

P P SAVANI UNIVERSITY

First Semester of B. Tech. Examination

JANUARY 2022

SECV1040 Basics of Civil & Mechanical Engineering

25.01.2019, Tuesday

Time: 09:00 a.m. To 11:30 a.m.

Maximum Marks: 60

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION - I

- Q - 1 (a) Explain role of civil engineer in infrastructure development. [05]
Q - 1 (b) Define Concrete. Explain application of concrete in Construction Industry. [05]

OR

- Q - 1 (a) Define Civil Engineering. Explain Branch of Civil Engineering. [05]
Q - 1 (b) Give a classification of properties of materials. Explain mechanical properties. [05]
Q - 2 (a) The following staff readings were observed successively with a level, the instruments having been moved after 3rd, 6th & 8th readings. 2.215, 1.615, 0.985, 2.080, 2.755, 1.165, 0.700, 1.885, 1.035, 2.675m. Calculate the reduced levels of all points if the first reading was taken with a staff held on bench mark of 200.00m. [05]
Q - 2 (b) Differentiate between Prismatic compass & Surveyor compass [05]

OR

- Q - 2 (a) The following bearings were observed with a prismatic compass: Find the correct included angles.

Line	Fore Bearing	Back Bearing
AB	322°30'	143°00'
BC	209°30'	28°30'
CD	135°30'	310°30'
DA	55°30'	234°30'

- Q - 2 (b) Differentiate between HI method & Rise-Fall method. [05]
Q - 3 (a) Write a short note on Mass Transportation. [05]
Q - 3 (b) What are the factors affecting on selection of Equipment? [05]

OR

- Q - 3 (a) Write a short note on Rain Water Harvesting. [05]
Q - 3 (b) What is an advantage of utilizing the construction equipment? [05]

SECTION - II

- Q - 1 (a) Explain the types of thermodynamic system with example of each. [05]
Q - 1 (b) Write down the advantages and disadvantages of gaseous fuel over solid fuel. [05]

OR

- Q - 1 (a) Explain the 2nd law of thermodynamics with the example of Heat engine. [05]
Q - 1 (b) Write down the short note on Biodiesel and alcohol as a alternative fuel. [05]
Q - 2 (a) Explain the Babcock Wilcox boiler with neat sketch. [05]
Q - 2 (b) List out various mounting used in boiler and explain the function of any two mounting. [05]

OR

- Q - 2 (a) Explain the locomotive boiler with neat sketch [05]
Q - 2 (b) What is break? List different types of mechanical break and explain any one in detail. [05]

[05]

- Q - 3 (a)** Differentiate between SI. Engine vs C.I engine. [05]
Q - 3 (b) Give the brief classification of gear and explain any one in detail. [05]

OR

- Q - 3 (a)** Explain construction and working of any heat engine with neat sketch. [05]
Q - 3 (b) What is Swept volume, clearance volume and compression ratio? Draw the P-V diagram of any governing cycle and mention the swept volume and clearance volume in that. [05]
