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Q634 - General Subjects

1. Which of the listed numeric values represents the smallest size drill?

- None
- 1
- 60
- **80**

Note:

Drill sizes decrease as the number increases; therefore, #80 represents the smallest drill size among the options.

2. Which of the drill sets listed would commonly be referred to as a “Jobbers Set”?

- A set of numbered size drills from 1 to 60.
- **A set of fractional size drills from 1/16" to 1/2".**
- A set of fractional size drills from 1/2" to 2".
- A set of lettered size drills from A to Z.

Note:

A Jobbers Set is a standard set of fractional-size drill bits, typically ranging from 1/16" to 1/2". This designation refers to the common size range for jobber-length twist drill bits used in general-purpose drilling.

3. No two drills from differing drill sets are of the exact same size, with the exception of the drills measured as 0.25 inch. These two drills are the 1/4 inch and the _____.

- "A" drill
- **"E" drill**
- No.1 drill
- No.80 drill

Note:

The 1/4 inch and "E" drill are the only drills from different sets with the same size of 0.25 inch.

4. When using a micrometer to measure a drill for size, you should measure across the drill _____.

- shank
- **margins**
- web
- flutes

Note:

Drill size is determined by measuring the outside cutting diameter, which is located at the margins. The shank, web, and flutes are not used for this measurement as they do not accurately represent the drill's cutting size.

5. Which of the following statements is true regarding mechanical seals?

- They may be used in lieu of conventional packing glands for any service other than salt water.
- They are not suitable for use on fuel oil transfer pumps.
- **They are normally lubricated and cooled by the fluid being pumped.**
- Once placed into service, leakage between the dynamic seal surfaces may be reduced by monthly adjustment of the spring compression.

Note:

Mechanical seals rely on the pumped fluid for lubrication and cooling of the seal faces, a design feature that distinguishes them from other sealing methods.

6. Air leakage between the shaft and stuffing box packing in a centrifugal pump is prevented by _____.

- lantern rings between the packing rings
- the stuffing box gland
- a compressed packing gland
- **a liquid seal**

Note:

Air leakage is prevented by a liquid seal, which creates a hydraulic barrier around the shaft and packing, blocking air entry.

7. Mechanical shaft seals used on water service pumps require lubrication of the seal faces to minimize deposits of foreign matter on those surfaces. Which of the following pressures and lubricants are required?

- Water under negative pressure.
- Oil under positive pressure.
- Oil under negative pressure.
- **Water under positive pressure.**

Note:

Mechanical shaft seals on water service pumps require a clean water film under positive pressure to lubricate the seal faces and prevent foreign matter deposits. Using oil risks contamination and negative pressure would draw in contaminants.

8. Permanent centrifugal pump shaft damage due to erosion, corrosion, and wear at the stuffing box is usually prevented by _____.

- internally flooded lantern rings
- **renewable sleeves**
- a hardened sprayed metal coating
- wearing rings

Note:

Renewable sleeves are replaceable components fitted around the pump shaft within the stuffing box, protecting the shaft from erosion, corrosion, and wear by bearing the damage themselves. This prevents permanent shaft damage and simplifies maintenance compared to other methods like coatings or relying on lantern rings or wearing rings, which address different aspects of pump operation.

9. One disadvantage of using a mechanical shaft seal instead of mechanical packing is that _____.

- it requires periodic disassembly and adjustment
- it is unsuitable for high temperature applications
- it is unsuitable for high-pressure applications
- **seal failure usually requires the immediate removal of the pump from service**

Note:

A mechanical shaft seal failure typically necessitates immediate pump removal for repair, unlike packing which allows for adjustments to mitigate leakage.

10. Which of the following bilge pumping applications would most likely use a non-automated centrifugal pump under manual supervision?

- Engine room bilges
- **Dry cargo-hold bilges**
- Shaft alley bilges
- Machinery space bilges

Note:

Dry cargo-hold bilges require intermittent, supervised pumping to avoid cargo damage or masking leaks, making them the most likely application for a non-automated centrifugal pump under manual supervision.
