

# EXERCISES

## Bearing clearance, operating clearance and preload

- 1. What is the difference between bearing clearance and operating clearance?**
  - a) Bearing clearance refers to installed bearings, operating clearance to dismantled bearings
  - b) Internal clearance refers only to the mobility of the rings in axial direction
  - c) Bearing clearance refers to dismantled rolling bearings, operating clearance to mounted bearings
  - d) Operating clearance only refers to the mobility of the rolling elements in radial direction
- 2. Which type of displacement of the inner ring, while the outer ring is rigid, can be called bearing clearance?**
  - a) Only the displacement in axial direction
  - b) Only the displacement in radial direction
  - c) Displacement in axial and radial direction
  - d) In neither direction
- 3. In which unit is bearing clearance usually measured?**
  - a) Millimetre
  - b) Nanometre
  - c) Micrometre
  - d) Centimetre
- 4. Which part of the designation of a rolling bearing usually shows the respective bearing clearance?**
  - a) The first two characters
  - b) The two middle characters
  - c) The last two characters
  - d) The first four characters
- 5. What happens to the bearing clearance when the temperature in the bearing increases evenly?**
  - a) The outer ring expands more than the inner ring -> bearing clearance decreases
  - b) The inner ring expands more than the outer ring -> bearing clearance decreases
  - c) The inner ring expands more than the outer ring -> bearing clearance increases
  - d) Both rings expand equally -> bearing clearance remains constant
- 6. Bearing clearance during operation is operating clearance.**
  - a) Correct
  - b) Incorrect
- 7. For which applications are rolling bearings with below-average internal clearance intended?**
  - a) Paper machines
  - b) Small engines
  - c) Semi-floating wheel bearings
  - d) Shaft journals of compressors
- 8. Why do you usually aim for an operating clearance of just above zero?**
  - a) This is the operating clearance that maximises the service life
  - b) The optimum operating clearance of just below zero cannot be measured very accurately
  - c) The positive operating margin could increase
  - d) The preload could increase when a rolling bearing is exposed to changing operating conditions

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- 9. The smaller the interference, the less the bearing clearance is reduced.**
- a) Correct
  - b) Incorrect
- 10. By how many °C is the outer ring cooler than the inner ring?**
- a) 5 to 10 °C
  - b) 10 to 15 °C
  - c) 5 to 15 °C
  - d) The temperature difference between the inner and outer ring depends on certain conditions
- 11. What is the effect of preload in a rolling bearing?**
- a) Less heat development
  - b) Less noise
  - c) Easier assembly
  - d) Better vibration resistance
- 12. Which bearings are most likely to be preloaded?**
- a) Deep groove ball bearing
  - b) Needle bearing
  - c) Angular contact ball bearing
  - d) Cylindrical roller bearing