THE TEXTILE ASSOCIATION (INDIA)
A.T.A. (REVISED) PART-1 EXAMINATION-2016
PAPER-A1.1
BASIC ENGINEERING SCIENCE

Date: 23-12-2016
Marks: 100
Time: 10am to 1pm

Instructions:
1. Attempt any THREE questions from each section, out of which Q.1 and Q.5 is compulsory
2. Answer each next main question on new page
3. Figure to the right indicate full marks
4. Illustrate your answer with sketches and flow chart wherever necessary
5. Use non-programmable electronic pocket calculator permissible
6. Mobile and any other communication devices are not allowed in exam hall
7. Assume suitable data wherever necessary

APPLIED PHYSICS
SECTION-I
(Use separate answer book)

Q.1. Attempt any TEN of the following. (20)
   a. What is unit? Give the different systems of unit.
   b. State Hook's law.
   c. The change in direction of light when it enters from one medium to another medium is..............
   d. Give the types of lens.
   e. The angle of contact of mercury is ..........
   f. Give some characteristics of X-rays.
   g. Give the dimension of momentum.
   h. Enlist the fundamental units.
   i. What do you mean by Reynolds no.?
   j. What is angle of prism?
   k. Define photoelectric effect.
   l. Define strain and give its types.
   m. Define modulus of rigidity.

Q.2. a. Obtain an expression for rise of liquid in a capillary tube. (05)
b. Explain in brief moisture meter. (05)
c. What is angle of contact? Explain. (06)

Q.3. a. Explain the concept of polarization and diffraction. (10)
b. Give the application of X-rays. (03)
c. Give the dimensions of –velocity, acceleration and pressure. (03)

Q.4. a. Explain in brief three elastic constants. (05)
b. Write a note on hygrometer. (05)
c. Explain in detail viscosity. (06)
APPLIED CHEMISTRY

SECTION-2

(Use separate answer book)

Q. 5) Answer any five  
   i) What are Proton, Electron and Neutron?  
   ii) What is soft and hard water? Which are the impurities those make soft water as hard water?  
   iii) Explain aliphatic and aromatic compounds with example.  
   iv) Define acids and bases on the basis of Lawry and Bronsted theory.  
   v) What are halogen derivatives? How are they classified?  
   vi) Write electronic configuration of Na and Al.

Q. 6) Write short note on any three  
  1) Isotopes and Isobars  
  2) Importance of Inorganic Chemical in Textile Industry  
  3) Disadvantages of Hard water  
  4) Assumption of Bohr's Atomic Model

Q. 7) a) What are oxides? Explain their types with example  
       b) Define: Atomic Number, Mass number, Organic Compound  
       c) What are types of hardness of water and how it measure

Q. 8) a) Give IUPAC name of  
     a) CH₃ – CH₂ – CH₃  b) CH₃ – CH₂ – COOH  
     c) CH₃ – CH =O  d) CH₃ – CH₃  e) CH₂ = CH₂

     b) What is Normality? Explain how will you prepare 1 N solution of NaOH?  
     c) Explain Hard and soft water. What are impurities present in natural water?