

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SECOND SEMESTER B.TECH DEGREE EXAMINATION (S), December 2021**Course Code: 20EST120****Course Name: Basics of Civil and Mechanical Engineering****Max. Marks: 100****Duration: 3 Hours****PART I BASIC CIVIL ENGINEERING***Part I to be answered in pages 1 to 15***PART A***(Answer all questions. Each question carries 4 marks)*

- | | CO |
|--|-----------|
| 1. Describe any four disciplines of Civil Engineering. | [1] |
| 2. Discuss the difference between Plinth area and Carpet area. | [2] |
| 3. Define surveying. List any three objectives of surveying. | [3] |
| 4. Which type of cement will you suggest for construction of a dam? Justify your answer. | [2] |
| 5. Explain the relevance of Green buildings in society. | [5] |

PART B*(Answer one full question from each module, each question carries 10 marks)***MODULE I**

- | | CO | Marks |
|--|-----------|--------------|
| 6. a) Define infrastructure. Explain the relevance of Civil Engineering in the overall infrastructural development of the country. | [1] | (5) |
| b) Describe the various factors considered for selection of site for a residential building. | [2] | (5) |

OR

- | | CO | Marks |
|--|-----------|--------------|
| 7. a) Discuss various roles of Civil Engineer in ensuring safety in built environment. | [1] | (5) |
| b) Define building as per NBC. List the classification of buildings as per NBC based on occupancy. | [2] | (5) |

MODULE II

- | | CO | Marks |
|---|-----------|--------------|
| 8. a) Explain the principles of surveying. | [3] | (4) |
| b) Discuss the properties of good building stone. Mention any four common uses of stones. | [2] | (6) |

OR

		CO	Marks
9.	a) Explain the properties of good building brick.	[2]	(6)
	b) With neat sketches, mention uses of different types of steel sections available in market	[2]	(4)

MODULE III

		CO	Marks
10.	a) Draw the plan and elevation of one and half thick English bond.	[2]	(5)
	b) Discuss the Civil Engineering aspects of escalators, elevators and ramps.	[4]	(5)

OR

		CO	Marks
11.	a) It was proposed to construct a multi-storeyed commercial building on a site. Soil investigation was conducted on the site to determine the safe bearing capacity of the soil and it was found to be 100 kN/m ² . What is the type of soil? Which type of foundation will you suggest? Justify your answer.	[2]	(4)
	b) Enumerate the requirements of an ideal flooring material. Discuss any four types of flooring materials.	[2]	(6)

PART II BASIC MECHANICAL ENGINEERING*Part II to be answered in pages 16 to 30***PART C***(Answer all questions. Each question carries 4 marks)*

		CO
12.	Write short notes on the thermal efficiency of an Internal Combustion Engine.	[7]
13.	Why air cooling is not as efficient as Liquid cooling in I.C engines?	[7]
14.	List out the desirable properties of a good refrigerant.	[8]
15.	Define Psychrometry and explain the terms DBT, WBT and DPT.	[8]
16.	What are the various operations that can be performed on a Lathe?	[11]

PART D*(Answer one full question from each module, each question carries 10 marks)***MODULE IV**

		CO	Marks
17.	a) Derive the efficiency of Carnot cycle with P-v diagram.	[6]	(7)
	b) Why diesel engines have higher compression ratio compared to petrol engines?	[7]	(3)

OR

		CO	Marks
18.	a) With a neat sketch explain various parts of an I.C engine.	[7]	(7)
	b) Differentiate between air system of SI and CI Engines.	[7]	(3)

MODULE V

		CO	Marks
19.	a) A centrifugal pump discharges water at the rate of 90litres/s against a head of 30m. If the power required is 35 kW, calculate the overall efficiency of the pump.	[9]	(5)
	b) Explain the working of a Single plate Clutch with the help of a neat sketch.	[10]	(5)

OR

		CO	Marks
20.	a) With suitable sketches explain the working of a Unit air conditioning system.	[8]	(6)
	b) Draw a neat sketch of a Pelton turbine and label the parts.	[9]	(4)

MODULE VI

		CO	Marks
21.	a) Explain the steps involved in Sand Casting process.	[11]	(6)
	b) Differentiate between up milling and down milling process.	[11]	(4)

OR

		CO	Marks
22.	a) List out the properties of Moulding sand.	[11]	(4)
	b) Explain with a neat sketch the Arc welding process.	[11]	(6)
