

**COMBINED FIRST AND SECOND SEMESTER B.TECH  
(ENGINEERING) DEGREE EXAMINATION, MAY 2010  
PTEN/EN09 106 - BASICS OF CIVIL AND MECHANICAL  
ENGINEERING  
(2009 admissions)**

Time : Three hours

Maximum: 70 marks

**Part A**

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 cements? Write about the properties and uses of the cement. (5 marks)
6. Write the types and functions of column. (5 marks)

**Part C**

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

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

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**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  $1\frac{1}{2}$  brick wall thickness). Explain in brief.

**Or**

- (b) What are the properties and applications cement mortar and cement concrete? (10 marks)

**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 of diesel power plants. (2 marks)
3. Name the main elements in a transmission system. (1 marks)

**Part B**

Answer any two questions

4. Derive the efficiency of the Brayton cycle. (5 marks)
5. Write short notes on carburetter 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 the water.

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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.

(5 marks)

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