

**VIT**Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

REG.NO.:

**SCHOOL OF CHEMICAL ENGINEERING
CONTINUOUS ASSESSMENT TEST -I
FALL SEMESTER 2025-2026**

SLOT: F2+TF2

Programme Name & Branch	: B.Tech (Chemical Engineering)	
Course Code	: BCHE314L	
Course Name	: Fuels and Combustion	
Faculty Name	: D Chitra	
Class Number	: VL2025260101230	
Date of Examination	: 22-8-2025	
Exam Duration	: 90 minutes	Maximum Marks: 50

General instructions:

- Answer ALL Questions
- Assume necessary and appropriate data if required

Q. No	Question	Marks	Course Outcome (CO)	Bloom's Taxonomy (BL)
1.	A sample of coal was analysed as follows: Exactly 1.5 g was weighed into a silica crucible. After heating for an hour at 110 °C, the residue weighed 1.415 g. The crucible was then covered with a vented lid and heated strongly for exactly 7 minutes at 950 ± 20 °C. The residue weighed 0.528 g. The crucible was then heated without the cover until a constant weight was obtained. The last residue was found to weigh 0.254 g. Calculate the percentage of moisture, volatile matter, ash, and fixed carbon.	10	1	3
2.	A sample of coal contains C = 93%, H = 6%, and ash = 1%. The following data were obtained when the above coal was tested in a bomb calorimeter. Weight of coal burnt = 0.92 g Weight of water taken = 550 g Water equivalent of bomb calorimeter = 2200 g Rise in temperature = 2.42°C Fuse wire correction = 10 cal Acid correction = 50 cal Calculate the gross and net calorific value of the coal, assuming the latent heat of condensation as 580 cal/g.	10	1	3
3.	Mention the advantages of washed coal? List the types of coal washing processes. With the help of a neat drawing, explain any three methods of the coal washing process.	10	2	2
4.	Describe Otto-Hoffmann's process for preparing coke. What are its advantages over the Beehive oven method?	10	2	2
5.	Explain the following process with the help of a neat and labelled sketch. (i) Dehydration of crude oil. (5 marks) (ii) Electrical desalting of crude oil. (5 marks)	10	2	2
