PHYSICS 2019

Time: 2 ½ Hours 10th Class Karachi Board **Max. Marks: 66**

SECTION "B" (SHORT-ANSWER QUESTIONS)(40)

PART 'A' NOTE: Answer 5 questions from this part.

2. Write down two contributions of each scientist:
   (i) Yaqoob Al-Kindi (ii) Abu-Al-Haitham
3. What are transistors? Write its two types with the help of circuit diagram.
4. Define: (i) Viscosity (ii) Surface tension
   (iii) Centre of gravity (iv) Couple
5. Stare Newton's Second Law of Motion and derive F = ma
6. Describe briefly any four electromagnetic waves with their ranges.
7. State Joule's law and derive equation $W = I^2 Rt$
8. Write down two differences between:
   (i) N-type substances and P-type substances
   (ii) Fundamental quantities and derived quantities.
9. Give scientific reason:
   (i) Why is sliding friction greater than rolling friction
   (ii) Why is an ammeter, low resistance connected in parallel with the coil of a galvanometer?

PART 'B' NOTE: Answer 5 questions from this part

10. How much energy will be released when 50 gm of mass is completely transformed to energy?
11. When a sound wave of frequency 200 Hertz and wave length 800 cm passes through a medium calculate the velocity of the wave in the medium.
12. Calculate the orbital velocity of artificial satellite required moving around the earth if radius of earth is 6×10^6 m and the value of 'g' is $10 m/s^2$.
13. A force is acting at an angle 60° with x-axis. If the x-component of the force in 50 Newton. Find resultant force and y-component of the force. ($\sin 60^\circ = 0.866$, $\cos 60^\circ = 0.5$)
14. Find the amount of heat required to raise the temperature of 100 gm of water from 10°C to 60°C. (Sp. Heat of water = 4200 J/Kg°C)
15. A ball is dropped from a tower it reaches the ground in 10 seconds. Calculate the height of the tower and the velocity with which it hits the ground?
16. The focal length of a Concave mirror is 15cm, where should an object be placed so as to get its real image magnified thrice (three)?
17. An electronic heater has a resistance of 20 Ohm, Works at a potential difference of 220 volts. Find the current passing through the heater and the power.

SECTION 'C' (DETAILED ANSWER QUESTIONS)

Note: Answer any two questions from this Section.

18.(a) Define Boyle's and Charle's Law and derive the general gas equation. PV = nRT

(b) Name two main defects of Human Eye. Describe with the help of ray diagrams show the defects and their correction.

19.(a) What are simple electric motors? Write down its construction and working with diagram.

(b) What is wheel and axle? With the help of a labeled diagram calculate its mechanical advantage.

20.(a) Define Potential and Kinetic Energy, also derive their equation: P.E. = MGH and K.E. = $\frac{1}{2} mv^2$

(b) Define Simple Harmonic motion and prove that the motion of a body attached to the end of spring execute simple harmonic motion.