THE TEXTILE ASSOCIATION (INDIA)
G.M.T.A. (REVISED) EXAMINATION – 2012
SECTION-A PAPER-I (A-1)
ENGINEERING PHYSICS

Date: 22.12.2012
Marks: 100
Time: 10 am to 1 pm

Instructions:
1. Attempt six questions out of which Q.1 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.

Q.1. a. Attempt any TEN of the following. (20)
1. Derive Hook's law.
2. Give applications of viscosity in textile.
3. What is angle of contact?
4. What do you mean by echo?
5. Give the two factors affecting architectural acoustics.
6. Which are the three types of magnetic materials.
7. Give some characteristics of X-rays.
8. Define photoelectric effect.
9. State examples of soft and hard magnetic materials.
10. Give examples of resonance.
11. State two applications of surface tension in textile.
12. Define piezoelectric effect.
13. State the Stokes law.

Q.2. a. Derive Poiseuille's equation for flow of liquid through a tube (05)
b. On the basis of molecular theory explain surface tension. (05)
c. Explain the formation of Newton's ring using interference in thin film by reflection. (06)

Q.3. a. Explain in brief hysteresis curve. (05)
b. Using Bragg's law explain concept of X-ray diffraction. (05)
c. Explain in short quartz and half wave plate. (06)

Q.4. a. Give the principle, construction and working of scanning and transmission electron microscope. OR Obtain an expression for rise of liquid in capillary tube. (10)

b. Give the use of microwave in textile. (03)
c. Define Fresnel and Fraunhofer diffraction. (03)

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Q.5. a. Explain the Rayleigh’s criterion for resolving power.
   (05)
b. Define stress, strain and give their types.
   (05)
c. Give the crystal structure and packing fraction of – BCC and FCC crystal.
   (06)

Q.6. a. Derive Einstein’s equation of photoelectric effect.
   (05)
b. Which are the basic requirements of acoustically good hall.
   (05)
c. Write a short note on intensity of sound.
   (06)

Q.7. a. How the photosensors are used in the textile field.
   (05)
b. Explain variation of viscosity with temperature.
   (05)
c. Define noise and explain the control of noise in brief.
   (06)

Q.8. a. Discuss the shape of meniscus in a capillary.
   (05)
b. Give the applications of ultrasonic in textiles.
   (05)
c. Write a short note on total internal reflection.
   (06)