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**Reg. No. :**

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**Question Paper Code: U1Y06**

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

First Semester

Civil Engineering

21UCY106 - CHEMISTRY FOR CIVIL ENGINEERS

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (10 x 1 = 10 Marks)

1. The color of EBT indicator is \_\_\_\_\_ CO1- U  
(a) Steel blue      (b) Steel green      (c) Wine red      (d) Violet
2. Distilled water can be obtained by CO1- U  
(a) boiling      (b) Zeolite process      (c) Lime-soda process      (d) Ion-exchange process
3. During the galvanic corrosion the noble metal act as CO1- U  
(a) Anode      (b) Cathode      (c) Catalyst      (d) Corroding metal
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. Wet cement can cause severe skin \_\_\_\_\_ if not washed off with water CO1 -U  
 immediately  
 (a) Burns (b) Chill (c) Head ache (d) All the above

PART – B (5 x 2= 10 Marks)

11. A water sample contains 204 mg of  $\text{CaSO}_4$  per litre .Calculate the hardness in CO1- U  
 terms of  $\text{CaCO}_3$ .
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) Steel screw in a brass, bolt & nut made from different metal and CO5- Ana (16)  
 zinc-iron bimetallic couple. Identify the corrosion type with  
 suitable reason.  
 Or  
 (b) Metal area covered by a drop of water, dust, scale and sand CO5- Ana (16)  
 etc.,what type of corrosion will form?
18. (a) Explain the principle, instrumentation, working of UV-Visible CO1-U (16)  
 spectroscopy.  
 Or  
 (b) Describe the principle, instrumentation and working process of CO1-U (16)  
 Atomic Absorption Spectroscopy with neat diagram.

19. (a) Senthil has weak acidic and weak basic materials for preparation of crucible. What kind of suitable refractories he needs to manufacture. CO3-App (16)
- Or
- (b) Apply the knowledge to prepare to best refractories materials from the following properties of refractoriness, RUL, Porosity. CO3-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, Tetracalciumaluminoferrite CO5 App (16)

