

P P SAVANI UNIVERSITY

Second Semester of B. Tech. Examination

May 2022

SECV1040 Basics of Civil & Mechanical Engineering

10.06.2022, Friday

Time: 10:00 a.m. To 12:30 p.m.

Maximum Marks: 60

Instructions:

1. The question paper comprises of two sections.
2. Make suitable assumptions and draw neat figures wherever required.
3. Use of scientific calculator is allowed.

SECTION - I

- Q - 1 Define following terms. (Any Five)** [05]
- (i) Bench Mark,
 - (ii) Green Building,
 - (iii) Mass Transportation,
 - (iv) Fore Bearing,
 - (v) Back Bearing,
 - (vi) Surveying,
 - (vii) Per Capita Income
- Q - 2 (a)** What is meant by local attraction? How is it detected? How is the observed bearing corrected for local attraction? [05]
- Q - 2 (b)** Discuss the importance of Cement in construction industry. [05]
- OR**
- Q - 2 (a)** What is total station? What are its advantages and disadvantages? [05]
- Q - 2 (b)** Enlist various types of aggregate. Discuss properties of aggregate. [05]
- Q - 3 (a)** Define Civil Engineering. Explain Branch of Civil Engineering. [05]
- Q - 3 (b)** Explain with neat sketch rain water harvesting. [05]
- OR**
- Q - 3 (a)** Write short note on Hauling Equipment. [05]
- Q - 3 (b)** Explain Hot mix plant. [05]
- Q - 4 Attempt any one.** [05]
- (i) Explain the loads which are to be taken into account while designing the foundation of a structure.
 - (ii) Explain importance of infrastructure development for the economy of the country.

SECTION - II

- Q - 1 Answer the Following:** [05]
- (i) Define: Calorific value
 - (ii) A cycle consisting of one constant pressure, one constant volume and two isentropic processes is known as
 - a) Carnot cycle
 - b) Stirling cycle
 - c) Otto cycle
 - d) Diesel cycle
 - (iii) Classify Fuels.
 - (iv) In a four stroke cycle, the minimum temperature inside the engine cylinder occurs at the

- a) beginning of suction stroke
- b) end of suction stroke
- c) beginning of exhaust stroke
- d) end of exhaust stroke

(v) List the different accessories of the boiler

Q - 2 (a) Discuss Closed, Open and Isolated Thermodynamic system with neat sketch. [05]

Q - 2 (b) Explain Lancashire boiler with neat sketch. [05]

OR

Q - 2 (a) Discuss with neat sketch any two boiler accessories. [05]

Q - 2 (b) List the non-convectional sources of energy. Prepare a short note on solar energy. [05]

Q - 3 (a) Discuss the construction and working of four stroke Petrol engine. [05]

Q - 3 (b) Define velocity ratio of pulleys and discuss effect of slip and creep on motion transmission [05]

OR

Q - 3 (a) Give comparison between Belt, Chain and Gear drive. [05]

Q - 3 (b) Compare 2-stroke and 4-stroke engines. [05]

Q - 4 **Attempt any one.** [05]

(i) Using neat sketch explain the working of Block brake and Internal expanding shoe brake.

(ii) Using neat sketch explain the working of Cone clutch and Centrifugal clutch
