident victimsIncrease in cross-country ability of tractors and cars. Constructive, pressure, agro-ecological, permeability
  72. Tire selection to improve traction.