Physics

Unit 1 – Paper 1

1. **Conservation and dissipation of energy**
   (energy stores, conservation of energy, energy and work, gravitational potential energy, kinetic energy, energy dissipation, energy and efficiency, electrical appliances, energy and power)
2. **Energy transfer by heating**
   (conduction, *infrared radiation*, specific heat capacity, insulating buildings)
3. **Energy resources**
   (energy demands, energy from wind and water, power from the Sun and Earth, energy and the environment)
4. **Electric circuits**
   (*electrical charges*, current and charge, potential difference and resistance)
5. **Electricity in the home**
   (alternating current, cables and plugs, electrical power and potential difference, electrical current and energy transfers, appliances and efficiency)
6. **Molecules and matter**
   (density, states and matter, changes of states, internal energy, specific latent heat, gas pressure- temperature *and pressure*)
7. **Radioactivity**
   (atoms and radiation, discovery of the nucleus, changes in the nucleus, alpha, beta and gamma radiation, activity and half-life, *nuclear radiation in medicine, nuclear fission, nucleus fusion*)

Unit 2 – Paper 2

8. **Forces in balance**
   (vectors and scalars, forces between objects, resultant forces, *moments*, *levers and gears*, centre of mass, *moments and equilibrium*, **parallelogram of forces**, **resolution of forces** *)*
9. **Motion**
   (speed and distance-time graphs, velocity and acceleration, analysing motion graphs)
10. **Force and motion**
    (force and acceleration, weight and terminal velocity, forces and braking, **momentum**, *conservation of momentum, impact forces*, *safety first*, forces and elasticity)
11. **Force and pressure**
    (*pressure and surfaces*, *pressures in a liquid at rest*, *atmospheric pressure*, *upthrust and flotation*)
12. **Wave properties**
    (properties of waves, **reflection**, **refraction,** *sound waves*, *uses of ultrasound*, *seismic waves*)
13. **Electromagnetic waves**
    (electromagnetic spectrum, light, infrared, microwaves, radio waves, communications, ultraviolet waves, x-rays and gamma rays, x-rays in medicine)
14. **Light**
    (*reflection of light, refraction*, *light and colour*, *lenses*)
15. **Electromagnetism**
    (magnetic fields, magnetic fields of electric currents, *electromagnets in devices*, **the motor effect**, *the generator effect*, *alternating-current generator*, *transformers*)
16. **Space**
    (*formation of the Solar System*, *life history of a star*, *planets*, *satellites and orbits*, *expanding universe*, *beginning and future of the Universe*)