THE TEXTILE ASSOCIATION (INDIA)
A.T.A. (REVISED) PART-I EXAMINATION – 2013
PAPER – A1.1
BASIC ENGINEERING SCIENCES

Date: 23.12.2013  MARKS : A+B=50+50=100  Time: 10 am to 1 pm

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 of 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

A-APPLIED PHYSICS- MAX MARKS 50
(Use separate answer book)

Q.1. Attempt any TEN of the following: (Compulsory)
   a. The unit of luminous intensity is
      (i) candela (ii) watt (iii) lumen (iv) ampere
   b. The dimensional formula for angular velocity
      (i) M⁰ L² T⁻¹ (ii) M⁻¹ L⁰ T¹ (iii) M¹ L⁻¹ T⁻¹ (iv) M¹ L¹ T⁰
   c. Define Stress and strain with SI units.
   d. Define Viscosity and Surface tension.
   e. Give some uses of X-rays.
   f. Define Vapour Pressure and Absolute humidity.
   g. Mention the four types of Lenses.
   h. Define photoelectric effect.
   i. Define modules of rigidity.
   j. Define Interference and Diffraction of light.
   k. Define Refraction of light.
   l. The Hygrometer is used to measure ............
   m. Define Polarization of light.

Q.2. a. State and explain Hook’s law. Define Bulk modules.
   b. Derive an expression for rise of liquid in a capillary tube.
   c. What is Reynold’s number? What is its significance?

Q.3. a. Define the angle of contact of a liquid with a solid surface.
    Why does it vary for different liquids?
   b. Explain coefficient of Viscosity. Describe an accurate method to determine the
      coefficient of Viscosity of a liquid.
   c. Explain in brief moisture meter.

Q.4. a. Explain with neat figure, the construction and working of simple and
    compound microscope.
   b. Mention the types of diffraction of light. What are X-rays?
    How they are produced? Discuss their properties.

Contd........
B-APPLIED CHEMISTRY- MAX MARKS 50
(Use separate answer book)

Q. 5. Answer any five (Compulsory) (20)
i. What is Normality? How will you prepare 1 N solution of HCl?
ii. What are assumptions of Bohrs atomic model?
iii. Explain structure of atom.
iv. Give distinguish test between aldehyde and ketone?
v. Write electronic configuration of C and Na.

Q. 6. Explain properties and uses of following in textile industry. (15)
i. Hydrogen peroxide
ii. Acetic acid
iii. Sodium bicarbonate
iv. Bleaching powder
v. Acid buffer

Q. 7. a. What are disadvantages of hard water in textile Industry? What are types of hardness of water and how it measure? (05)
b. Write physical properties of alcohol and ester (05)
c. Write structure of i. 1, 2-Dimethyl-Butane ii. Benzoic Acid (05)

Q. 8. a. Give IUPAC name of (05)
i. CH₃ – CH₂ - CH₂ – OH
ii. CH₃ – CH₂ – CO-CH₃
b. Explain Arrhenius theory of ionization. (05)
c. What are oxides? And explain use of Hydrogen peroxide, caustic soda and sodium sulphate in textile process house. (05)