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FERROUS MATERIALS AND ALLOYS

(2 MARKS)

Q.1.What are the characteristics of ferrous material?

Ans:-.

- Ease of fabrication process.
- Resistance to corrosion.
- Magnetic properties.
- weight.

Q.2.Classification of low carbon steel?

Ans:-3Types

- Low carbon steel
- Medium carbon steel,
- High carbon steel.

Q.3.What is steel?

Ans:-Steel is an alloy of Iron and Carbon.

Q.4.What is an alloy steel?

Ans:A steel in which elements other than carbon are added in sufficient quantity in order to obtain special properties is known as alloy steel.

Q.5.What is the use of vanadium steel?

Ans:-Widely used for making steels,it may be used for shafts,spring gears,& drop forged paints.

5 MARKS

Q.1.What are the purposes of alloying?

Ans:-

- To improve elasticity.
- To improve corrosion and fatigue resistance.
- To improve hardness, toughness &tensile strength.

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- To improve machinability.
- To improve high/low temp. stability.
- To improve cutting ability.
- To improve wear resistance.
- To improve ductility.
- To strengthen the ferrite.

Q.2.What is high speed tool steel?

Ans:-They are widely used for cutting of materials where hardness must be retained at elevated temperature.

A common analysis

- Tungsten(w)-18%,
- Chromium -04%,
- Vanadium-01%,
- Carbon-0.6-0.7%,
- termed as 18:04:01
- Steel as its improves hardness and cutting ability from 05 to 10% used.

Q.3.Write short note on Manganese steel.

Ans:-

Manganese steel:-

- More manganese reduces strength manganese steels show high percentage of elongation.
- Heat treated cast manganese steel in bar from is so ductile that it can be bent double when cold without fracture.

  Sp.gr=7.9 Melting point=1343 degree Celsius
- Manganese steel is weldable

USE:-

- Jaws of stone & ore crushers, tramway& railway point crossing etc.
- Others applications include agricultural implements such as shovel.

7 MARKS

Q.1.What are the various tool effect of alloying element?

Ans:-1.Chromium:

- ❖ Provides stainless property in steel.
- ❖ Used widely in stainless steel.
- ❖ Used in electric plates.

2.Manganese:

- Counteracts brittleness from Sulphur to improve
- Improve response to heat treatment.
- Lower both ductility and malleability of it.it is present in high percentage with high carbon content in steel.

3.Nickel:-

- ❖ Increase toughness.
- ❖ Improve response to heat treatment specially large sections.
- ❖ In large amount provides special electrical and magnetic properties.
- ❖ Improve forming properties of stainless steel.

4.Vanadium:-

- Improve response to heat treatment.
- Provides control of structure.
- Used in high speed tool steels.

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5.Molybdenum:-

- Enhances corrosion resistance.
- Makes steel usually tough at various hardness levels.
- Promotes hardenability of steel.
- Forms abrasion resisting particle.
- Raise tensile and creep strength at high temperature.
- Makes steel fine grained.

6.Tungsten:-

- Retention of hardness and toughness at high temperature.
- Used in tool dies ,valves,magnets etc.