

C 15009

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Name.....

Reg. No.....

COMBINED FIRST AND SECOND SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, MAY 2011

EN 09 106—BASICS OF CIVIL AND MECHANICAL ENGINEERING

(2009 admissions)

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 functions of a Civil Engineer ? (2 marks)
2. Name the different types of beams. (2 marks)
3. Surveying is defined as the process of measuring distances, distances and angles in order to determine the location of points on, above or below the earth surface. (1 mark)

Part B

Answer any two questions.

- 4. Compare between English and Flemish bond. (5 marks)
5. Explain about the temporary adjustments of a levelling instrument. (5 marks)
6. What are the factors influencing the selection of a bridge ? (5 marks)

Part C

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

- 7. (a) Compare between Brick masonry and Stone masonry. Or (b) Write in detail about the properties of concrete.
8. (a) Draw a neat sketch by showing the cross-sectional details of a gravity dam and explain its features. Or (b) (i) Define super elevation. Explain the purpose of super elevation. (6 marks) (ii) Find the superelevation to be provided to the carriageway of a road on a horizontal curve of radius 200 m. The average speed of vehicles may be taken as 45 km./hr. (4 marks)

Turn over

**Section II (Basics of Mechanical Engineering)**

**Part A**

*Answer all questions.*

1. Distinguish between Carburettor type and MPFI engines. (2 marks)
2. What is meant by priming of pumps ? Is it necessary to prime all the types of pumps ? (2 marks)
3. Give the classifications of IC engines. (1 mark)

**Part B**

*Answer any two questions.*

4. Draw the layout of Nuclear power plants. (5 marks)
5. Compare between two stroke and four stroke engines. (5 marks)
6. Show the relationship between Power transmitted by a belt system; belt tension and coefficient of friction. (5 marks)

**Part C**

*Answer section (a) or section (b) of each question.*

7. (a) Explain the following with the help of necessary figures :—
  - (i) CRDI engines.
  - (ii) Otto cycles.
  - (iii) Tidal power plants.

*Or*

- (b) Explain in detail of the first law of thermodynamics with internal energy concept.
8. (a) Write a detailed note on centrifugal pumps.

*Or*

- (b) Write short notes on :
  - (i) Sand casting processes.
  - (ii) Hydrostatic extrusion.
  - (iii) 3 roll process.

(2 × 10 = 20 marks)