



C-16/A/AA/CHST/C/CM/EC/EE/M/AEI/  
MNG/IT/PKG-104

**5004**

**BOARD DIPLOMA SUPPLEMENTARY (INSTANT)  
EXAMINATION, (C-16)**

JUNE - 2019

**COMMON - FIRST YEAR EXAMINATION  
ENGINEERING CHEMISTRY &  
ENVIRONMENTAL STUDIES**

Time : 3 Hours]

[Total Marks : 80

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**PART - A**

**2×15=30**

**Instructions :**

- (1) Answer any 15 questions.
- (2) Each question carries 2 marks.
- (3) Answer should be brief and straight to the point and shall not exceed five simple sentences.

- 1 Draw the shapes 's' and 'p' orbitals.
- 2 Write any two differences between oxidation number and valency.
- 3 Calculate the oxidation number of Mn in  $\text{KMnO}_4$  and Cr in  $\text{K}_2\text{Cr}_2\text{O}_7$ .
- 4 State Pauli's exclusion principle.
- 5 Define Molarity and give its expression.
- 6 Calculate the number of moles present in 4.9 grams of  $\text{H}_2\text{SO}_4$ .
- 7 Calculate the  $\text{P}^{\text{H}}$  of 0.001 M HCl solution.
- 8 Write any two applications of buffer solutions.
- 9 Write any two differences between electrolytic cell and galvanic cell.
- 10 Define electrochemical series.

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- 11 Write any two disadvantages of using hard water in industries.
- 12 Define soft water and hard water.
- 13 Write any two disadvantages of plastics.
- 14 What is vulcanization of rubber ?
- 15 Define fuel. Mention any two characteristics of a good fuel.
- 16 Write the composition and uses of water gas.
- 17 Define biodiversity.
- 18 Define Pollution and contaminant.
- 19 Define the terms (i) DO and (ii) COD
- 20 Define renewable energy source and give two examples.

**PART - B**

**10×5=50**

**Instructions :**

- (1) Answer any **FIVE** questions.
- (2) Each question carries **TEN** marks.
- (3) Answer should be comprehensive and criterion for valuation is the content but not the length of the answer.

- 21 (a) Write the postulates of Bohr's atomic theory. 6  
(b) Write any four differences between ionic and covalent compounds. 4
- 22 (a) Define Normality. Calculate the weight of oxalic acid (H<sub>2</sub>C<sub>2</sub>O<sub>4</sub>.2H<sub>2</sub>O) required to prepare 0.25 N solution in 2 litres. 1+4  
(b) Explain Arrhenius theory of acids and bases. 5
- 23 (a) Explain the following terms with one suitable example  $2\frac{1}{2}+2\frac{1}{2}$   
(i) Calcination and (ii) Roasting.  
(b) Define alloys. State the composition and uses of following alloys (i) Nichrome and (ii) German silver. 1+2+2

- 24** (a) State and explain Faraday's laws of Electrolysis. **6**  
(b) A current of 0.5 amp is passed through  $\text{CuSO}_4$  solution for 45 minutes. Calculate the weight of copper deposited at cathode. At Wt. of Cu = 63.5) **4**
- 25** (a) Define corrosion. Explain any four factors influencing the rate of corrosion. **5**  
(b) Explain the cathodic protection by sacrificial anode method. **5**
- 26** (a) Explain ion exchange process for softening of hardwater. **7**  
(b) Define Reverse Osmosis. Write two advantages of Reverse Osmosis. **2+1**
- 27** (a) Write any four differences between thermo plastics and thermo setting plastics. **4**  
(b) Write the preparation and uses of following synthetic rubbers (i) Buna-s rubber and (ii) Neoprene rubber. **6**
- 28** (a) Explain briefly following (i) Ozone layer depletion and (ii) Acid rain. **6**  
(b) Define Producers and Consumers. Give examples. **4**
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