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Question Paper Code: U1Y06

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

First Semester

Civil Engineering

21UCY106 - CHEMISTRY FOR CIVIL ENGINEERS

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

1. Bicarbonates of Ca and Mg causes CO1- U
(a) Softness (b) permanent hardness
(c) temporary hardness (d) none of the above
2. Distilled water can be obtained by CO1 -U
(a) boiling (b) Zeolite process (c) Lime-soda process (d) Ion-exchange process
3. The non-volatile portion of medium in paint is CO1- U
(a) Pigment (b) Vehicle (c) Thinner (d) Extender
4. Importance(s) of electroplating are CO1- U
(a) Resistance of Corrosion (b) Improving hardness
(c) Increasing commercial value (d) All the above
5. The Mass spectrometer separate ions on the basis of which of the following? CO1 -U
(a) Mass (b) Molecular weight (c) Charge (d) Mass to charge ratio
6. In AAS, which of the following is the generally used radiation source? CO1- U
(a) Tungsten lamp (b) Xenon mercury arc lamp
(c) Hydrogen lamp (d) Hollow cathode lamp
7. The example of super heat duty refractories ----- bricks CO1- U
(a) Fire clay (b) Chromite (c) Magnesite (d) All the above

8. PCE number mention for the----- CO1- U
 (a) Thermal spalling (b) Porosity (c) Refractoriness (d) RUL
9. Green cement is _____ CO1- U
 (a) Green colored cement (b) Cement mixed with plant products
 (c) Cement mixed with recycled materials (d) Cement mixed with green algae
10. The compound used for the manufacturing of Portland cement is _____ CO1- U
 (a) Coke (b) Gypsum (c) Coal (d) Back fill

PART – B (5 x 2= 10 Marks)

11. A water sample contains 204 mg of CaSO_4 per litre .Calculate the hardness CO1- U
 in terms of CaCO_3 .
12. What is corrosion and write its types? CO5- Ana
13. Difference between chromophore and auxochrome. CO2-U
14. Give reason why quartz heating the higher temperature to change the structure CO3-App
15. What is the function of gypsum CO3-App

PART – C (5 x 16= 80 Marks)

16. (a) Explain ion-exchange process of water softening. CO1- U (16)
 Or
 (b) Explain carbonate, phosphate, calgon and colloidal conditioning. CO1- U (16)
17. (a) What are paints? Explain the constituents and function of it CO5- Ana (16)
 Or
 (b) Explain the different types of corrosion CO5- Ana (16)
18. (a) Selva prepare sugar solution on various concentration A To E but CO5- Ana (16)
 Deva's don't know this solution concentration. Then how to Deva
 analyze the sugar solution from beer lamberts law
 Or
 (b) Vijay has a material in the form of sodium chloride crystal. He CO5- Ana (16)
 has little confusion whether this material is single crystal or poly
 crystalline material. So, how to verify the spectroscopic
 techniques and explain with diagram?

19. (a) Sankar has strong acidic and strong basic materials for preparation of crucible. So, what kind of refractories he needs to manufacture. CO4-App (16)

Or

(b) Raju has Aluminiumoxide , Magnesium oxide and Zirconium oxide then how to the classify the above material for refractories and explain in detail. CO4-App (16)

20. (a) Apply the knowledge to prepare the fire clay flower vases using following steps (i) Grinding and Screening ii) Tempering iii)Moulding iv) Drying v) Firing CO5-App (16)

Or

(b) Apply your knowledge to setting and hardening of cement from flash set to crystalline set by using dicalcium silicate, Tricalcium silicate, Tricalcium aluminate, Tetracalciumalumino ferrite CO5-App (16)

