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Write two applications of each of the following electromagnetic radiations:

- 1) Ultraviolet
- 2) Infra red
- 3) Microwaves
- 4) Radio waves
- 5) X-rays

Electromagnetic Radiations

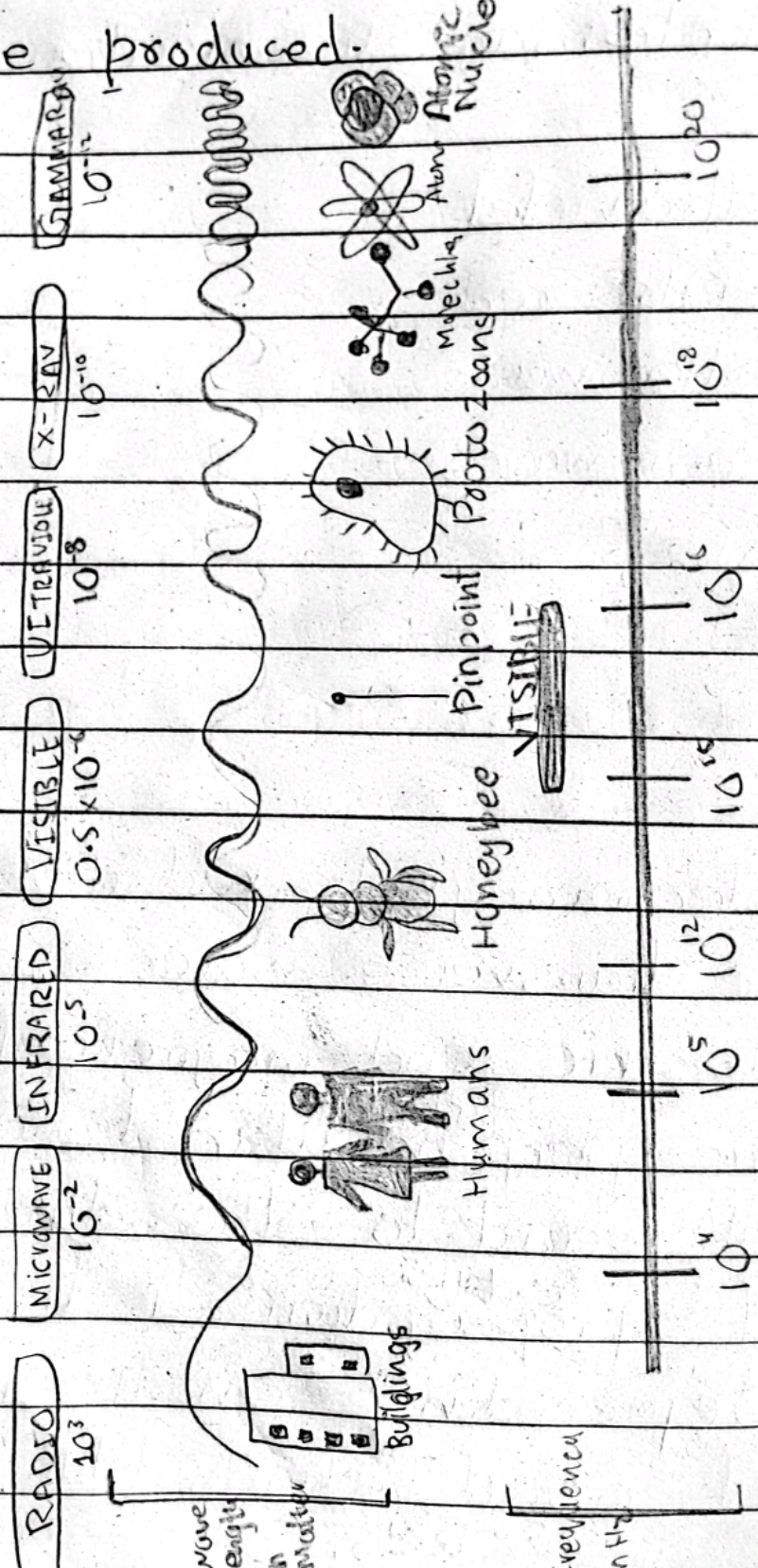
Electromagnetic radiations are transverse waves in the electric and magnetic fields are perpendicular to each other and to the direction of propagation of the wave.

Depending on the frequency of oscillation, different

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wavelengths of the electromagnetic spectrum, from gamma rays to radio waves, are produced.

THE ELECTROMAGNETIC SPECTRUM:



• Applications of Different Electromagnetic waves

• Ultraviolet Radiations

• Ultraviolet radiations are used in energy-efficient lights, in which fluorescent substances absorb UV light produced inside the lamp and re-emit the energy as visible light.

• UV radiations are also used on bank notes to detect forgeries and allow investigators and forensic researchers to examine clues and recover evidence by providing more detail and contrast to the suspected area than standard lighting techniques.

• Infrared

◦ In medicine, infrared radiations can promote local blood circulation through their heating effect and reduce muscle tension, thus, being used in the treatment of autoimmune disease or wound-healing disorders.

◦ In homes, infrared radiation is used by electrical heaters, cookers for cooking food, short-range communications like remote controls, optical fibres security systems, and thermal imaging security cameras that detect people in the dark.

• Microwaves

- One of the major applications of microwaves in homes is in the kitchen, i.e. the microwave oven. The ^{مغناطيسية} magnetism present in the internal circuitry of the ~~microwave~~ microwave oven emits microwaves. These emitted radiations get reflected on striking a metallic surface and get absorbed by the food particles. This property of microwaves is utilized to heat and cook foods.
- The operation and working of global positioning systems (GPS) Wi-Fi, and Bluetooth are based on microwaves. Moreover, these are used

in various communication techniques such as satellite communication, cellular communication, optical communication, point-to-point communication, wireless communication, etc.

• Radio Waves.

- Radio waves, with their longest wavelengths, are used to transmit data from radios, televisions, satellites and RADAR.
- Cellular mobile phones used radio waves to transmit voice communication.

• X-rays:

- In medicine, X-rays are used in the diagnosis of fractures of bones, foreign bodies like bullets and stones in the body, and ~~dental~~ dental pathologies. Moreover, these are also used in the treatment of certain types of cancer.
- In industry, X-rays are used to test the homogeneity of welded joints and to detect the structural defects of inaccessible parts of machinery.