**SAHRDAYA COLLEGE OF ENGINEERING AND TECHNOLOGY**

**Combined First and Second semester B.Tech Degree Examination APRIL 2012**

**EN09 106 : Basics of Civil and Mechanical Engineering**

***Instructions:****a) Section 1 (Basics of Civil Engineering) and Section 2 (Basics of mechanical Engineering) are to be answered in separate answer –books. b) Assume suitable data wherever necessary*

Time: 3hours Total Marks: 70

**Section 1 : Basics of Civil Engineering**

**Part A** *(Answer all questions)*

1. What is fineness Modulus? Classify the sand on fineness modulus? (2 marks)
2. What are the functions of foundations? (2 marks)
3. What do you mean by formwork? (1 mark)

**Part B** *(Answer any two questions:2x5marks=10 marks)*

1. What are the elements of cross section of road?
2. What are the different operations in chain surveying?
3. What are the different methods of preservation of timber?

**Part C** *(Answer section(a)or section(b) of each question:2x10marks=20marks)*

7. a) What are the physical and chemical properties of cement ?

OR

b) What are the different types of trusses?

8. a) Find the area of a plot of land as recorded in a chain survey field book both by Simpson’s Rule and by Trapezoidal Method.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Chainage (m)** | 0 | 15 | 30 | 45 | 60 | 70 | 80 | 100 | 120 | 140 |
| **Offsets(m)** | 7.5 | 9.0 | 10.5 | 12.5 | 11.5 | 9.0 | 8.5 | 6.5 | 5.5 | 6.0 |

OR

b) The following consecutive readings were taken with a level and a 4 metre leveling staff on a continuously sloping ground at a common interval of 25m:

**0.585 on A , 0.930, 1.955, 2.845, 3.640, 3.940, 0.960, 1.035, 1.685, 2.530, 3.845, 0.950, 1.570, and 3.015 on B**. The elevation of A was 520.450. Find the level difference between A and B.

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

**Part A**

Answer all questions

1. Draw an ideal PV diagram of a CI engine (Diesel cycle)? (2 marks)
2. Write short note on nuclear power plant? (2 Marks)
3. Name the main elements in transmission systems? (1 Marks)

**Part B**

Answer any two questions

1. Derive the efficiency of Brayton cycle? (5 marks)
2. Write short note on thermal power plant? (5 Marks)
3. Write short note on extrusion process? (5 Marks)

**Part C**

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

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

OR

(b) Discuss about gears and gear trains? (10 Marks)

8. (a) 1. Compare between SI and CI engine? (5 Marks)

2. Explain the working of solar power plants? (5 Marks)

OR

(b) Explain the construction and working of reciprocating pumps. (10 Marks)