PHYSICS 2015

Time: 30 minutes Max. Marks: 17

SECTION "A" (COMPULSORY)(M.C.Q.)

1. Choose the correct answer for each from the given options: (17)

(i) The only Noble Prize holder scientist from Pakistan is:
* Dr. Abdus Salam * Dr. Abdul Qadeer Khan
* Dr. Atta ur Rehman * Dr. Saleem Uz Zaman

(ii) The least count of screw guage is:
* 0.001 cm * 0.1 cm * 0.01 cm * 0.0001 cm

(iii) The SI unit of force is:
* Metre * ms^{-1} * kg * Newton

(iv) A vector quantity is:
* Density * Velocity * Temperature * Distance

(v) The turning effect of a force about an axis is:
* Force * Rotation * Torque * Momentum

(vi) In case of satellites the necessary acceleration is provided by:
* Frictional force * Gravitation force
* Coulomb's force * Magnetic force

(vii) 1 hp =
* 467 watts * 647 watts * 746 watts * 764 watts

(viii) For an Ideal machine efficiency is:
* 1 * 2 * 3 * 4

(ix) Elasticity of a substance depends on its:
* Temperature * size * mass * nature

(x) The temperature of a substance changes from -20^0C to 20^0C. What is the temperature change in Kelvin's scale?
* 0 K * 20 K * 40 K * 293 K

(xi) The waves produced by a vibration body in air are:
* Longitudinal * Transverse
* Electromagnetic * Magnetic

(xii) If the Inner surface of a spherical mirror is reflecting it is called:
* Plane mirror * Convex mirror
* Concave mirror * Ordinary mirror

(xiii) Refractive index of common salt (Sodium Chloride) is:
* 1.33 * 1.52 * 1.53 * 1.54

(xiv) When a ray of light enters obliquely from a rarer into a denser medium the angle of refraction becomes.... Angle of incidence:
* Greater than * Smaller than
* Equal to * Unrelated to

(xv) To disperse white light into different colours we use:
* Convex lens * Prism
* Concave mirror * Convex mirror

(xvi) One mega ohm resistance is equal to:
* 10^8 ohm * 10^6 ohm * 10^{-6} ohm * 10^{-9} ohm

(xvii) The half life of Radon $_{86}Rn^{222}$ is:
* 3.83 days * 38.3 days * 3.38 days * 8.33 days

PHYSICS 2015

Time: 2 ½ Hours Max. Marks: 68

SECTION "B" (SHORT-ANSWER QUESTIONS)

Note: Answer 14 questions from this section.

2. Name and define branches of physics about solid material, nucleus of atoms and astronomical bodies.
3. Write the approximate value of mass of our galaxy, earth and moon.
4. A car is moving with uniform acceleration and attains the velocity of 108 kmh^{-1} in 5 minutes. Find acceleration of the car.
5. Write three point of comparison between weight & mass
6. With the help of graphical method add two vectors $\overline{A}$ and $\overline{B}$.
7. Prove that Moment of the couple is equal to the product of one of the forces and arm of couple.
8. With the help of two bodies mathematically express the law of universal gravitation in three steps.
9. A string 2m long is used to whirl a 100gm in horizontal circle at a speed of $2ms^{-1}$ find tension in string.
10. Describe inter conversion of kinetic & potential energy.
11. Draw the figure of wheel and axle and calculate its mechanical advantage.
12. Explain Hooky's Law applied to Helical spring.
13. A steel rod has a length of 10m at a temperature of 25^0C calculate the increase in length if it is heated to 35^0C.
    $\propto$ (for steel = $1.1 \times 10^{-5}\ k^{-1}$)
14. Who invented pin hole camera? Show the image formed by it through diagram.
15. Find the time period of a simple pendulum whose length is 100cm.
16. With the help of Snell's law prove that there is no change in direction of refracted ray if the incident ray is perpendicular on the surface separating the two media.
17. An object is placed 10 cm from a convex lens of focal length 15cm. Find the position and magnification of the image.
18. Compare between Newton's corpuscular theory and Huygen's wave theory of light.
19. A parallel circuit contains 80 (ohm) heater and 20 (ohm) element. What will be the current passing through the circuit if it is driven by a voltage source of 80 volts? Also find the equivalent resistance.
20. Write the name of three elements by which magnets are artificially made by their alloy and also write three modern uses of magnet.
21. What is transistor? Draw the symbolic diagram of two types of transistors.
22. With the help of Einstein equation find the mass transformed to energy when the speed of light is 3×10^8 ms^{-1} and the energy released during nuclear reaction is 9×10^{16} J.

SECTION 'C' (DETAILED – ANSWER QUESTIONS)

NOTE: Attempt 2 questions from this section. (26)

23.(a) What is Natural Radio activity? Name three element which emit powerful radiations and write the range of velocity of particles of negative rays emitted during radio activity.
(b) Draw the diagram of electric bell and describe its working.
(c) Describe and derive general gas equation.

24.(a) Define simple harmonic motion and describe its five important terms.
(b) Describe Electrostatic induction in four steps with the use of two metal spheres.
(c) Describe four examples showing surface tension.

25.(a) Derive second equation of motion in five steps.
(b) With the help of diagram show and explain short sightedness and long sightedness and its correction.
(c) Describe sign convention for real and virtual image.