

C 26476

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Name.....

Reg. No.....

**COMBINED FIRST AND SECOND SEMESTER B.TECH. (ENGINEERING)
DEGREE EXAMINATION, APRIL 2012**

EN 09 106—BASICS OF CIVIL AND MECHANICAL ENGINEERING

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. Name the types of stone masonry. (2 marks)
2. What are the advantages of reinforced cement concrete ? (2 marks)
3. Define transportation. (1 mark)

Part B

Answer any **two** questions.

4. Name the different types of stone masonry. Explain them in detail with a neat sketch. (5 marks)
5. Define workability of concrete. Explain briefly about slump test. (5 marks)
6. Write short notes on Raft or Mat foundation. (5 marks)

Part C

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

7. (a) Explain in detail about single Flemish and double Flemish bond. (10 marks)

Or

(b) Briefly describe the Engineering properties and applications for the following :

- | | |
|---------------|-------------|
| (i) Cement. | (ii) Brick. |
| (iii) Timber. | (10 marks) |

8. (a) Explain about the types and functions of the following structural components of buildings :
(i) Foundation. (ii) Arch and lintels. (10 marks)

Or

- (b) Define a bridge and Explain the components of a bridge with a neat sketch. (10 marks)

Turn over

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

Answer all questions.

1. Give the classification of SI engines. (2 marks)
2. State second law of thermodynamics. (2 marks)
3. Is it necessary to prime all the types of pumps. (1 mark)

Part B

Answer any two questions.

4. Derive the air-standard efficiency of diesel cycle. (5 marks)
5. Compare between the different forging operations. (5 marks)
6. Draw the layout of Gas turbine power plants. (5 marks)

Part C

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

7. (a) How does a hydroelectric power plant work ? Explain with the help of schematic diagrams. (10 marks)

Or

- (b) Explain the following with the help of necessary figures :

- (i) Die casting.
- (ii) Oxy-acetylene welding.

(10 marks)

8. (a) A Carnot refrigeration cycle absorbs heat at 256 K and rejects at 303 K. Calculate the COP of the refrigeration cycle. If the Carnot heat pump operates between the same temperature limits as the above cycle, what is COP. How many kJ/s will the heat pump delivers at 303 K if it absorb 1200 kJ/min. (10 marks)

Or

- (b) Explain in detail about the closed cycle and open cycle gas turbine.

(10 marks)