

18/05/19
AN

Reg. No. :



Question Paper Code : 80103

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

First Semester

Civil Engineering

CY 8151 — ENGINEERING CHEMISTRY

(Common to all Braches (Except Marine Engineering))

(Regulation 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the salts responsible for temporary hardness of water?
2. Mention the indicator used in EDTA titration. What is the end point?
3. Distinguish between physisorption and chemisorption.
4. Why is a reaction speeded up in the presence of a catalyst?
5. Write down any two applications of alloys.
6. What is triple point?
7. Classify fuels.
8. Define ignition temperature.
9. What is a nuclear chain reaction?
10. What is the voltage generated by H₂ - O₂ fuel cell?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Calculate total hardness of the given sample water which contains the following in ppm.
CaCl₂ = 111; CaSO₄ = 136; MgCl₂ = 95 and MgCO₃ = 144. (8)
- (ii) How are Sludge and Scale formed? Write briefly about their prevention and disadvantages. (8)

Or

- (b) (i) Describe ion exchange process and explain the reactions involved in it. (8)
- (ii) Write notes on
 - (1) Phosphate conditioning,
 - (2) Sodium aluminate conditioning. (8)

12. (a) (i) Discuss various factors which affect the adsorption of gas on a solid adsorbent. (8)
- (ii) Deduce the expression for Langmuir adsorption isotherm. Mention its limitations. (8)

Or

- (b) (i) Explain
- (1) Catalytic poisoning, (8)
- (2) Catalytic promoters. (8)
- (ii) Derive Michaelis-Menten equation. (8)
13. (a) (i) Write notes on any two types of heat treatment of steel. (8)
- (ii) Mention the composition and uses of
- (1) Nichrome, (8)
- (2) Stainless steel. (8)

Or

- (b) (i) State phase rule and explain the terms involved in it. (8)
- (ii) Draw and label the phase diagram of lead-silver system. Explain. (8)
14. (a) (i) How is proximate analysis of coal carried out? Mention its significance. (8)
- (ii) Explain
- (1) Octane number and
- (2) Cetane number. (8)
- How can they be improved?

Or

- (b) (i) How is the analysis of flue gas done? Explain with a neat diagram. (8)
- (ii) What is calorific value? What are its types? Explain. (8)
15. (a) (i) Distinguish between nuclear fission and nuclear fusion. (8)
- (ii) Explain the essential parts of a nuclear reactor with the help of a diagram. (8)

Or

- (b) (i) Describe the Ni-Cd cell with reactions. (8)
- (ii) Construct a lead acid battery and explain. (8)

54008



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)

Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

FW



Question Paper Code : 25064

B.E./B.Tech. DEGREE EXAMINATION, DECEMBER/JANUARY 2019.

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. What are zeolites?
2. Bring out the differences between scale and sludge.
3. Define acid base catalysis with an example.
4. Distinguish between catalyst promoter and catalyst poisoner.
5. Write the mathematical expression of reduced phase rule.
6. What is Pattinson process?
7. Define calorific value of a fuel.
8. Describe the process knocking.
9. What is a moderator?
10. Write the principles of a fuel cell.

PART B — (5 × 16 = 80 marks)

11. (a) (i) What is hard water? Highlight its disadvantages? (8)
(ii) Explain the mechanism of ion exchange process of water treatment. (8)

Or

- (b) (i) Explain the reverse osmosis process and its advantages. (8)
(ii) What are internal treatments? Explain any two of them. (8)

12. (a) (i) Derive and explain the Langmuir adsorption isotherm. (8)
(ii) Write a note on Freundlich adsorption isotherm. (8)

Or

- (b) (i) What is an adsorption isotherm? What are its major types? (8)
(ii) Write down the difference between physisorption and chemisorption. (8)

13. (a) (i) Explain the phase diagram of water in detail. (10)
(ii) Differentiate between hardening and nitriding heat treatment processes. (6)

Or

- (b) (i) Deduce and explain the lead silver phase diagram. (10)
(ii) What are the significance of alloying? (6)

14. (a) (i) How are fuels classified? Give examples for each of them. (6)
(ii) Distinguish between ultimate and proximate analyses. (10)

Or

- (b) (i) Explain the functioning of Orsat's apparatus (8)
(ii) Write about LPG, its uses, advantages and disadvantages. (8)

15. (a) (i) Explain the working of a hydrogen oxygen fuel cell. (8)
(ii) Distinguish between nuclear fission and nuclear fusion. (8)

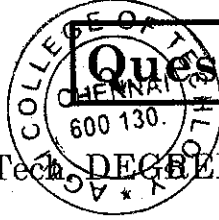
Or

- (b) (i) Write notes on the working of a breeder reactor. (8)
(ii) Explain the working of a lead acid battery. (8)



Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



Question Paper Code : 90163

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019

First Semester

Civil Engineering

CY 8151 : ENGINEERING CHEMISTRY

(Common to Medical Electronics/Aeronautical Engineering/Aerospace Engineering/ Agriculture Engineering/Automobile Engineering/Biomedical Engineering/Geoinformatics Engineering/Computer Science and Engineering/ Computer and Communication Engineering/Electrical and Electronics Engineering/Electronics and Communication Engineering/Electronics and Instrumentation Engineering/Electronics and Telecommunication Engineering/ Environmental Engineering/Industrial Engineering/Industrial Engineering and Management/Instrumentation and Control Engineering /Manufacturing Engineering/Material Science and Engineering/Mechanical Engineering/ Mechanical Engineering (Sandwich)/Mechanical and Automation Engineering/ Mechatronics Engineering/Petrochemical Engineering/Production Engineering/ Robotics and Automation Engineering/Safety and Fire Engineering/Bio Technology/Chemical Engineering/Chemical and Electrochemical Engineering/ Fashion Technology/Food Technology/Handloom and Textile Technology/ Information Technology/Petrochemical Technology/Petroleum Engineering/ Pharmaceutical Technology/Plastic Technology/Polymer Technology/Textile Chemistry/Textile Technology)

(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART - A

(10×2=20 Marks)

1. What happens when water containing bicarbonates of Ca^{2+} and Mg^{2+} is boiled ?
2. Write the equations involved in the bleaching action of CaOCl_2 .
3. What is an auto catalyst ? Give an example.
4. Give an example each for homogeneous and heterogeneous catalyzed reactions.
5. Define "Component".
6. What are the advantages of alloying ?
7. How is percentages fixed carbon of coal calculated ?

90163



8. Give the classification of petroleum.
9. Write the disadvantages of fuel cell.
10. Give some applications of solar cell.

PART – B

(5×16=80 Marks)

11. a) A water sample is alkaline to both phenolphthalein as well as methyl orange. 100 ml of the water sample on titration with N/50 HCl required 4.7 ml of the acid to phenolphthalein end point. When a few drops of methyl orange are added to the same solution and the titration was further continued till the yellow color of the solution just turned red after the addition of another 10.5 ml of the acid solution. Elucidate on the type and extent of alkalinity present in the water sample.
(OR)
- b) Compare zeolite process with lime-soda process in water treatment.
12. a) Discuss the general characteristics of catalytic reactions.
(OR)
- b) Derive Michaelis-Menten equation of enzyme catalysis.
13. a) Describe the phase diagram of water system.
(OR)
- b) What do you mean by heat treatment of alloys ? Discuss its advantages and the various processes.
14. a) Give a detailed procedure of determination of various elements present in coal (Ultimate analysis).
(OR)
- b) Describe the Synthesis of metallurgical coke by Otto-Hoffmans by product oven method and explain how various by products are recovered.
15. a) i) What are fuel cells? Briefly describe about hydrogen-oxygen fuel cell. (12)
ii) What are the advantages of Li Battery ? (4)
(OR)
- b) Write anode, cathode and over all cell reactions of
i) Lead acid storage cell and (8)
ii) Lithium battery. (8)