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Reg. No. : | | | | | | | | | | |

Question Paper Code: 93906

B.E./B.Tech. DEGREE EXAMINATION, DEC 2021

Third Semester

Chemical Engineering

19UCH306- Engineering Materials for Process Industries

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The ability of a material to resist plastic deformation known as _____ CO1- U

   (a) Tensile strength (b) Yield strength (c) Modulus of elasticity (d) Impact strength

2. For steel, which one of the following properties can be enhanced upon annealing? CO1- U

   (a) Hardness (b) Toughness (c) Ductility (d) Resilience

3. Which of the following cannot be used as an alloying element in steel? CO2- U

   (a) Lead (b) Chromium (c) Nickel (d) Tungsten

4. Addition of _____ gives stainless steels an austenitic structure. CO2- U

   (a) Molybdenum (b) Carbon (c) Nickel (d) Vanadium

5. Aluminium is commercially produced usually from _____ CO3- R

   (a) Hematite (b) Pyrite (c) Malachite (d) Bauxite

6. Which of the following is not an ore of Magnesium? CO3- R

   (a) Cassiterite (b) Dolomite (c) Kieserite (d) Carnallite

7. What is 96% silica glass used for? CO4- R

   (a) Heat shield (b) Combustion tubes

   (c) Electronic tubes (d) Temperature thermometers

8. How is the corrosion resistance of high alumina when compared against fireclay? CO3- Ana

(a) Higher (b) Equal (c) Lower (d) No resistance

9. Which of the following is a correct refractory type of quartz? CO1- U

(a) Acidic (b) Basic (c) Neutral (d) Amphoteric

10. Which of the following cannot be used as bio-materials? CO1- R

(a) Metals (b) Ceramics (c) Polymers (d) None of the mentioned

PART – B (5 x 2= 10 Marks)

11. Define ductility. CO1- U

12. What are the types of carbon steels available and write its composition. CO2- R

13. What are the ores of Titanium? CO3- R

14. What are the types of glasses available for construction of materials CO4- R

15. What is the attachment mechanisms of bio ceramics. CO5- U

PART – C (5 x 16= 80 Marks)

16. (a) Explain in detail about the physical and chemical properties of the materials CO1- U (16)

Or

(b) What are different types of Non ferrous metals are there? Explain briefly CO1- U (16)

17. (a) Explain in detail about the factors affecting the selection of materials for engineering processes. CO2- U (16)

Or

(b) Describe in detail about Teflon and polystyrene. CO2- U (16)

18. (a) Briefly explain the Bayer process of aluminum manufacturing method with a suitable diagram. CO3- U (16)

Or

(b) Discuss briefly about the alloys of with its applications CO3- U (16)

19. (a) Write a brief notes on unsaturated polyester resins and its applications CO4- U (16)

Or

(b) Write a brief notes on wood and its applications CO4- U (16)

20. (a) Discuss briefly about bio ceramics, characteristics and its applications. CO5- U (16)

Or

(b) Briefly explain about application of biomedical polymers. CO5- U (16)