

B.E.CHEMICAL ENGINEERING EXAMINATION, 2019

(3rd Year, 1st Semester)

ENERGY ENGINEERING

Time: Three Hours.

Full Marks : 100

(50 marks for each Part)

Use separate Answer Script for each Part

PART I

Answer any five questions. All questions carry equal marks.

Assume missing data, if any.

- 1 What is the significance of washability characteristic curve? Describe the operation of a 'Baum jig' for coal washing. 10
- 2 What is low temperature oxidation of coal? How low temperature oxidation of coal can be prevented? 10
- 3 Using simplified diagram, briefly describe Beehive coke oven. 10
- 4 Why soft coke is not used in Blast furnace? What is the role of limestone in blast furnace? Mention all the reactions that are taking place inside the blast furnace. 10

[Turn over

- 5 Auto catalytic reactions are taking place during anaerobic digestion of bio mass-
Explain. 10
- 6 How coal is converted to coke during carbonisation process? 10
- 7 What are the compositions of producer gas and synthesis gas? How producer gas is
produced? Mention the reactions involved for the production of producer gas. 10

BACHELOR OF CHEMICAL ENGINEERING EXAMINATION, 2019**(THIRD YEAR, FIRST SEMESTER)****ENERGY ENGINEERING**

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10×5

1. Discuss the working principle of both First-generation and Second-generation tidal power plants.
2. Among the solar thermal collectors, which one is more an efficient — evacuated tube collector or flat plate collector? Why?
3. Balanced draft increases the combustion efficiency — how?
4. In a coal-fired furnace, coal is fed and not coke — why?
5. Corrosion of the heat exchanger surface in low temperature heat recovery can be eliminated by using direct contact condensation heat-recovery system — how?
6. According to you, what should be the minimum flash point of kerosene and why?
7. Would you like to test pour-point and flash point of gasoline? If yes, why yes and if no, why not?
8. Use of geothermal energy is associated with water pollution — do you agree? Give reasons.
9. What is wet natural gas? How can it be made 'dry'? Why is this 'drying' necessary?
10. Why gasoline is tested for its RVP?
11. Why both Storage Stability and Thermal Stability are to be tested for ATF?