C 6289

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Name..................................

Reg. No.................................

COMBINED FIRST AND SECOND SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, MAY 2010

EN 09 106—BASICS OF CIVIL AND MECHANICAL ENGINEERING

(2009 admissions)

Time : Three Hours

Maximum : 70 Marks

Answer Sections I and II 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. Explain about Laterite stone. (2 marks)

2. Define header and stretcher. (2 marks)

3. Define magnetic bearing. (1 mark)

Part B

Answer any **two** *questions.*

4. Explain in detail about the test and characteristics of good bricks. (5 marks)

5. What are the various types of cement ? Write about the properties and uses of cement. (5 marks)

6. Write the types and functions of the column. (5 marks)

Part C

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

7. (a) Define Surveying. Briefly describe about chain and accessories.

   Or

   (b) Draw a neat sketch of a bowstring girder bridge. Explain in detail.

   (10 marks)

8. (a) Draw a neat sketch of English bond (1 brick wall and 1½ brick wall thickness). Explain in brief.

   Or

   (b) What are the properties and applications of cement mortar and cement concrete.

   (10 marks)

Turn over

Section II (Basics of Mechanical Engineering)

Part A

Answer all questions.

1. Draw an ideal PV diagram of a four stroke SI engine (Otto cycle).   (2 marks)

2. Write short notes on diesel power plants.   (2 marks)

3. Name the main elements in the transmission system.   (1 mark)

Part B

*Answer any **two** questions.*

4. Derive the efficiency of the Brayton cycle.   (5 marks)

5. Write short notes on carburetted and MPFI engines.   (5 marks)

6. Write a short note on 2 roll process.   (5 marks)

Part C

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

7. (a) A pump develops a head of 10 m. of water column. The discharge is 600 litres/min. Determine the motor power if the overall efficiency is 0.5 and the medium pumped is water.

Or

(b) Discuss in detail about the slider crank mechanism.   (10 marks)

8. (a) (i) Compare four stroke and two stroke engine.   (5 marks)

(ii) Compare between SI and CI engine.   (5 marks)

Or

(b) Explain in detail about the refrigeration and air conditioning with a neat sketch. (10 marks)