

**Exam questions to
Transport Vehicles and Handling Machinery (Erasmus - KKS/ZDMT)**

- 1 Write the main advantages and main disadvantages of a water transport
- 2 Explain the difference between ships and structures on waterways
- 3 What is the purpose of navigational structures?
What sorts of navig. structures do you know?
- 4 What is the purpose of regulatory structures?
Write examples of navigatory structures.
- 5 Explain what water bridges are.
- 6 Explain the purpose of the basic navigation.
What is declination and deviation?
- 7 What is an advantage and disadvantage of the basic navigation by GPS?
- 8 Explain the difference between ships and floating machines.
- 9 Explain the difference between displacement vessels and planing vessels.
- 10 Explain the difference between displacement vessels and hovercrafts.
- 11 Lateral stability of a ship: Draw a sketch and highlight the significant points and dimensions.
Explain these points and dimensions.
- 12 Lateral stability of a ship: Draw a sketch, write the size of stabilizing moment M .
- 13 Lateral stability of a ship: Draw a sketch, write the formula of Atwood's formula for the metacentric radius
- 14 Lateral stability of a ship: the higher the metacentric height " k " is, the more or the less stable the ship is?
- 15 Ship movement: The main criterion for speed limit between displacement running and planing is a) length or b) width or c) weight of a ship?
- 16 Cars: Explain a) Gross weight b) Gross axle weight c) Technically permissible maximum laden mass d) Mass of the vehicle in running order
- 17 Cars: Explain "Active safety" and give the examples
- 18 Cars: Explain "Passive safety" and give the examples
- 19 Cars: Explain "Connected vehicles"
- 20 Cars: Write the five main forces of drive resistance and formulas for their calculation
- 21 Cars: Sketch a diagram of the dependence of the driving force [N] on the speed [m/s] and mark in it the individual resistance forces
- 22 Cars: Sketch a diagram of the dependence of the driving power [kW] on the speed [m/s] and mark in it the individual resistance powers
- 23 Cars: draw a diagram of the dependence of the adhesion coefficient " μ " on the slip size " σ " and mark the adhesion limits " μ_v " and " μ_{σ} "
- 24 Cars: draw the ideal characteristics of a drive motor $F_{tractForce} = f(\text{speed } v)$ and $P_{drivingPower} = f(\text{speed } v)$
- 25 Cars: draw the real characteristic of a combust. engine $M=f(\text{revs } n)$, $P=f(\text{revs } n)$
- 26 Cars: draw the diagram of the ideal and real drive force F_K and drive power P_K as a function of speed (revs n)
- 27 Cars: draw the diagram of the changing of torque characteristics of an engine with a four speed transmission at output from transmission
- 28 Cars: What kinds of braking system have cars and what is their function?
- 29 Cars: What main parts is braking unit composed of?
- 30 Cars: How the braking units are classified in terms of the energy source used?
- 31 Cars: Write (and accompany it with a sketch) which parts the braking distance consists of

- 32 Write the difference between dependent and independent traction of railway vehicles
- 33 Sketch the basic traction characteristic of a locomotive
- 34 Curtius-Kniffer and Cother formulas express dependence $Y=f(X)$.
What variables X, Y are in fact?