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Degree / Branch: BE / Mechanical Engineering **Semester /Year: VII / IV**

Sub Code / Name: OA1553 / PRODUCTION TECHNOLOGY OF AGRICULTURAL MACHINERY

Question Bank (2Mark & 16 Mark)

UNIT I - ENGINEERING MATERIALS

PART A – 2 MARKS

1. What are three primary groups of plain carbon steels?

Low, Medium, high carbon steel

2. How do you classify Cast irons? (Nov/Dec-2019)

Grey CI, White CI, Malleable CI, Nodular CI, Chilled CI

3. Differentiate wrought iron and cast iron?

Cast iron is iron that has been melted, poured into a mold, and allowed to cool.

Wrought iron is iron that has been heated and then worked with tools. In fact, the term “wrought” derived from the past participle of the word “worked.”

4. What is tool steel ?

Tool carbon steels (C>0.8%) – subgroup of high carbon steels

Tool steel contains various amounts of tungsten, molybdenum, cobalt and vanadium to increase the heat resistance and durability of the metal. This makes them ideal when used for cutting and drilling. Tool steels and die steels are types of high-carbon steels, which contain additional alloying elements including chromium, vanadium, molybdenum and tungsten. The addition of these elements results in the very hard wear-resistant steel, which is a result of the formation of carbide compounds such as tungsten carbide (WC).

5. Define weldability ?

The weldability, also known as joinability, of a material refers to its ability to be welded. Many metals and thermoplastics can be welded, but some are easier to weld than others.

6. What do you mean by formability ?

It is the ability of a given metal workpiece to undergo plastic deformation without being damaged.

7. Define Machinability ?

The term machinability refers to the ease with which a metal can be machined permitting the removal of the material with a satisfactory finish at low cost.

8. what do you mean by Ductility ?

Ductility is a property of a solid material which indicates that how easily a material gets deformed under tensile stress.

9. Define Malleability?

Malleability is a property of solid materials which indicates that how easily a material gets deformed under compressive stress. Malleability is often categorized by the ability of material to be formed in the form of a thin sheet by hammering or rolling.

10. Define Strength ?

It is the capacity of the material to withstand the breaking, bowing, or deforming under the action of mechanical loads on it.

11. What do you mean by Toughness ?

It is the ability of a material to absorb the energy and gets plastically deformed without fracturing.

12. Define Alloysteel ?

Alloy steels are iron-carbon alloys, to which alloying elements are added with a purpose to improve the steels properties as compared to the Carbon steels.

PART B

1. Describe the properties and typical applications of Low, Medium and high carbon steels?

2. Summaries the effect of the following elements as alloying additions to steels: Mn, Si, Cr, Mo, V, Ti, Al, Si, Cu, W?

3. Describe the different types of stainless steels, making reference to approximate compositions, structures, heat treatments and applications ?

4.Write an engineering brief about (a) Tool steels (b) HSLA steels (c)Maraging steels (d)High speed steels?

5. Describe the structures of main types of Cast iron and explain the factors which affect the structure of Cast iron?

6. Discuss the composition, properties and typical applications of Copper alloys?

7. Explain the mechanical properties of materials?