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**Question Paper Code : 91369**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Second Semester

Civil Engineering

CY 2161 /CY 24/ 080010002 — ENGINEERING CHEMISTRY – II

(Common to all Branches – Except Marine Engineering)

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is single electrode potential?
2. What are ion selective electrodes?
3. State pilling — Bedworth rule.
4. Name any two anodic inhibitors.
5. Distinguish between Coal and Coke.
6. Name the reagents used for absorbing  $CO_2$ ,  $CO$  and  $O_2$  in flue gas analysis.
7. What is simple eutectic point?
8. What is the composition of brass and bronze?
9. What are the difference between atomic spectra and molecular spectra?
10. Write any two disadvantages of AAS?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Differentiate reversible and irreversible cells? Illustrate with examples. (8)  
(ii) Derive the Nernst equation for a single electrode potential? (8)  
Or  
(b) (i) Describe the standard hydrogen electrode and its use in the determination of single electrode potential. (8)  
(ii) Explain the potentiometric redox titration of  $FeSO_4$  vs  $K_2Cr_2O_7$  with neat diagram. (8)

12. (a) (i) What is an electrochemical cell? Explain the mechanism of electrochemical corrosion with suitable example. (8)  
(ii) Explain differential aeration corrosion with suitable examples. (8)

Or

- (b) (i) Write the difference between electroplating and electroless plating. (8)  
(ii) State the constituents of oil paints with examples and their functions. (8)
13. (a) (i) What is proximate analysis? How is it carried out? Mention its significances. (8)  
(ii) How the flue gas analysis is carried out? Explain with neat diagram. (8)

Or

- (b) (i) Explain the Otto-Hoffmann's method of production of coke with neat diagram. (8)  
(ii) Discuss the properties and preparation of producer gas. (8)
14. (a) (i) State the phase rule. Explain the Various terms involved in it with examples. (8)  
(ii) Discuss in detail the application of phase rule to systems involving eutectic compound formation. (8)

Or

- (b) (i) Discuss the heat treatment methods and their effects on alloys. (8)  
(ii) Write short notes on Non-ferrous alloys. (8)
15. (a) (i) Explain the principal and determination of iron by colorimetry. (8)  
(ii) State Beer's law. Write the applications of UV visible spectroscopy. (8)

Or

- (b) (i) Write and explain the applications of flame photometry. (8)  
(ii) Discuss the principal and instrumentation of atomic adsorption spectroscopy. (8)