THE TEXTILE ASSOCIATION (INDIA)
A.T.A Part- I EXAMINATION-2018
PAPER –A 1.1
BASIC ENGINEERING SCIENCE
PART-1: BASIC ENGINEERING PHYSICS

Date: 22.12.2018
Marks: 50
Time: 10.00 am to 1.00 pm

Instructions: (Use separate answer book for Part 1 and Part2)
1. Attempt THREE questions out of which Q1 is Compulsory
2. Answer each next question on new page
3. Figures to the right indicate full marks
4. Illustrate your answers with sketches and flow chart wherever necessary
5. Use of nonprogrammable electronic pocket calculator permissible
6. Mobile and any other communication devices are not allowed in the exam hall
7. Assume suitable data wherever necessary

Q1 Attempt any TEN of the following:

a Mention any four base quantities and their corresponding units used in the international system of units 2
b Mention three different types of units of measurement? 2
c Define Hooke’s Law 2
d Define bulk modulus 2
e The hygrometer is used to measure ------------- 2
f Mention the formula for Young’s Modulus of elasticity 2
g Define surface tension 2
h Mention the units of surface tension measurement 2
i Define relative humidity 2
j Mention the standard atmosphere or testing atmosphere in textile testing 2
k Mention the alternative term used for dry and wet bulb thermometer or hygrometer 2
l Define refraction of light 2

Q2 A Define angle of contact of a liquid with solid surface 5
B Explain in brief hair hygrometer and its usage. 5

C Describe an accurate method to determine the coefficient of viscosity of a liquid. 5

Q3 A Define photoelectric effect and mention its characteristics 5

B Define viscosity and its application 5

C Derive an expression for the rise of liquid in a capillary tube 5

Q4 A What is lens? Define the main two types of lenses and illustrate them with neat diagrams. 7

B Explain and write respective formulae for terms of stress, strain, elasticity or elastic recovery and yield point. 8

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PAPER-A1.1
BASIC ENGINEERING SCIENCE
PART 2: BASIC ENGINEERING CHEMISTRY

Date: 22.12.2018  MARKS: 50  TIME: 10 am to 1 pm

Instructions: (Use Separate Answer Book for Part 1 and Part 2)
1. Attempt six questions, out of which Q.1 and Q.5 are 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

Q5) Answer any five:
1. Define isotopes and isobars. Give examples of each.
2. Give two chemical properties of caustic soda and baking soda.
3. Enlist the problems associated with the use of hard water.
4. Give example of homologous series of alkanes.
5. Give uses of any two aldehydes and ketones in textile industry.
6. Define aromatic compounds. Give examples of aromatic compounds used in textile industry.

Q6) Write short note on any three:
1. Orbits and orbitals.
2. Types of oxides with two uses of each.

Q7) a. Explain the estimation of hard water by EDTA method.
   b. Give the electronic configuration:- Na, Al, Cl, Ar, Ca, K.
   c) Explain the modern concept of acid and base.

Q8) a. Which is the functional group present in alcohols and phenols. Give difference between alcohols and phenols.
   b. Give chemical name and molecular of sodium sulphate. Give its two chemical properties.
   c. What are alkenes? Give any two examples. Give its uses.