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

2/01/2018 FN

Question Paper Code : 54008

B.E./B.Tech. DEGREE EXAMINATION, JANUARY 2018

First Semester

Civil Engineering

CY 8151 – ENGINEERING CHEMISTRY

(Common to : All Branches (Except Marine Engineering))

(Regulations 2017)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions.

PART – A   **(10×2=20 Marks)**

1. Name any two salts that cause temporary hardness.

2. What is reverse osmosis ?

3. List any four characteristics of enzyme catalysis.

4. What are autocatalysts ? Give an example.

5. Define "component' and 'Degree of freedom".

6. What are the uses of phase diagram ?

7. What is a calorie ? Give the different units of calorific value.

8. How coals are classified ?

9. Give an example each for nuclear fission and nuclear fusion reactions.

10. What are the advantages of lithium cell ?

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PART – B (5×16=80 Marks)

11. a) i) What are the essential requirements of boiler feed water ? **(6)**

ii) What are the various boiler troubles and how they can be prevented ? **(10)**

(OR)

b) i) Write the differences between internal and external treatment of boilers. **(6)**

ii) Discuss the various methods available for internal conditioning. **(10)**

12. a) What is an adsorption isotherm ? Draw the five general types of adsorption isotherms. Derive Langmuir adsorption isotherm mathematically. **(16)**

(OR)

b) i) Give any four applications of adsorption. **(4)**

ii) Derive Michaelis Menten equation for enzyme catalysis. **(12)**

13. a) Draw and explain the phase diagram of Pb-Ag eutectic system. **(16)**

(OR)

b) With two cooling curves for pure substance and mixture, discuss briefly about thermal analysis. **(16)**

14. a) With a neat diagram of Orsat's apparatus, explain the analysis of flue gas. **(16)**

(OR)

b) What is ultimate analysis of coal ? Give its significance. **(16)**

15. a) Explain the construction, charging and discharging of lead acid accumulator. **(16)**

(OR)

b) What are the components of a nuclear power reactor and explain the functioning of light water nuclear power reactor with a neat diagram ? **(16)**