SAMPEL PERCUMA

Nota DLP SPM Sains & Matematik Tingkatan 4 & 5 (English)

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Sampel bermula di muka surat sebelah

SPM · KSSM FORM 4 + FORM 5 · ENGLISH (DLP)

Physics Infographic Notes

One picture page per chapter

- 📄 **13** chapter pages
- ✍️ **39** quick-check questions
- ✅ Worked answers
- 🔤 English–BM glossary
- 📐 Formula / key terms box
- ⚠️ Common mistake box



Digital file for study and printing (A4, colour). Written and drawn by Nightmew Studios from the KSSM Form 4 and Form 5 topic list. Not an official Ministry of Education (KPM) or Lembaga Peperiksaan publication. Use it together with your textbook.

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1. Look at the picture first
The middle diagram shows the whole chapter. Cover the side cards and explain it out loud.

2. Learn the two boxes
The yellow box has the formulas and key words. The red box shows the mistake most students make.

3. Do the Quick Check
Answer the 3 questions on paper, then check the worked answers at the back.

BIOLOGY · FORM 4 · CHAPTER 12

Coordination and Response in Humans

Brain

Cerebrum: thinking, senses. Cerebellum: balance. Medulla oblongata: heartbeat, breathing.

Nervous

Fast, short, by electrical impulses along neurones.

Endocrine

Slower, longer-lasting; hormones in the blood.

Stimulus
hand touches a hot object

↓

Receptor (skin) → afferent neurone

↓

Interneurone in the SPINAL CORD

↓

Efferent neurone

↓

Effector: muscle contracts
hand pulled away (no brain decision first)

Synapse

Gap between neurones; neurotransmitter crosses it; one-way.

Insulin

From pancreas; lowers blood glucose. Glucagon raises it.

Adrenaline

Fight or flight: faster heartbeat, more glucose in blood.

FORMULA / KEY TERMS

- Stimulus → receptor → afferent neurone → CNS → efferent neurone → effector → response
- **Reflex arc**: automatic response through the spinal cord
- **Hormone**: chemical messenger from a ductless gland
- Pituitary = "master gland"

COMMON MISTAKE

❌ "The brain controls the knee-jerk reflex."

✅ A reflex goes through the SPINAL CORD; the brain is told afterwards.

QUICK CHECK (worked answers at the back, page 32)

1. Name the part of the brain that controls balance.
2. Give two differences between nervous and hormonal coordination.
3. What happens to blood glucose after a big meal, and which hormone acts?

Nuclear Physics

α Alpha

Helium nucleus $^{4}_{2}He$; +2; stopped by paper; strongest ionising.

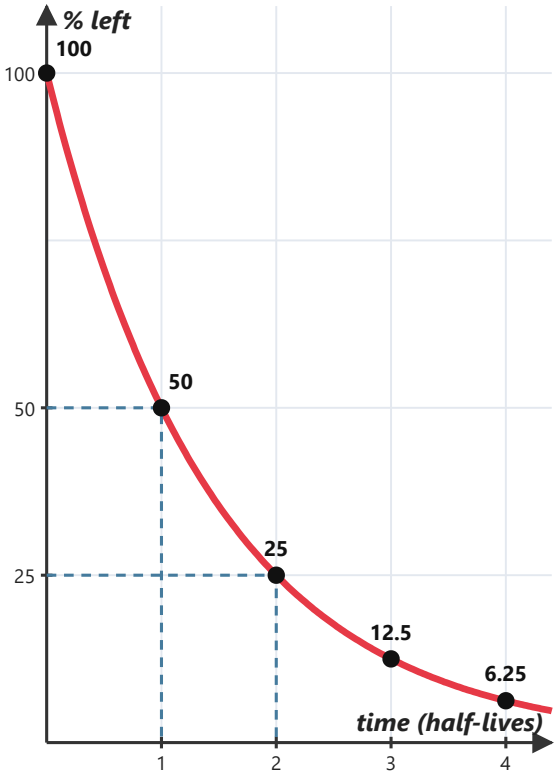
β Beta

Fast electron; −1; stopped by a few mm of aluminium.

γ Gamma

EM wave; no charge; reduced by thick lead/concrete; least ionising.

Radioactive decay: halves every T½



Fission

Heavy nucleus (U-235) hit by a neutron splits; releases energy + more neutrons (chain reaction).

Fusion

Light nuclei join (hydrogen → helium) at huge temperature: the Sun's energy.

Uses

Co-60 radiotherapy, Na-24 finds pipe leaks, C-14 dating, Am-241 smoke detectors.

📐 FORMULA / KEY TERMS

- $E = mc^2$ (mass defect → energy)
- $N = N_0(½)^n$, $n = t \div T½$
- α decay: A − 4, Z − 2 · β decay: A same, Z + 1
- $c = 3 \times 10^8$ m s^{-1}

⚠️ COMMON MISTAKE

❌ "After two half-lives the sample is completely gone."

✅ After 2 half-lives ¼ is LEFT (½ × ½). It never quite reaches zero.

✍️ QUICK CHECK (worked answers at the back, page 17)

1. A sample of 80 g has a half-life of 5 days. How much is left after 15 days?
2. Find the energy released when the mass defect is 0.001 kg.
3. U-238 (Z = 92) emits an alpha particle. Give the A and Z of the new nucleus.

TAMAT SAMPEL

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