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B.Sc. (Hons) AME (Semester – 4th)

APPLIED PHYSICS

Subject Code: BAME3-427

Paper ID: [20131117]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

Q1. Attempt the following:

- a. Why Newton's second law is real law?
- b. What do you understand by limiting friction
- c. What is the simple bending stress formula?
- d. How can we conserve energy?
- e. Give some examples of angular momentum?
- f. What is the principle of barometer?
- g. Is there buoyancy force in air?
- h. What is the basic principle of SHM?
- i. Is boiling water convection? Comment
- j. What is called calorimeter?

Section – B

(5 marks each)

- Q2. Discuss five Engineering applications based on Newton's laws of motion
- Q3. Draw stress strain curve and discuss its utility by taking suitable example
- Q4. Calculate the angular momentum of disc whose rotational energy is 12 kJ and moment of inertia about axis of rotation is 10^{-3}kg-m^2 .
- Q5. Differentiate between streamline and turbulent flow by citing appropriate example(s)
- Q6. Give different scales of temperature and establish relation among them

Section – C

(10 marks each)

Q7. Write the followings:

- a. What do you understand by strain softening and strain hardening? Explain using appropriate example
 - b. Discuss different types of friction and suggest some methods to reduce friction.
- Q8. Obtain Differential equation for damped harmonic oscillator and discuss the conditions for under damped, critically damped and overdamped case by using appropriate example(s) and diagram(s).
 - Q9. What do you understand by coefficient of thermal conductivity? Suggest a method (with proper explanation) to estimate the thermal conductivity of a bad conductor.