Enrolment No/Seat No.: _____

R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT

(An Autonomous College U/s UGC Act 1956)

B. Voc. SEMESTER-II, SEMESTER END EXAMINATION – SUMMER 2025

Subject Code: 1IC203 **Date: 19-05-2025**

Subject Name: FUELS AND COMBUSTION

Time: 11:00 AM to 01:00 PM **Total Marks: 50**

Instructions

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Attempt all questions in the question paper.
3. The figures to the right of each question indicate full marks. Make suitable assumptions with proper justification wherever required.
4. Simple, non-programmable scientific calculators are permitted.
5. BL - Bloom's Taxonomy Levels (R-Remember, U-Understanding, A-Application, N-Analyze, E-Evaluate, C-Create), CO - Course Outcomes.

		Marks	BL	CO
Q.1	**Multiple-Choice Questions**	**[05]**		
(a)	What was the primary fuel used in steam engines during the Industrial Revolution **(i)** Wood **(ii)** Coal **(iii)** Diesel **(iv)** Natural Gas	**1**	**R**	**1**
(b)	Which type of coal give more amount of heat after combustion? **(i)** Anthracite **(ii)** Peat **(iii)** Lignite **(iv)** Bituminous	**1**	**R**	**2**
(c)	The liquid fuel among this: **(i)** Coke **(ii)** Coal **(iii)** Diesel **(iv)** Natural Gas	**1**	**R**	**3**
(d)	Which of the following gaseous fuels is the primary component of natural gas? **(i)** Ethane **(ii)** Methane **(iii)** Propane **(iv)** Butane	**1**	**R**	**4**

(e) What is combustion?		**1**	**R**	**5**

(i) A process of melting substances

(ii) A process of breaking down food

(iii) A chemical reaction with oxygen that produces heat and light

(iv) A physical change involving water

Q.2 Attempt Any Three **[15]**

(a) Analyze the trends in global energy consumption over the past century. What are the key factors driving energy demand?	**5**	**N**	**1**
(b) Define Solid fuels. write a note on any two solid fuels.	**5**	**R**	**2**
(c) Write a note on lignite coal.	**5**	**U**	**2**
(d) Explain different analysis of coal.	**5**	**U**	**2**

Q.3 Attempt Any Three **[15]**

(a) List out all the liquid fuel and explain any one in detail.	**5**	**U**	**3**
(b) Describe gasoline and give idea about the Sulphur content.	**5**	**U**	**3**
(c) Define Smoke point and give significance of it.	**5**	**U**	**3**
(d) Describe the concept of cetane number and its relevance to diesel fuel quality.	**5**	**U**	**3**

Q.4 Attempt Any Three **[15]**

(a) Discuss the properties, uses, and advantages of natural gas as a gaseous fuel.	**5**	**U**	**4**
(b) What are the key differences between compressed natural gas (CNG) and liquefied natural gas (LNG)?	**5**	**U**	**4**
(c) Explain the Combustion stoichiometry with one Example.	**5**	**U**	**5**
(d) In manufacturing of Sulphur trioxide feed to a reactor consist of 50 kmol SO_2 and 150 kmol air. Calculate the % excess air is used.	**5**	**A**	**5**

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