CE344 LAB 2 QUESTIONS

1. What is the unit weight and how can it be calculated? What are the two types of unit weight? Calculate the unit weight of the aggregate using the data given in the unit weight test.

2.

a) In concrete technology, what distinction is made between the terms specific gravity and bulk density? With the help of suitable sketches, explain the following terms and discuss their significance: absorption capacity, saturated-surface-dry condition, damp condition.

b) Determine the apparent specific gravity, dry bulk specific gravity, SSD bulk specific gravity, moisture content and the absorption capacity of coarse and fine aggregates.

3. List any three characteristics of concrete aggregate and discuss their influence on both the properties of fresh concrete and hardened concrete.

4. Define the terms grading and maximum aggregate size, as used in concrete technology. What considerations control the choice of the maximum aggregate size of aggregate in a concrete? Discuss the reason why grading limits are specified.

5. Why is the grading of aggregate important with regard to the properties of fresh concrete?

6. How can the shape of aggregate particles be relevant to the properties of hardened concrete?

7. How does the maximum size of aggregate affect the workability of concrete with a given water content?

8. How does the variation in moisture content of the aggregate affect the workability of fresh concrete and the strength of hardened concrete?

9. Using the data given for the fine aggregate:

- ☐ Draw the gradation curve,
- ☐ Comment on whether the sample is suitable according to the ASTM standard gradation curves and if the gradation curve of an aggregate sample does not fit with the standard limits, what can be done to overcome such a problem?
- ☐ Determine the fineness modulus of this aggregate sample and determine what this value indicates,
- ☐ For what purposes the fineness modulus is used?

10. Using the data given for the coarse aggregate:

- ☐ Draw the gradation curve,
- ☐ Determine Dmax.

11. Determine the amount of material finer than No.200 sieve (by weight) using the given data and determine whether it is suitable according to the standard (ASTM C117).

12. Explain the alkali-aggregate reaction briefly, what are the effects of this reaction on concrete and how may this reaction can be prevented? Draw the elongation in percent graph using the given data and determine the alkali-silica expansion in percent and also determine whether the specimen can be used according to ASTM C 227.

13. What is soundness? According to ASTM C 88, determine whether the aggregate defined in soundness test is resistant to environmental effects such as freezing and thawing.

14. According to ASTM C 131, determine whether the aggregate defined in abrasion test can be used the structures which are subjected to the abrasive forces.