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SPRING MATERIALS

2 MARKS

Q.1.Give example of spring materials?

Ans:-Steel piano wire, Phosphor, Bronze, Nickels Silver, Montel, Inconel.

Q.2.List the types of spring material?

Ans;

- 1.Iron-based
- 2.Coper-based
- 3.Nickel-based
- 4.Special spring

Q.3.Write any two copper based spring materials with their composition?

Ans. Two copper based spring material are

- Phosphor bronze; Cu=92%,
  Sn=8%
- Brass: Cu=67%
  ,Zn=33%

5 MARKS

Q.1. Name different types of iron based spring material and write their composition?

Ans: Different types of iron based spring materials are

Steel piano wire:

C=0.7 to 1.0%,

Mn=0.3 to 0.6% , Fe=remainder

Hard-drawn spring wire:

C=0.5 to 0.75%

Mn=0.6 to 1.2% Fe=remainder

Oil hardened spring steel:

C=0.55 to 0.75%

Mn=0.3 to0.9%

Fe=remainder

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Cr-v spring steels:

C=0.5%

Mn=0.8 to1.2%

Cr=0.2 to0.9%

v=0.07 to 0.12%

Fe=remainder

Stainless steel:

Cr=18%

Ni=8%

C=0.1 to0.2%

Fe=remainder

Q.2.state the properties of cadmium based bearing material?

Ans: Properties: cadmium based bearing material possess

- Low co-efficient of friction
- High fatigue strength
- High load carrying capacity
- Low wear
- Good seizure resistance
- Fair ability to embed dirt
- Poor corrosion resistance (using ordinary lubricant).

7 MARKS

Q.1.List properties of copper base spring material?

Ans: Copper based spring material:

- They possess high electrical conductivity.
- Good resistance to corrosion and lack of magnetic properties.
- Such material can be classed as
  - One which can be hardened only by cold deformation and
  - Other which can be hardened also by heat treatment materials coming in the second group can be formed in to spring while the material in the soft or half

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hard condition and then required spring properties can be developed by heat treatment.

- Various copper based spring material are:

Phosphor bronze

- Chemical composition

Cu 92%

Sn 8%

Uses:

High quality spring for switches, relays, contacts etc.

Brass

- Chemical composition

Cu 67%

Zn 33%

Uses:

Switches and contact (spring)

Nickel silver

- Chemical composition

Cu 56%

Ni 18%

Zn 25%

Uses:

Same as brass, but for better quality spring.

Beryllium copper

Chemical composition

Cu 98%

Be 2%

Uses:

Brushes, relays, switches, etc. with relatively good resistance to wear, good conductivity and good resistance to corrosion.