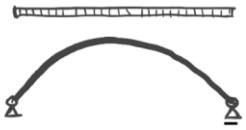
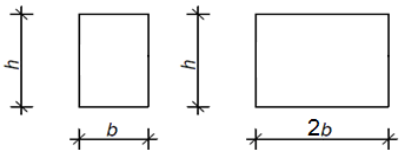
Instructions for completing the test:

- On each page, fill in your application code in the header
- There are always four answers to each question, one of which is correct
  - There are 4 points for the correct answer
  - One point is deducted for an incorrect answer
  - An incomplete answer does not count
- Mark the correct answer with a cross (i.e. cross out the letter of the correct answer)
- If you want to cancel the mark, put a circle around the crossed-out letter
- Any other way of marking the answer is considered an error
- The length of the exam is 90 minutes

1)	Properties of wood-based constructions are: [A] **high sensitivity to moisture volume changes** [B] ceiling structures made of wood-based elements are suitable for extreme loads [C] wood is a combustible material, therefore constructions based on it have very low fire resistance [D] high stiffness and low deformability of wood-based constructions.
2)	The construction (load-bearing) systems of multi-storey buildings are classified according to: [A] the predominant material of the supporting structure [B] method of foundation [C] **dominant positions of the stiffening element** [D] according to the amount of stiffening elements
3)	Curved structure transmits the effect of the vertical load (self-weight construction, snow load) mainly by: [A] bending moments acting in the cross section of the arc [B] decomposition of load into normal arc forces [C] bending moment of a pair of vertical reactions [D] shear forces in the cross section 
4)	The driving force of water vapour diffusion across a building component separating two different environments is: [A] the air pressure difference across the building component [B] the air relative humidity difference across the building component [C] **difference of the water vapour content in the air (humidity by volume) across the building component** [D] the partial water vapour pressure at saturation across the building component
5)	The health hazard of asbestos is caused by: [A] the chemical composition of the fibres [B] the bacteria living on asbestos fibres [C] **size and geometric shape of fibres** [D] the mineralogical origin of the fibres

6)	A building component has thermal transmittance U = 0,5 W/(m^2·K). The area of the building component is A = 10 m^2 and the temperature difference across the building component is 20 °C. The heat loss through this building component is: [A] 200 W [B] **100 W** [C] 100 W/K [D] 200 W/s
7)	The reverberation time is one of the parameters of room acoustics. What parameter is not necessary to know for its determination? [A] the room volume. [B] **the sound pressure level of a sound source.** [C] the middle sound absorption coefficient of the room. [D] the sound absorption coefficient of sub-surfaces depending on frequency.
8)	Choose the value of the light transmission factor through 2 identical glass panes, if the manufacturer states that one such pane transmits 70% of the light. Consider only the normal conditions (perpendicular to the plane of the glass pane). [A] 0,27 [B] **0,49** [C] 0,72 [D] 1,40
9)	Typical span for reinforced concrete slabs in residential and office buildings is: [A] 2,5 – 3,5 m [B] 4,2 – 6,0 m [C] **6,0 – 9,0 m** [D] 12,0 – 15,0 m
10)	Which one of the following materials has the lowest water vapour resistance factor μ [-]?: [A] expanded polystyrene (EPS) [B] steel [C] concrete [D] mineral fibre boards
11)	Steel piping has the following advantages compared to plastic piping: [A] greater wall thickness as protection against corrosion [B] less strength in the joints because bolted joints are used [C] lower frictional pressure losses [D] less length expansion
12)	For the dimensioning of the internal water supply piping, the following is used [A] the maximum hourly water demand calculated on the basis of the number of persons [B] the number of sanitary appliances in the building [C] the number of persons having a defined water consumption per day [D] the nominal outflow of water from the sanitary appliances

13)	The human heat balance equation is used to express: [A] the health status of the user. [B] the thermal state of the user. [C] the heat output of the heating element. [D] the requirements of the heating system control.
14)	How do we describe humidification by spraying water into the air? [A] Isothermal and isoentropic process. [B] Adiabatic and isobaric process. [C] The isochoric process. [D] Water vapor condensation process.
15)	Condensing boiler [A] is the condensate drainage vessel in a steam heating system. [B] is usually connected to the sewage system. [C] achieves efficiencies of up to 118 % in relation to the higher heating value. [D] must be located at the lowest point of the heating system.
16)	Hot water circulation piping: [A] provides a constant supply of hot water to the heating elements [B] provides the supply of hot water to sanitary appliances. [C] is a necessary condition for local and central hot water production [D] ensures the circulation of heating water due to heat losses in the pipes
17)	The geometry of the internal wastewater pipes must be designed to connect the wastewater and rainwater drainage [A] within the building at the horizontal pipe so that there is only one building drain connection [B] outside the building [C] within the building on the wastewater pipe [D] where the layout of the building allows and where is the access for the maintenance
18)	The terminal units in combined air-water air-conditioning systems have the function to: [A] mix indoor and fresh air before supplying to the ventilated room. [B] provide temperature control of the fresh and circulating air mixture. [C] reduce the effect of aerodynamic noise from the central air handling unit fan. [D] increase the efficiency of the fresh air temperature control
19)	The second law of thermodynamics expresses: [A] direction of thermal energy transfer [B] heat sharing between body and liquid [C] relation for thermodynamic equilibrium [D] the principle where heat spreads depending on the density of the medium

20)	To design the pipe dimensions of the heating system we need in particular [A] pressure loss of fittings and equipment [B] heating water temperature [C] mass flow rate [D] temperature drop on the heating element
21)	For which type of wood structure do we need to check tension perpendicular to the grain? [A] The lower chord of a lattice truss of solid timber [B] Saddle girder in a duopitch roof made of glued laminated timber [C] Tapered in girder in single pitch roof made of glued laminated timber [D] Centrically compressed column of solid timber
22)	Compressive strength of normal masonry units is in the range: [A] 5 - 30 MPa [B] 100 - 300 kPa [C] 1 - 5 GPa [D] None of the above answers is correct.
23)	Which of the following statements is correct: [A] Young's modulus of normal concrete and reinforcement steel is almost identical. [B] The compressive strength of normal concrete and the tensile strength of reinforcement steel is almost identical. [C] The coefficient of thermal expansion of normal concrete and reinforcement steel is almost identical. [D] The tensile strength of normal concrete and reinforcement steel is almost identical.
24)	Considering the same strength class of concrete, the flexural capacity of the non-reinforced concrete cross-section of the width 2b is in comparison with the cross-section of width b (see the picture below): [A] 2 x higher [B] 4 x higher [C] 8 x higher [D] 16 x highervodozna 
25)	Which of the following actions does not belong to accidental actions: [A] Impact from forklift trucks [B] Internal gas explosions [C] Hard landing of helicopters on roofs [D] Snow overhanging the edge of a roof