PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – MAY 2025

Date: 27-05-2025   **Time:** 01:00 pm – 04:00 pm

School: SOE	**Program:** B. Tech- Basic Engineering Science Cycle
Course Code: CIV1008	**Course Name:** Basic Engineering Sciences
Semester: II	**Max Marks**: 100 **Weightage**: 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	10	24	22	22	22

Instructions:

   (i) *Read all questions carefully and answer accordingly.*

   (ii) *Do not write anything on the question paper other than roll number.*

Part A

Answer ALL the Questions. Each question carries 2marks.   **10Q x 2M=20M**
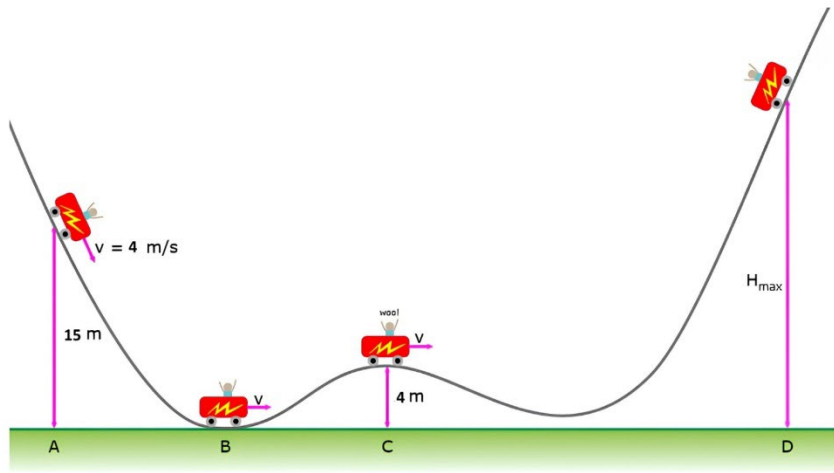
1.	List any four basic roles of civil engineers in our daily life.	2 Marks	L1	CO1
2.	List the components of bridge structure.	2 Marks	L1	CO1
3.	Write the scope of Transportation Engineering. Name the different modes of transportation.	2 Marks	L1	CO1
4.	Write the different sources of water with examples.	2 Marks	L1	CO1
5.	Classify the dam structure based on structural behavior.	2 Marks	L1	CO1
6.	Write any four core infrastructural elements of smart city.	2 Marks	L1	CO2
7.	What is meant by air compressor? List the types.	2 Marks	L1	CO3
8.	Define potential energy and kinetic energy.	2 Marks	L1	CO3
9.	What is meant by offshore and onshore based E & P activities.	2 Marks	L1	CO4
10.	Define metal joining process. List the types of joining process.	2 Marks	L1	CO5

Part B

Answer the Questions.   **Total Marks 80M**

11.	a.	Explain the layers of building blocks of digitalization in smart city.	12 Marks	L2	CO2
	b.	Discuss the various benefits of a Smart Cities.	08 Marks	L2	CO2
		Or			
12.	a.	Explain the various challenges of smart implementation in cities and list the measures to overcome the same.	12 Marks	L2	CO2
	b.	What are the core infrastructure elements of a smart city	08 Marks	L1	CO2

13.	a.	Explain the working principle of Impeller type Centrifugal pump.	10 Marks	L2	CO3
	b.	A cart travels along a frictionless roller coaster track. At point A, the cart is 15 m above the ground and traveling at 4 m/s. a) What is the velocity at point B when the cart reaches the ground? b) What is the velocity of the cart at point C when the cart reaches a height of 4 m? c) What is the maximum height the cart can reach before the cart stops? 	10 Marks	L3	CO3
		Or			
14.	a.	Classify different types of Internal Combustion heat engines.	10 Marks	L2	CO3
	b.	Calculate the electricity bill amount for a month of 30 days, if the following devices are used as specified: a) 3 tube lights of 40 watts each for 8hours b) a refrigerator of 300 watts for 24 hours c) mixer of 750 watts for 1 hour d) T.V of 100 watts for 6 hours Given the rate of electricity as Rs.5 per unit for first 50units and Rs. 7 per unit in excess of 50 units. Take 1 unit =1kWh.	10 Marks	L2	CO3

15.	a.	Write short notes on i) source rock, ii) reservoir rock iii) cap rock and iv) traps.	10 Marks	L2	CO4
	b.	Discuss the key differences between Onshore and Offshore E&P activities.	10 Marks	L2	CO4
		Or			
16.	a.	List and describe the main stages of the upstream oil and gas life cycle, explaining the purpose of each stage	10 Marks	L2	CO4
	b.	Discuss the key areas of digitalization in petroleum industry. Also mention any five benefits of digitization.	10 Marks	L2	CO4

17.	a.	Explain the process of welding and soldering. Write the applications of welding and soldering.	10 Marks	L2	CO5
	b.	In a machining experiment, tool life was found to vary with the cutting speed in the following manner. Determine the exponent (n) and constant (K) of the Taylor's tool life equation. Also find the percentage increase in tool life when cutting speed is halved <table><tr><th>Cutting speed (m/min)</th><th>Tool Life (min)</th></tr><tr><td>50</td><td>72</td></tr><tr><td>85</td><td>30</td></tr></table>	10 Marks	L3	CO5
		Or			
18.	a.	Explain the following (i) Rolling (ii) Extrusion (iii) Wire Drawing (iv) Forging	10 Marks	L2	CO5
	b.	What is additive manufacturing? Write the key differences between additive and subtractive manufacturing.	10 Marks	L2	CO5