

PHYSICS**2010**

Time: 30 min

Max.Marks.15

**SECTION "A" (COMPULSORY)
(MULTIPLE CHOICE QUESTIONS)**

Instruction: This paper of Physics (Theory) (Class x-New Model) consists of two separate question papers, the first paper (Section "A") consists of MCQ's. This paper of 30 minutes duration will be given to you first of all and collected back as soon the time is over. Then you will be given the next paper of 2 ½ Hours consisting of short-Answer Questions (Section "B") and detailed-Answer Questions (Section "C")

General Instruction:

Section A: This section consists of 17 Multiple Choice Questions (MCQ's) and all are to be answered.

Section B: This section consists of 21 short answer questions out of which 14 are to be answered.

Section C: This section consists of 3 detailed answer questions out of which 2 questions are to be answered.

SECTION 'A' MULTIPLE CHOICE QUESTION (MCQ's)**1. Choose the correct answer for each from the given options: (17)****i. The Laws of Reflection were first introduced by:**

- a) Yaqoob Al-Kindi
- b) Ibnu-ul-Haitham
- c) Moosa Khawarzmi
- d) Al beruni

ii. In S.I System the unit of mass is:

- a) Gram
- b) Pound
- c) Slug
- d) Kg

iii. A 25 N force actos along with X-axis, its Y component is:

- a) 0 N
- b) 25 N
- c) -25 N
- d) None of the above

iv. The accelaration of a ball thrown vertically upward will, in S.I system be:

- a) 98 m/s²
- b) 980 cm/s²
- c) -9.8 m/s²
- d) 32 ft/s²

- v. **A body will be in a state of stable equilibrium if its centre of gravity lies:**
- At the point of suspension
 - below the point of suspension
 - above the point of suspension
 - none of the above three
- vi. **The mass of earth is:**
- 6×10^{24} slugs
 - 6×10^{24} grams
 - 6×10^{24} N
 - 6×10^{24} Kg
- vii. **The S.I Unit of work is:**
- Watt
 - Newton
 - N-m
 - dyne
- viii. **For an ideal machine:**
- The output is always greater than the input
 - The output is always is equla to the input
 - The output is always is less than the input
 - The output is always seldom equal to the input
- ix. **The pressure of liquid depends:**
- Only upon its density
 - Only upon its height above the point inside the liquid
 - Upon its density as well as height above the point inside the liquid
 - Neither upon its density nor height.
- x. **The maximum denisty of pure water is at**
- 0°C
 - 100°C
 - 4°C
 - -4°C
- xi. **Sound waves can not travel through:**
- Water
 - A solid
 - Vacuum
 - Gases
- xii. **A virtual, erect and diminshed image is always obtained from a:**
- Plane mirror
 - Concave mirror

- c) Convex mirror
d) Parabolic mirror
- xiii. The speed of light in vacuum is:**
a) 3×10^5 Km/hr
b) 3×10^8 m/min
c) 3×10^8 km/s
d) 3×10^8 m/s
- xiv. If $I = 1.5$ amps, $R = 10$ ohms, then V is :**
a) 15 volts
b) 1.5 volts
c) 150 volts
d) 10 volts
- xv. Shunt converts a galvanometer into:**
a) Transistor
b) Capacitor
c) Resistor
d) Semi – conductor Diode
- xvi. Gamma rays are:**
a) Fast moving neutral particles
b) Electromagnetic radiations
c) Fast moving positively charged particles
d) Fast moving negatively charged particles

PHYSICS

2010

Time: 2 ½ Hours

Max. Marks: 68

Instruction: This paper consisting of Short-Answer Questions (Section "B") and Detailed-Answer Questions (Section "C") will be given after 30 minutes and its total duration will be 2 ½ hours only.

SECTION "B"

(SHORT-ANSWER QUESTIONS)

Note: Answer any 14 questions from this section. No answer should exceed 3 to 5 sentences: (42)

2. Define three branches of physics.
3. Two forces of 3N and 4N are acting on a body. If the angle between them is 90° , find the magnitude of the resultant vector.
4. If F_x , F_y are the horizontal and vertical components of a vector F , write down the formulae for the magnitude and direction of F . Show F_x , F_y and F by a diagram.

5. A car moving with a uniform acceleration attains a speed of 36km/hr in 2 minutes; find the acceleration of the car.
6. Write down three methods of reducing friction.
7. Define Linear Momentum. Write down its formula and S.I. unit.
8. Define Equilibrium. Write down conditions of equilibrium and relate the formulae.
9. A stone of 200 gm mass tied to one end of a string of length of 50 cm is whirled from the other end in a circle with the constant speed of 2 m/s; find the tension in the string.
10. The length of the handle of a Screw Jack is 42cm and its pitch is 0.001m; find its Mechanical Advantage.
11. State Pascal's principle. Describe any one of its applications.
12. 117.6 J heat is required to raise the temperature of 10gm of silver by 50°C, find the specific heat of silver.
13. Define the following:
 - i) Echo
 - ii) Ultrasonic wave
 - iii) Beats
14. Define the following:
 - i) Irregular reflection
 - ii) Radius of Curvature
 - iii) Magnification of Concave Mirror
15. A convex lens forms a virtual image of an object placed 5cm away from the optical centre at a distance of 10cm. Determine the focal length of the convex-lens.
16. Define:
 - i) Photon
 - ii) Dispersion of light
 - iii) Total internal reflection
17. What is the Wave Theory of Light? Write down two phenomena which support this theory.
18. A force of 50N acts on a body. If the moment arm is 0.5m, find the value of the Torque.
19. A 100-watt bulb operates in a 220v circuit; find the current through the bulb.
20. What is an Electromagnet? Illustrate it with a labeled diagram and write down its two uses.
21. Define Reflection. Describe the working of a semi-conductor diode as rectifier.
22. Write down 3 precautions to minimize radiation hazards.

SECTION 'C'
(DETAILED - ANSWER QUESTIONS)

Note: Attempt any 2 questions from this section.

(26)

23. (i) Derive the equation $2aS = v^2 - v_0^2$
- (ii) Write down two characteristic properties of Simple Harmonic Motion.

- (iii) The frequency of vibration of a wire is 200 hertz; find its time period.
- (iv) Write down four similarities between electrostatic induction and magnetism.
- 24.** (i) Define evaporation. Write down any four factors on which the rate of evaporation depends.
- (ii) Define Kinetic energy and Potential energy and write down 2 points of difference between them.
- (iii) Draw ray diagrams only to show the nature, position and size of the images formed by a concave mirror when the object is placed:
- At the centre of curvature of the mirror.
 - Between the centre of curvature and the principal focus.
- 25.** (i) What is natural radioactivity? Write down four properties of Alpha rays.
- (ii) Define the following:
- Refractive Index
 - Critical Angle
 - Power of Lens
 - Magnifying Glass
- (iii) What is an electric capacitor? Write down three factors upon which its capacity depends.