

***B. Tech. Degree I & II Semester (Combined) Examination
June 2013***

**IT/CS/EC/CE/ME/SE/EE/EI/EB/FT 1106 BASIC CIVIL AND MECHANICAL ENGINEERING
(2012 Scheme)**

(Use separate answer books for SECTION A and SECTION B)

Time : 3 Hours

Maximum Marks : 100

SECTION A: BASIC CIVIL ENGINEERING

PART A

(Answer *ALL* questions)

(4 x 5 = 20)

- I. (a) Explain the lab test for brick.
(b) Explain the term grading of aggregate.
(c) Draw the component parts of a building.
(d) Draw the plan of alternate course of English bond for the corner of a brick wall of 2 brick thick.

PART B

(2 x 15 = 30)

- II. Enumerate the market forms of steel with neat sketch.
OR
III. Describe the material classification of pile.
IV. Draw a detailed sketch of simple fink steel truss used for a span of 10 meters. Mark all the parts.

OR

- V. The following consecutive readings were taken with a dumpy level.
0.600, 1.255, 3.000, 2.820, 1.855
3.545, 2.325, 1.500, 0.900, 0.200
2.800, 3.115, 2.100, 1.900

The instrument was shifted after taking 4th, 8th and 12th readings. The first reading was taken on a B.M of R.L + 100.000m. Enter the readings in a level field book and calculate the reduced levels of all the points and apply the check.

(P.T.O)

SECTION B: BASIC MECHANICAL ENGINEERING

PART A

(Answer *ALL* questions)

(4 x 5 = 20)

- I. (a) Differentiate between path functions and point functions. Heat and work are not properties, but their difference is a property. Explain.
- (b) Compare four stroke petrol engines and diesel engines.
- (c) Define air conditioning. Differentiate between summer and winter air conditioning.
- (d) What is meant by compounding of impulse steam turbines? Enumerate various methods of compounding.

PART B

(2 x 15 = 30)

- II. (a) Derive expressions for work done, change internal energy and heat transferred during a polytropic process undergone by a perfect gas with polytropic index 'n'. (10)
- (b) Give the two statements of second Law of Thermodynamics. (5)
- OR**
- III. (a) Derive an expression for air standard efficiency of diesel cycle. (9)
- (b) In a diesel engine the stroke volume of the cylinder is 19 times the clearance volume. If cut off takes place at 5% of the stroke, determine (6)
- (i) Compression ratio
- (ii) Cut off ratio
- (iii) Air standard efficiency
- IV. (a) With a flow diagram explain the working of a simple vapour compression refrigeration system clearly explaining the duty of each component. (10)
- (b) What are the desirable properties of a refrigerant? (5)
- OR**
- V. Differentiate between
- (i) Sand casting and die casting (5)
- (ii) Arc welding and gas welding (5)
- (iii) Soldering and brazing (5)
