St. Mary's Higher Secondary School, Vickramasingapuram

Physics Test

X - SCIENCE

Time : 1.30 Hours **Total Marks : 50**

I. Choose the correct answer : **8 x 1 = 8**

1. One kilogram force equals to
   a) 9.8 dyne b) 9.8×10^4 N c) 98×10^4 dyne d) 980 dyne
2. The unit of 'g' is ms^{-2}. It can be also expressed as
   a) cms^{-1} b) Nkg^{-1} c) Nm^2kg^{-1} d) cm^2s^{-2}
3. Power of a lens is -4D, then its focal length is
   a) 4m b) -40m c) -0.25 m d) -2.5m
4. The value of universal gas constant
   a.) 3.81 $Jmol^{-1}K^{-1}$ b) 8.03 $Jmol^{-1}K^{-1}$ c) 1.38 $Jmol^{-1}K^{-1}$ d) 8.31 $Jmol^{-1}K^{-1}$
5. Kilowatt hour is the unit of
   a) resistivity b) conductivity c) electrical energy d) electrical power
6. Velocity of sound in the atmosphere of a planet is 500 ms-1. The minimum distance between the sources of sound and the obstacle to hear the echo, should be
   a) 17 m b) 20 m c) 25 m d) 50 m
7. Kamini reactor is located at ……..
   a) Kalpakkam b) Koodankulam c) Mumbai d) Rajasthan
8. …….. Aprons are used to protect us from gamma radiations
   a) Lead oxide b) Iron c) Lead d) Aluminium

II. Answer any six questions (Q.no.16 is compulsary) **6 x 2 = 12**

9. Differentiate mass and weight.
10. How does an astronaut float in a space shuttle ?
11. Differentiate convex lens and concave lens.
12. Define on calorie.
13. List the merits of LED bulb.
14. State two conditions necessary for hearing an echo.
15. Define one roentgen.
16. At what temperature will the velocity of sound in air be double the velocity of sound in air at 0^0C.

III. Answer any four questions (Q.No.22 is compulsary) **4 x 4 = 16**

17. Describe rocket propulsions.
18. List any five properties of light.
19. Differentiate the eye defects : Myopia and Hypermetropia.
20. Derive the ideal gas equation.
21. Define electric potential and potential difference.
22. i) Calculate the current and the resistance a 100 W, 200 V electric bulb in an electric circuit.
    ii) Define critical mass.

IV. Give the answer in detail : **2 x 7 = 14**

23. a) i) State and prove the law of conservation of linear momentum. (5)

ii) State Snell's law. (2)

(or)

b) Explain the construction and working of a ' Compound Microscope'

24. a) i) State Joule's law of heating. (2)

b) An alloy of nickel and chromium is used as the heating element. Why.? (1 ½)

c) Why does sound travel faster on a rainy day than on a dry day ? (1 ½)

(or)

b) What is a nuclear reactor ? Explain its essential parts with their functions.