

ARYA VIDYA MANDIR GROUP OF SCHOOLS

STD: X
Sci.1(Phy)
10.01.2014

PRELIMINARY REVIEW – JANUARY 2014.
SCIENCE Paper 1 (Physics)

Marks: 80
Time: 2 Hrs.

Answers to this paper must be written on the paper provided separately.

*You will **not** be allowed to write during the first 15 minutes.*

This time is to be spent in reading the Question Paper.

The time given at the head of this Paper is the time allowed for writing the answers

***Section I** is compulsory. Attempt **any four** questions from **Section II**.*

The intended marks for questions or parts of questions are given in brackets []

This paper consists of 5 printed pages.

SECTION I (40 marks)

Attempt all questions from this section.

Question 1

- a) If there is no gain in mechanical advantage of a single pulley, why is it then used? Also state why is the efficiency of a single movable pulley not 100%? [2]
- b) What is the S.I. unit of power? How is it related to horsepower? [2]
- c) Name the chief source of energy transformations in the following: [2]
- A dynamo.
 - A microphone.
- d) Why are passengers made to occupy the lower deck of a double – decker bus first, before occupying the upper deck? [2]
- e) A crowbar of length 1.2 m has its fulcrum at a distance of 0.2 m from the load. Calculate the mechanical advantage of the crowbar. [2]

Question 2

- a) i. Name the technique used to estimate the age of very old trees, wood and other specimens. [2]
- ii. Name the isotope that forms the basis of this technique.
- b) State two precautions that must be taken while handling a radioactive source. [2]
- c) A radar is able to detect the reflected waves from an enemy airplane, after a time interval of 0.02 milliseconds. If the velocity of the waves is $3 \times 10^8 \text{ ms}^{-1}$, calculate the distance of the plane from the radar [2]
- d) i. What is meant by 'dispersion of light'? [2]
- ii. In the atmosphere, which colour of light gets scattered the least?
- e) Draw a neat and labelled diagram of a single movable pulley. [2]

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Question 3

- a) i. What is the purpose of a fuse in an electric circuit? [2]
 ii. What material is used to make a fuse?
- b) i. Write the frequency range of: [2]
 ii. infrasonic sound.
 iii. audible sound
- c) An electric heater has a rating 220 V, 1000W. What does it mean? [2]
- d) Can an electric bell work using an alternating current source? Explain why. [2]
- e) Give two reasons why a tungsten filament is used in a bulb. [2]

Question 4

- a) i. Which lens acts as a converging lens? [2]
 ii. How is it possible to burn a piece of paper using the lens named by you in (i) in daylight, without using matches or any direct flame?
- b) Give two differences between heat capacity and specific heat capacity of a body. [2]
- c) Give two ways in which the speed of rotation of a d.c. motor can be increased. [2]
- d) Which extinguishes a fire more quickly, hot water or cold water? Explain. [2]
- e) i. Why are dark rooms provided with infra – red lamps for photography? [2]
 ii. Why is a rock salt prism used instead of a glass prism to obtain infra – red spectrum?

SECTION II (40 marks)

Attempt any four questions from this section.

Question 5

- a) i. Which physical quantity does the electron volt measure? [3]
 ii. How is it related to the S.I. unit of the quantity stated by you in (i).
 iii. What should be the angle between force and displacement to get the maximum work?
- b) i. Define moment of force. [3]
 ii. The moment of force of 12 N about a fixed point 'O' is 6 Nm. Calculate the distance of the point 'O' from the line of action of the force.
- c) i. A force acts upon a body. State two conditions under which the work done could be zero. [4]
 ii. A ball of mass 200 g falls from a height of 5 m. What will be its kinetic energy when it just reaches the ground? ($g = 9.8 \text{ ms}^{-2}$)

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