11N503

Roll No. _____ Total No of Pages: 2

11N503

B. Tech. I - Sem. (New Scheme) Main Exam., July – 2022

1FY1 – 03 Engineering Chemistry

Common to all Branches

Time: 2 Hours **Maximum Marks: 70**

Min. Passing Marks:

Instructions to Candidates:

Part – A: Short answer questions (up to 25 words) 5×3 marks = 15 marks. Candidates have to answer 5 questions out of 10.

Part – B: Analytical/Problem Solving questions 3×5 marks = 15 marks. Candidates have to answer 3 questions out of 7.

Part – C: Descriptive/Analytical/Problem Solving questions 2×20 marks = 40 marks. Candidates have to answer 2 questions out of 5.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

PART– A

Q.1 What is carbonate hardness?

Q.2 Enlist methods for removal of carbonate and non-carbonate hardness of water.

Q.3 Mention composition and properties of Flint glass and Pyrex glass.

Q.4 Discuss role of gypsum in cement.

Q.5 What are green solvents?

Q.6 Enlist alternation sources of energy.

Q.7 Mention classification of coal with carbon content.

Q.8 Define gross and net calorific value of coal.

Q.9 Discuss briefly ultimate analysis of coal and its applications.

Q.10 What is green energy?

PART– B

Q.1 What is boundary lubrication? What is its importance?

Q.2 How is disinfection of water carried out? Mention various methods.

Q.3 Draw flow diagram of steps involved in cement manufacture by Vertical Shaft Kiln technology. Write a few lines also.

Q.4 Explain working of Redwood viscometer with the help of neat diagram.

Q.5 Why is small amount of ethylene dibromide along with TEL used in IC engines?

Q.6 Calculate weight and volume of air required for carbonization of 3 kg carbon.

Q.7 Describe manufacture and uses of producer gas.

PART–C

Q.1 What is anodic protection? How does it work?

Q.2 What is diversification of glass? What is importance of annealing in glass manufacture? What is importance of borosilicate glass in industry?

Q.3 Write structure of graphite. Based on this, suggest why is this used as a solid lubricant?

Q.4 Discuss concept of green chemistry in pollution prevention in industry. What is pollution prevention hierarchy?

Q.5 Percentage composition of a sample of bituminous coal was found to be as follows –

C=75.4%, H=5.3%, O=12.6%, N=3.2%, S=1.3% and remaining % of ash content. Calculate minimum weight of air necessary for complete combustion of 1.0 kg of coal and the % composition of dry products of combustion (by wt.).
