Note: This is Model Paper for guidance of students & teachers.

<table>
<thead>
<tr>
<th>(D)</th>
<th>(C)</th>
<th>(B)</th>
<th>(A)</th>
<th>QUESTIONS</th>
<th>Q.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inertia</td>
<td>Force of gravity</td>
<td>Tension in the string</td>
<td>Air resistance</td>
<td>In S.H.M of simple pendulum restoring force is provided by</td>
<td>(i)</td>
</tr>
<tr>
<td>Frequency and speed</td>
<td>Distance and speed</td>
<td>Time period and frequency</td>
<td>Speed and frequency</td>
<td>Wavelength $\lambda$ of waves can also be defined as ratio of</td>
<td>(ii)</td>
</tr>
<tr>
<td>$\log \frac{I}{I_0}$ (dB)</td>
<td>$10 \log \frac{I}{I_0}$ (dB)</td>
<td>$10 \log \frac{f}{f_0}$ (dB)</td>
<td>$10 \log \frac{f}{f_0}$ (dB)</td>
<td>Sound level in dB is given by</td>
<td>(iii)</td>
</tr>
<tr>
<td>$f$</td>
<td>$2f$</td>
<td>$\frac{1}{2}f$</td>
<td>$\frac{1}{4}f$</td>
<td>The distance between centre of curvature and pole of spherical mirror is equal to</td>
<td>(iv)</td>
</tr>
<tr>
<td>Lose identity</td>
<td>Gain potential</td>
<td>Gain power</td>
<td>Lose energy</td>
<td>In electric circuit when electrons move from low to high potential they</td>
<td>(v)</td>
</tr>
<tr>
<td>4 Volt</td>
<td>2 Volt</td>
<td>8 Volt</td>
<td>1 Volt</td>
<td>If 4 Joul of work is done on a 2 coulomb charge against the direction of electric field, the value of electric potential is</td>
<td>(vi)</td>
</tr>
<tr>
<td>Qt</td>
<td>QC</td>
<td>QV</td>
<td>QR</td>
<td>Electrical energy is given by</td>
<td>(vii)</td>
</tr>
<tr>
<td>Voltage</td>
<td>Power</td>
<td>Energy</td>
<td>Charge</td>
<td>Transformer is used to change the value of</td>
<td>(viii)</td>
</tr>
<tr>
<td>Negative</td>
<td>Neutral</td>
<td>Zero</td>
<td>Positive</td>
<td>In C.R.O the potential of Grid is</td>
<td>(ix)</td>
</tr>
<tr>
<td>1MB</td>
<td>1GB</td>
<td>1TB</td>
<td>1PB</td>
<td>1024 kilobytes are equal to</td>
<td>(x)</td>
</tr>
<tr>
<td>1820-1920</td>
<td>1620-1720</td>
<td>1420-1520</td>
<td>1220-1320</td>
<td>Half life of radium-226 is</td>
<td>(xi)</td>
</tr>
<tr>
<td>17 Hectobyte</td>
<td>17 Megabyte</td>
<td>17 Giga byte</td>
<td>17 Kilobyte</td>
<td>The storage power of DVD is</td>
<td>(xii)</td>
</tr>
</tbody>
</table>
2. Attempt any Five parts from the followings:- \((5\times2=10)\)

(i) Distinguish between longitudinal and transverse waves with a suitable example.

(ii) Why must the volume of a stereo in a room with wall-to-wall carpet be tuned higher than in a room with a wooden floor?

(iii) Define audible sound. Also describe its frequency range.

(iv) If at Anarkali Bazar, the sound level is 80 dB, what will be the intensity level of sound there?

(v) What is critical angle? Write the relationship between the critical angle and the refractive index of a material.

(vi) Why is the driver's side mirror in many cars convex rather than plane or concave?

(vii) An object 4 cm high is placed at a distance of 12 cm from a convex lens of focal length 8 cm. Calculate the position of the image.

(viii) How nature of charges are detected by using electroscope?

3. Attempt any Six parts from the followings:- \((6\times2=12)\)

(i) Write any two properties of electric field lines.

(ii) A current of 3 mA is flowing through wire for 1 minute. What is the charge flowing through wire?

(iii) For an ideal transformer prove that \(\frac{V_p}{V_s} = \frac{I_s}{I_p}\)

(iv) How capacitor works in resonant circuit?

(v) How does the earth wire save us from electric shock when the line wire of the electric appliances gets damaged?

(vi) How short circuit happens due to decrease in resistance of the circuit?

(vii) What is the working principle of A.C. generator?

(viii) Why the resistance of conductor rises with increase in temperature?

(ix) What is the relation between electric potential and potential energy?

4. Attempt any Five parts from the followings:- \((5\times2=10)\)

(i) How the direction of current is reversed in the armature of D.C. motor?
(ii) Define analogue and digital electronics.

(iii) How is NAND gate made? Also write its symbol.

(iv) What is the difference between primary memory and secondary memory?

(v) For storing data, is the floppy disk more better or the hard disk?

(vi) Write two uses of cathode ray oscilloscope.

(vii) How much a 1g sample of pure radioactive material would be left after four half lives?

(viii) Find the number of protons and neutrons in the nuclide defined by $^{13}_6X$.

---

Part 2

Note: Attempt any Three questions.

5. (a) Define simple pendulum. Also prove that its motion is S.H.M.

(b) A marine survey ship sends a sound wave straight to the sea bed. It receives an echo 1.5 s later. The speed of sound in water is 1500 m/s. Find the depth of sea at that position.

6. (a) Explain the formation of images by ray diagrams when the object is placed at (i) beyond 2F

(ii) between F and P. Also give the nature of image formed in each case.

(b) A convex lens of a focal length 6 cm is to be used to form a virtual image three times the size of the object. Where must the lens be placed?

7. (a) Define and describe Coulomb’s law.

(b) By applying a potential difference of 10 V across a conductor a current of 1.5 A passés through it. How much energy would be obtained from the current in 2 minutes.

8. (a) Write symbols of AND operation and OR operation. Also write their truth table.

(b) A step-up transformer has a turn ratio of 1:100. An alternating supply of 20 V is connected across the primary coil. What is the secondary voltage ($V_s$).
9. (a) Define fission reaction and explain fission chain reaction. [4]

(b) Explain briefly the transmission of radio waves through space. [3]

Part III (Practical Part)

Attempt any two parts of Question (5 x 2 = 10)

10. (a) Draw the circuit diagram for finding the resistance of galvanometer by half deflection method.

(i) In above mentioned experiment resistance taken from H.R.B is 5000Ω and deflection $\theta = 24^\circ$.

(ii) The resistance taken from L.R.B is 110Ω to make deflection half. Find the resistance of galvanometer. [2+3]

(b) Write down the procedure and formula to find refraction index of a liquid using a concave mirror.

(i) How parallax is removed in the above experiment. [2+1+2]

(c) In parallel combination of resistances shown in the figure. Find the current flowing through the circuit, current through $R_1$ and current through $R_2$. [1+2+2]