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**[5559]-213**

**S.E. (Chemical) (First Semester) EXAMINATION, 2019**

**ENGINEERING MATERIALS**

**(2015 PATTERN)**

**Time : 2 Hours**

**Maximum Marks : 50**

**N.B. :—** (i) Neat diagrams must be drawn wherever necessary.

(ii) Use of logarithmic tables, slide rule, mollier charts, electronic pocket calculator and steam tables is allowed.

(iii) Assume suitable data, if necessary.

Q 1. a) Define the following terms with examples. [6]

i) Malleability

ii) Ductility

b) Draw stress-strain curve showing elastic and plastic limit of metal. [6]

**OR**

Q 2.a) Write the classification of Engineering Materials. [4]

b) Write short note on Durometer for testing of materials. [8]

3) a) Write the difference between destructive and non-destructive hardness test. [6]

b) What is Nanotechnology? Explain the applications of Nanomaterials in chemical Industry. [7]

P.T.O.

OR

Q4) a) Draw Iron-Iron carbide equilibrium diagram. [7]

b) Explain various phases observed in Iron-Iron carbide equilibrium diagram. [6]

Q5) Explain principle and working of Transmission Electron Microscope (TEM). [13]

OR

Q6) Explain principle and working of Scanning Tunneling microscopy (STM). [13]

Q7. Write short notes on (any three): [12]

i) Mechanical properties of ceramic

ii) Clays

iii) Cement

OR

Q8. a) Write down different applications of Glass materials. [6]

b) Discuss in detail applications of Ceramic materials. [6]