

C 60702

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Name

Reg. No.

**COMBINED FIRST AND SECOND SEMESTER B.TECH (ENGINEERING)
DEGREE EXAMINATION, APRIL 2014**

EN 09 106—BASICS OF CIVIL AND MECHANICAL ENGINEERING

(2009 Scheme)

Time : Three Hours

Maximum : 70 Marks

*Section I (Basics of Civil Engineering) and Section II (Basics of Mechanical Engineering) are to be answered in **separate** answer-books.*

Assume suitable data wherever necessary.

Section I (Basics of Civil Engineering)

PART A

Answer all questions.

1. What are the uses of timber as a construction material ? (2 marks)
2. What is plain cement concrete ? (2 marks)
3. What is the use of dumpy level ? (1 mark)

PART B

Answer any two questions.

4. What is cement mortar ? What are its applications ?
5. Mention the Engineering properties of bricks. Explain briefly.
6. Draw the typical cross-section of a bridge.

(2 × 5 = 10 marks)

PART C

Answer Section (a) or Section (b) of each question.

7. (a) Write short notes on engineering properties and applications of the following construction materials :—
 - (i) Concrete.
 - (ii) Laterite stone.

Or

Turn over

(b) Explain the following terms :

- (i) Setting time of cement. (ii) Concrete workability.
(iii) Timber.

(10 marks)

8. (a) Sketch the plan and a suitable section of a single room having 4 m. × 3 m. size and 3.5 m. height. Assume the basement height, floor thickness, floor finish, thickness of slab and foundation details suitably. Also assume the size and location of doors / windows.

(Use answer paper for sketching.)

Or

(b) Write in detail about the permanent adjustments involved for the levelling instrument.

(10 marks)

[2 × 10 = 20 marks]

Section II (Basics of Mechanical Engineering)

PART A

Answer all questions.

1. State Zeroth law. (2 marks)
2. Write a short note on fuels. (2 marks)
3. How are the Hydraulic pumps classified ? (1 mark)

PART B

Answer any two questions.

4. Explain the working principles of Power Plants.
5. Derive the air-standard efficiency of Brayton cycle.
6. Compare between SMAW and oxy-fuel welding. (2 × 5 = 10 marks)

PART C

Answer Section (a) or Section (b) of each question.

7. (a) Explain the working principle of two-stroke and four-stroke engines with a neat sketch. (10 marks)

Or

(b) Discuss in detail by showing the layout and working principles of OTEC plant. (10 marks)

8. (a) Explain in detail about the open and closed die forging. (10 marks)

Or

(b) Write a detailed note on Rack and pinion. (10 marks)

[2 × 10 = 20 marks]