Roll No ....

ES-220 (CE) (CBCS)
B.E. III Semester
Examination, December 2017
Choice Based Credit System (CBCS)
Material Science
Time : Three Hours
Maximum Marks : 60

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Iron is basic construction material explain and write importance of steel in different form in construction work.   **rgpvonline.com**

   b) Write and discuss the name of various non ferrous metals and their applications in construction work.

   c) Define: Metallic bonding, covalent bonding

2. a) What is a polymer? How does the structure of a polymer differ from that of a metal? Explain.

   b) Explain the mechanism of creep.

   c) Write the corrosion in brief and explain its importance in civil engineering projects.

3. a) Write the various test required for good quality stone and explain any two test in detail.

   b) Write the various steps of brick manufacturing process and explain in detail drying and firing.

4. a) What is water cement ratio in concrete also explain its effect on strength of concrete.

   b) Write the process for determining the initial and final setting time of cement in lab.

5. a) Define cement mortar, its functions and their quality.

   b) Write in brief on:
      i) Testing of concrete
      ii) Bulking of sand
      iii) Lime mortar

6. a) Write in short on various properties of reinforced steel for construction purposes.

   b) Write in brief on :
      i) Defects of timber
      ii) Particle board
      iii) Use of polymers

   c) Write short note on: **rgpvonline.com**
      i) Seasoning of timber
      ii) Common Indian timber

7. a) Write various tests of bitumen quality and explain any two in detail.

   b) Write short note on:
      i) Asphalt concrete
      ii) Use of asphalt in load construction
      iii) Asphalt flooring
      iv) Grades of bitumen

8. Write short note on (any five)

   i) Nano materials   ii) Van der Waal bond

   iii) Fracture   iv) Different bond in masonry

   v) Hardened concrete   vi) Ply wood

   vii) Ceramic tiles   viii) Cement