

**BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI**

**HYDERABAD CAMPUS**

**First Semester 2022-23**

**CE F230 Civil Engineering Materials**

**Comprehensive Examination (Regular- Closed Book)**

**Date:30-12-2022(FN)**

**Max. Marks:0.5x80 =40**

**Duration :3 hrs.**

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➤ Draw neat sketches wherever necessary.

1. (a) Differentiate brick and stone masonry works. **(5m)**  
(b) Compare English and Flemish bond masonry work. **(5m)**
2. (a) Explain with neat sketches defects in timber. **(5m)**  
(b) Give the comparison of tar and asphalt in tabular form. **(5m)**
3. (a) State the differences between mild steel, cast iron and wrought iron. **(5m)**  
(b) Discuss the use of non-ferrous metals as building materials. **(5m)**
4. (a) Compare distempering and varnishing. **(4m)**  
(b) Describe the procedure of following: **(3x3=9m)**
  - i. Painting of a plastered surface
  - ii. Painting of new wood work
  - iii. Painting of an old iron work
5. Calculate the quantities of ingredients required to produce one cubic meter of structural concrete. The mix is to be used in proportions of one part of cement to 1.37 parts of sand to 2.77 parts of 20 mm nominal size crushed coarse aggregate by dry volumes with a water cement ratio of 0.49 (by mass). Assume the bulk densities of cement, sand and coarse aggregate to be 1500, 1700 and 1600 kg/m<sup>3</sup>, respectively. The percentage of entrained air is 2. **(7m)**
6. (a) What is alkali-silica reactivity (ASR) and how it is avoided? **(5m)**  
(b) How does the presence of sugar and oil in water affect the concrete? **(5m)**
7. Write short notes on the following: **(5x4=20m)**
  - (a) Super plasticizers
  - (b) Self-compacting concrete (SCC)
  - (c) Ceramics as building material
  - (d) Glass as building material
  - (e) Lime as building material

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