Q. 1.a) Fill in the blanks with the options given in the brackets  
(N, acceleration, neutron, CO₂, mass, m/s², transducer, voltage)  
1. Presence of excess of _________ causes greenhouse gas effect.  
2. _________ converts one form of signal into another.  
3. The SI unit of force is _________  
4. The measure of potential difference in electric circuits is _________  
5. The atomic particle without charge is _________  

b) Match the column  

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 positive drive</td>
<td>a. lever</td>
</tr>
<tr>
<td>2 Silicon diode</td>
<td>b. Green energy</td>
</tr>
<tr>
<td>3 mechanical advantage</td>
<td>c. doping</td>
</tr>
<tr>
<td>4 Acid rain</td>
<td>d. gear</td>
</tr>
<tr>
<td>5 Solar Panel</td>
<td>e. NO₂</td>
</tr>
</tbody>
</table>

c) State True or false and give the true statement in case of false statements  
1. Diodes only allow unidirectional flow of current.  
2. Boilers do not need safety valves.  
3. Electric current is due to flow of electrons.  
4. Scissors are an example of levers.  
5. Chain drive is more positive than gear drive.  

d) Define the following in one line  

Q.2. Write 4 points on: (each question carries 4 marks each)
Q. 3. Explain: (write 4 points in your answers)
1. Write 4 uses of steam in textile industry.
2. Explain principle of lever.
3. Explain use of speed sensor.
4. How can sound pollution be reduced?

Q. 4. Answer the following (write 4 points in your answers)
1. Explain how electricity is generated in hydro-electric plants?
2. Explain the working of a gear?
3. Explain ecology.
4. What material handling equipment are used in Textile industry.

Q. 5. Answer the following (write 4 points in your answers)
1. Explain food chain - only with a diagram
2. If an object of mass m= 100 kg is pushed with a force of 10N. What will its acceleration be? (F=ma)
3. Calculate the resistance the circuit: I 15A  V is 150 mVolts.
4. What are the effects of water pollution?

Q. 6. Explain in brief the following (write 4 points in your answers)
1. AC motors.
2. Ecosystem.
3. How is gear drive different from belt drive?
4. Mechanical advantage.

Q. 7. Answer the following. (write 4 points in your answers)
1. Explain how solar energy can be used to generate electricity.
2. How are diodes made?
3. Why does it sweat more in humid areas?
4. Explain what is energy audit.

Q. 8 Write about the following: (write 4 points in your answers).
1. What are the causes of air pollution?
2. Write about renewable energy.
3. List the type of sensors.
4. Explain why water/effluent treatment is needed.