



Jawapan Praktis Pengukuhan

Bab 1

- fenomena alam / *natural phenomena*
- Memahami / *Understand*
 - penyelesaian / *Solves*
 - taraf hidup / *standard of living*
 - Mereka cipta / *Invent*
 - Komunikasi / *Communication*
- fizik, biologi, kimia, geologi, astronomi, meteorologi
physics, biology, chemistry, geology, astronomy, meteorology
- merengsa, radioaktif, mengakis, beracun, mudah meletup, mudah terbakar
irritant, radioactive, corrosive, poisonous, explosive, flammable
- Tabung uji
Test tube
 - Bikar
Beaker
 - Balang gas
Gas jar
 - Silinder penyukat
Measuring cylinder
 - Buret
Burette
 - Pipet
Pipette
 - Corong turas
Filter funnel
 - Penunu Bunsen
Bunsen burner
 - Kasa dawai
Wire gauze
 - Kaki retort dan penyepit
Retort stand and clamp

6.	Kuantiti asas <i>Base quantity</i>	Unit S.I. <i>S.I. unit</i>	Simbol unit S.I. <i>Symbol of S.I. unit</i>
	Panjang / <i>Length</i>	meter / <i>metre</i>	m
	Jisim / <i>Mass</i>	kilogram / <i>kilogram</i>	kg
	Masa / <i>Time</i>	saat / <i>second</i>	s
	Suhu / <i>Temperature</i>	Kelvin / <i>Kelvin</i>	K
	Arus elektrik / <i>Electric current</i>	Ampere / <i>Ampere</i>	A

7.	Kuantiti asas <i>Base quantity</i>	Alat pengukur <i>Measuring instrument</i>
	Panjang <i>Length</i>	Pembaris, angkup vernier, tolok skru mikrometer <i>Ruler, vernier caliper, micrometer screw gauge</i>
	Jisim <i>Mass</i>	Neraca tuas, neraca tiga alur, penimbang elektronik <i>Lever balance, triple beam balance, electronic balance</i>
	Masa <i>Time</i>	Jam randik <i>Stopwatch</i>
	Suhu <i>Temperature</i>	Termometer <i>Thermometer</i>
	Arus elektrik <i>Electric current</i>	Ammeter <i>Ammeter</i>

- Kejituan / *Accuracy*
- Kepersisan / *Consistency*
- Kepekaan / *Sensitivity*
- ralat rawak, ralat sifar / *random error, zero error*
- jisim, isi padu / *mass, volume*

$$\frac{\text{Jisim (g)}}{\text{Isi padu (cm}^3\text{)}} / \frac{\text{Mass (g)}}{\text{Volume (cm}^3\text{)}}$$
- Membina hipotesis
Construct a hypothesis
 - Mengawal pemboleh ubah
Control variables
 - Merancang eksperimen
Plan an experiment
 - Menjalankan eksperimen
Conduct the experiment
 - Mengumpul data
Collect data
 - Menganalisis dan mentafsir data
Analyse and interpret data
 - Membuat kesimpulan
Make a conclusion



Jawapan Praktis Pengukuhan

Bab 2

1. unit asas
basic units
2. proses hidup
living processes
3. mikroskop
microscope
4. membran sel, sitoplasma, nukleus, mitokondria
cell membrane, cytoplasm, nucleus, mitochondria
5. membran sel, dinding sel, sitoplasma, nukleus, vakuol, mitokondria, kloroplas
cell membrane, cell wall, cytoplasm, nucleus, vacuole, mitochondria, chloroplast
6. (a) satu
one
(b) banyak
many
7. • *Amoeba*
Amoeba
• *Paramecium*
Paramecium
• *Chlamydomonas*
Chlamydomonas
• *Euglena*
Euglena

[Terima mana-mana jawapan sesuai / *Accept any suitable answers*]

8. • *Spirogyra*
Spirogyra
• Cacing
Worm
• Burung
Bird
• Manusia
Human

[Terima mana-mana jawapan sesuai / *Accept any suitable answers*]

9. saiz, bentuk, fungsi / *sizes, shapes, functions*

10. Sel → Tisu → Organ → Sistem
Cell → Tissue → Organ → System

- | | |
|--|---|
| 11. (a) Sistem perkumuhan
<i>Excretory system</i> | (g) Sistem saraf
<i>Nervous system</i> |
| (b) Sistem rangka
<i>Skeletal system</i> | (h) Sistem peredaran darah
<i>Blood circulatory system</i> |
| (c) Sistem limfa
<i>Lymphatic system</i> | (i) Sistem respirasi
<i>Respiratory system</i> |
| (d) Sistem pencernaan
<i>Digestive system</i> | (j) Sistem endokrin
<i>Endocrine system</i> |
| (e) Sistem otot
<i>Muscular system</i> | (k) Sistem pembiakan
<i>Reproductive system</i> |
| (f) Sistem integumen
<i>Integumentary system</i> | |

12. glukosa, tenaga / *glucose, energy*

13. air, karbon dioksida / *water, carbon dioxide*

14.	Respirasi sel <i>Cell respiration</i>	Fotosintesis <i>Photosynthesis</i>
	Berlaku dalam <u>mitokondria</u> <i>Occurs in <u>mitochondria</u></i>	Berlaku dalam <u>kloroplas</u> <i>Occurs in <u>chloroplast</u></i>
	Melibatkan <u>pembebasan</u> tenaga <i>Involved <u>release</u> of energy</i>	Melibatkan <u>penyerapan</u> tenaga <i>Involved <u>absorption</u> of energy</i>
	<u>Makanan</u> sebagai sumber tenaga <i><u>Food</u> as the source of energy</i>	<u>Cahaya matahari</u> sebagai sumber tenaga <i><u>Sunlight</u> as the source of energy</i>
	Berlaku dalam <u>manusia, haiwan, tumbuhan dan mikroorganisma</u> <i>Occurs in <u>humans, animals, plants, and microorganisms</u></i>	Berlaku dalam <u>tumbuhan dan mikroorganisma yang berwarna hijau</u> <i>Occurs in <u>green plants and microorganisms</u></i>
	Melibatkan <u>penguraian</u> glukosa <i>Involved the <u>break down</u> of glucose</i>	Melibatkan <u>sintesis</u> glukosa <i>Involved the <u>synthesis</u> of glucose</i>
	Hasil akhir: <u>karbon dioksida, air dan tenaga</u> <i>End product: <u>carbon dioxide, water and energy</u></i>	Hasil akhir: <u>oksigen dan glukosa</u> <i>End product: <u>oxygen and glucose</u></i>



Jawapan Praktis Pengukuhan

Bab 3

1. seimbang, stabil
balanced, stable
2. suhu badan, aras air, pH darah, tekanan darah
body temperature, water level, blood pH, blood pressure
3. pembedulan.
corrective
4. (i)
 - otak
brain
 - hormon
hormone
 - menurun
decreases(ii)
 - otak
brain
 - hormon
hormone
 - meningkat
increases
5. (i)
 - otak
brain
 - salur darah mengembang, bulu roma condong, aktiviti otot rangka dan rembesan hormon tertentu berkurang, berpeluh
blood vessel dilate, hairs lie flat, activity of skeletal muscles and secretion of certain hormone decreases, sweating
 - menurun
decreases(ii)
 - otak
brain
 - salur darah mengecut, bulu roma tegak, metabolisme badan meningkat, otot rangka mengecut dan mengendur dengan aktif dan menyebabkan menggigil
blood vessels constrict, hairs erect, skeletal muscles contract and relax actively and cause shivering
 - meningkat
increases
6. (a) dibebaskan
remove
(b)
 - perlahan, menurun, rendah
slower, decrease, lower
 - pantas, cepat, meningkat
faster, faster, increases(c) bendalir
mucus
(d) mengurangkan
reduce
(d) Menjelirkan lidah
Stick out their tongue
7. transpirasi
transpiration
8. stoma
stoma
9. terbuka
opens
10. tertutup
closes
11. Sel pengawal
guard cells



Jawapan Praktis Pengukuhan

Bab 4

1. gamet jantan, gamet betina, zigot
male gamete, female gamete, zygote
2. persenyawaan dalam, persenyawaan luar
internal fertilisation, external fertilisation
3. satu
one
4. (a) Belahan dedua
Binary fission
(b) Pertunasan
Budding
(c) Penjanaan semula
Regeneration
(d) Pembentukan spora
Spore formation
(e) Pembiakan vegetatif
Vegetative reproduction
5. testis
testis
6. 14 – 17
14 – 17
7. ovari
ovary
8. 10 – 12
10 – 12
9. 28
28
10. fasa haid, fasa pemulihan, fasa subur, fasa prahaid
menstruation phase, repair phase, fertile phase, premenstrual phase
11. 14
14
12. subur
fertile
13. zigot, persenyawaan
zygote, fertilisation
14. Zigot → Embrio → Fetus → Bayi
Zygote → Embryo → Foetus → Baby
15. karbohidrat, protein, kalsium, ferum, vitamin A dan C
carbohydrate, protein, calcium, iron, vitamin A and C
16. merokok, alkohol, dadah
smoke, alcohol, drugs
17. rawatan hormon, pembedahan, persenyawaan in vitro (IVF)
hormone treatment, surgery, in vitro fertilisation (IVF)
18. penggunaan kondom, alat kontraseptif dalam uterus, pil pencegah hamil, implan, vasektomi, ligasi
the use of condom, intrauterine contraceptive device, contraceptive pills, implants, vasectomy, ligation
19. Bunga
Flower
20. anter, stigma
anther, stigma
21. pendebungaan sendiri, pendebungaan kacuk
self-pollination, cross-pollination
22. ovul
ovule
23. • buah
fruit
• biji benih
seed
24. Percambahan
Germination
25. air, udara, suhu yang sesuai
water, air, suitable temperature



Jawapan Praktis Pengukuhan

Bab 5

1. jisim, ruang
mass, space
2. takat didih, takat lebur, kebolehan melarut, kekonduksian haba
boiling point, melting point, solubility, heat conduction
3. pengaratan, kebolehbakaran
corrosion, flammability
4. ketumpatan, takat didih, takat lebur, keterlarutan
density, boiling point, melting point, solubility
5. kuantiti jirim, isi padu, tenggelam, terapung
quantity of matter, volume, sink, float
6. pepejal, cecair
solid, liquid
7. cecair, gas
liquid, gas
8. pelarut, larutan
solvent, solution
9. kecil, diskret
small, discrete

10.	Sifat <i>Characteristics</i>	Pepejal <i>Solid</i>	Cecair <i>Liquid</i>	Gas <i>Gas</i>
	Susunan zarah <i>Arrangement of particles</i>	Tetap <i>Fixed</i>	Rawak <i>Random</i>	Rawak <i>Random</i>
	Pergerakan zarah <i>Movement of particles</i>	Bergetar setempat <i>Vibrate in a fixed position</i>	Sederhana <i>Moderate</i>	Sangat cepat <i>Fairly rapid</i>
	Ruang antara zarah <i>Space between particles</i>	Kecil <i>Small</i>	Sederhana <i>Moderate</i>	Besar <i>Large</i>
	Tenaga kinetik zarah <i>Kinetic energy of particles</i>	Rendah <i>Low</i>	Sederhana tinggi <i>Moderately high</i>	Sangat tinggi <i>Very high</i>

11. (a) zarah-zarah kecil
tiny particles
(b) bergerak
moving
(c) meningkat
increases
12. banyak, sedikit
more, lesser
13. gas, cecair, pepejal
gases, liquids, solids
14. fizikal
physically
15. (a)
 - Pendidihan (cecair → gas)
Boiling (liquid → gas)
 - Penyejatan (cecair → gas)
Evaporation (liquid → gas)
 - Peleburan (pepejal → cecair)
Melting (solid → liquid)
 - Pemejalwapan (pepejal → gas)
Sublimation (solid → gas)
 (b)
 - Pembekuan (cecair → pepejal)
Freezing (liquid → solid)
 - Kondensasi (gas → cecair)
Condensation (gas → liquid)
 - Pemejalwapan (gas → pepejal)
Sublimation (gas → solid)



Jawapan Praktis Pengukuhan

Bab 6

1. atom
atoms
2. proton, neutron, elektron
proton, neutron, electron
3. proton, neutron
protons, neutrons
4. fizik, kimia
physical, chemical
5. Jadual Berkala
Periodic Table
6. logam, separuh logam, bukan logam
metal, semi-metal, non-metal
7. kekilauan permukaan, kemuluran, kebolehtempaan, kekuatan regangan, kekonduksian elektrik, kekonduksian haba, ketumpatan, takat lebur, takat didih
surface appearance, ductility, malleability, tensile strength, electrical conductivity, heat conductivity, density, melting point, boiling point
8. fizikal
physically
9. (a) (i) pengasingan
separating
(ii) pepejal-cecair
solid-liquid
(b) (i) takat didih
boiling point
(c) (i) bahan magnet, bahan bukan magnet
magnetic, non-magnetic substances
(d) (i) bawah
bottom
(ii) lebih tumpat, tidak larut
denser, insoluble
(e) (i) mengapungkan
float
(f) (i) keterlarutan
solubility
10. kimia
chemically
11. kimia
chemical
12. Elektrolisis
Electrolysis
13. fizik, kimia
Physical, chemical



Jawapan Praktis Pengukuhan

Bab 7

1.
 - Nitrogen
Nitrogen
 - Oksigen
Oxygen
 - Karbon dioksida
Carbon dioxide
 - Gas nadir dan bahan-bahan lain
Inert gases and other substances
2. (a) Kitar karbon
carbon cycle
(b) Kitar oksigen
oxygen cycle
3.
 - penyahhutan
deforestation
 - Menanam
Replanting
 - terbuka
open
 - racun serangga
pesticides
 - asap
smoke
4. (a) oksigen
oxygen
(b) haba, cahaya
heat, light
(c) oksigen, bahan api, haba
oxygen, fuel, heat
5. Alat pemadam api
fire extinguisher
6. menghapuskan salah satu daripada tiga syarat yang diperlukan oleh pembakaran
removing one of the three conditions needed for combustion
7. Bahan pencemar udara
Air pollutants
8. (a) pernafasan
breathing
(b) Nitrogen dioksida
Nitrogen dioxide
(c) Karbon monoksida
Carbon monoxide
(d) kanser
cancer
9. (a) Habuk
Dust
(b) hujan asid
acid rain
10. (a) akuatik
aquatic
(b) tidak subur
infertile
11. (a) jerebu
haze
(b) kesan rumah hijau, pemanasan global
greenhouse effect, global warming.
(c) suhu
temperature
(d) Klorofluorokarbon (CFC)
chlorofluorocarbons (CFCs)



Jawapan Praktis Pengukuhan

Bab 8

1. sahii, maya
real, virtual
2. satah, cekung, cembung
plane, concave, convex
3. tegak, maya, songsang sisi, sama saiz dengan objek
upright, virtual, laterally inverted, same size as the object
4. besar
larger
5. kecil
smaller
6. lurus
straight
7. bayang-bayang
shadow
8. lebih laju
faster
9. titisan air
water droplets
10. pemantul
reflecting
11. (a) Maya
Virtual
(b) Tegak
Upright
(c) Songsang sisi
Laterally inverted
(d) Sama
Same
(e) sama
equal
12. • sama
same
• Sinar tuju, sinar pantulan, garis normal
incident ray, reflected ray, normal line
13. ketumpatan
densities
14. bengkak, cetek, dekat
bent, shallower, closer
15. merah, jingga, kuning, hijau, biru, indigo, ungu
red, orange, yellow, green, blue, indigo, violet
16. prisma
prism
17. Pelangi
rainbow
18. biru
blue
19. merah, kuning
red, yellow
20. Penambahan
Addition
 - Kuning
Yellow
 - Magenta
Magenta
 - Sian
Cyan
21. penolakan
subtraction
22. • primer
Primary
 - sekunder
Secondary
 - putih
White
 - hitam
Black



Jawapan Praktis Pengukuhan

Bab 9

1. atmosfera, biosfera, hidrosfera, geosfera
atmosphere, biosphere, hydrosphere, geosphere
2. eksosfera, termosfera, mesosfera, stratosfera, troposfera
exosphere, thermosphere, mesosphere, stratosphere, troposphere
3. permukaan, tengah malam, gelap
surface, midnight, dark
4. kitar air
water cycle
5. penyejatan, kondensasi
evaporation, condensation
6. Kerak, mantel, teras
Crust, mantle, core

7.	Kerak <i>Crust</i>	Mantel <i>Mantle</i>	Teras <i>Core</i>
	- paling luar <i>outermost</i> - litosfera <i>lithosphere</i> - granit, basalt <i>granite, basalt</i>	70% - separa cair <i>semi-molten</i> - arus perolakan <i>convection current</i>	- teras luar, teras dalam <i>outer core, inner core</i> - tumpat, panas <i>denser, hotter</i>

8. igneus, sedimen, metamorfik
igneous, sedimentary, metamorphic
9. eksogen, endogen
exogenic, endogenic
10. luluhawa, hakisan, susutan jisim, susutan darat, angkutan, pegenapan
weathering, erosion, mass depletion, land depletion, transport, sedimentation
11. aktiviti magma, proses olakan mantel, proses pergerakan kerak Bumi
magma activity, mantle convection process, Earth's crust movement process
12. geologi
geological
13. vulkanisme, pemanasan global, tsunami, tanah runtuh, lubang benam, gempa bumi, hujan asid, tanah jerlus
volcanism, global warming, tsunami, landslides, sinkhole, earthquake, acid rain, quicksand
14. 4.5 billion
4.5 billion
15. Fosil
Fossil
16. pentarikhan radioaktif
radioactive dating
17. Air permukaan
Surface water
18. Air bawah tanah
Underground water
19. Mineral ekonomi
Economic minerals
20. organik
organic
21. Hidroterma
Hydrothermal