



Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**B.Tech Degree S1 (R,S) Examination December 2025 (2024 Scheme)**

**Course Code: GCEST104**

**Course Name: INTRODUCTION TO MECHANICAL AND CIVIL  
ENGINEERING**

Max. Marks: 60

Duration: 2 hours 30 minutes

- ***Use separate answer sheets for Part 1 and Part 2***
- ***No separate minimum marks are required to pass.***

**PART 1**

**MECHANICAL ENGINEERING (30 Marks)**

**PART 1-A  
Module (1 & 2)**

***Answer all questions. Each question carries 3 marks***

		CO	Marks
1	Name any 6 important parts of internal combustion engine	2	3
2	Draw the P-V and T-S diagram of Otto cycle and list out the processes involved	2	3
3	Explain the rolling process with diagram.	3	3
4	What is the use of a bearing? How bearings are classified.	1	3

**PART 1-B  
Module (1&2)**

***Answer any one full question from each module. Each question carries 9 marks***

**Module 1**

5	a)	Write three differences between 2 stroke & 4 stroke engines. Also Write three differences between SI & CI engines.	2	6
	b)	A Carnot engine working between 700K and 300K, it produces 300 kJ of work. Find the thermal efficiency of the Carnot engine.	2	3
6	a)	With a neat diagram, explain the working of 4-stroke Petrol Engine	2	6
	b)	Define the following terms 1) Dew point temperature 2) Specific humidity 3) Relative humidity	2	3

**Module 2**

a) With the help of neat diagram explain the working of a centrifugal pump. Also mark 7 important parts on diagram.	1	6
b) List six types of welding processes	3	3
8 a) With the help of neat diagram explain shielded metal arc welding (SMAW) process.	3	5
b) Explain about any two operations that can be performed in a lathe machine	3	4

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**PART 2**  
**CIVIL ENGINEERING (30 Marks)**

**PART 2-A**  
**Module (3 & 4)**

*Answer all questions. Each question carries 3 marks*

		CO	Marks
1	List the major disciplines of Civil Engineering.	4	(3)
2	What are the primary objectives of CRZ norms in India?	5	(3)
3	List the various uses of cement.	6	(3)
4	How is soil formed?	6	(3)

**PART 2-B**  
**Module (3 & 4)**

*Answer any one full question from each module. Each question carries 9 marks*

**Module 3**

5	Explain the classification of buildings as per NBC with an example for each.	5	(9)
6	a) What is FAR? What is its significance?	4	(3)
	b) How do Kerala Building Rules (KBR) influence building planning & construction?	5	(3)
	c) Give one function of the following building components: (i) plinth (ii) lintel (iii) parapet	5	(3)

**Module 4**

7	a) Give any six properties required for good bricks.	6	(3)
	b) Name any three commonly used stones with their uses.	6	(3)
	c) List any six qualities of a good timber.	6	(3)
8	a) What is Reinforced Cement Concrete? What are its uses?	6	(3)
	b) Explain any six types of steel sections with their uses.	6	(6)

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