

JAWAPAN

BAB 1 Biodiversiti/Biodiversity

BAHAGIAN A

- | | | | | |
|------|-----|-----|-----|------|
| 1 A | 2 A | 3 C | 4 C | 5 B |
| 6 B | 7 D | 8 D | 9 A | 10 B |
| 11 B | | | | |

BAHAGIAN B

- 1 (a) Mamalia / Mammals
Lembu / Cow ; Gajah / Elephant
Reptilia / Reptiles
Ular / Snake ; Cicak / Lizard
- (b) (i) Monokotiledon / Monocotyledon
(ii) Berakar tunjang / Tap root
- 2 (a) (i) poikiloterma / poikilothermic
(ii) bertelur / lay egg
- (b) (i) PALSU / FALSE
(ii) BENAR / TRUE
(iii) PALSU / FALSE

- 3 (a) 
- (b) (i) luar / external
(ii) ikan / fish

BAHAGIAN C

- 1 (a) Kepelbagaian organisma, sama ada mikroorganisma, haiwan atau tumbuhan
The diversity of organism, whether microorganisms, animals or plants
- (b) – Mengharamkan pembunuhan atau pemerdagangan haiwan dan tumbuhan yang terancam
Banning the killing or trade of endangered plants and animals
- Mewujudkan taman negara, taman laut dan hutan simpan
Creating national parks, marine parks and forest reserves
- (c) Akibat daripada kepelbagaian habitat dan cuaca
As a result of the diversity of habitat and climate
- (d) (i) Satu cara yang digunakan oleh ahli biologi untuk mengenal pasti dan mengelaskan organisma secara sistematik berdasarkan persamaan dan perbezaan
A method by biologists to identify and classify organisms systematically based on similarities and differences
- (ii) A: Gajah / Ikan / Ular (mana-mana haiwan vertebrata selain burung)
Elephant / Fish / Snake (any vertebrate animals except birds)
- B: Helang / Gagak (mana-mana haiwan kelas burung)
Eagle / Crow (any animals that is bird)
- C: Cacing pita / Cacing tanah / Lintah
Tapeworm / Groundworm / Leech
- D: Span / Buran / Karang laut / Planaria / Siput
Sponge / Sea anemone / Corals / Planaria / Snail
- 2 (a) Spesies yang hidup berkelompok di habitat yang terbatas di sesebuah lokasi tertentu
Species that lives in clusters within a restricted habitat in a specific location
- (b) Penyahhutan / Pembunuhan dan pemerdagangan haiwan
Deforestation / Killing and trade of animals
- (c) (i) Mengekalkan spesies di habitat asal
Preserves the species within their natural habitat
- (ii) Zoo dan taman botani
Zoo and botanical garden

- (d) Bunga pakma dan periuk kera
Rafflesia and pitcher plant
- 3 (a) Poikiloterma / Menghasilkan telur yang bercangkerang / Bernafas melalui peparu / Bersisik dan berkulit keras / Melakukan persenyawaan dalam
Poikilothermic / Produce eggs with a shell / Breathe through lungs / Have scales and hard skin / Undergo internal fertilisation
- (b) Penyu / Ular / Iguana / Cicak
Turtle / Snake / Iguana / Lizard
- (c) – Haiwan yang mempunyai tulang belakang
Animal that have backbone
- Ikan / Amfibia / Burung / Mamalia
Fish / Amphibians / Birds / Mammals
- (d) Kalis air dan tahan lama
Water proof and long-lasting

BAB 2 Ekosistem/Ecosystem

BAHAGIAN A

- | | | | | |
|------|-----|-----|-----|------|
| 1 A | 2 C | 3 C | 4 C | 5 C |
| 6 B | 7 B | 8 D | 9 A | 10 B |
| 11 C | | | | |

BAHAGIAN B

- 1 (a) (i) PALSU / FALSE
(ii) PALSU / FALSE
(iii) BENAR / TRUE
- (b) (i) Menghasilkan makanan sendiri
Produce their own food
- (ii) Memakan organisma lain
Eat other organisms
- 2 (a) Proses X : Respirasi / Process X : Respiration
Proses Y : Fotosintesis / Process Y : Photosynthesis
- (b) (i) ✓ (iii) ✓
- 3 (a) (i) Mutualisme / Mutualism
(ii) Komensalisme / Commensalism
- (b) (i) tikus / rat
(ii) mangsa-pemangsa / prey-predator

BAHAGIAN C

- 1 (a) (i) Gabungan beberapa rantai makanan
Combination of several food chain
- (ii) – Bilangan padi menurun / berkurang
Number of paddy decrease
- Tikus memakan padi
Rats eat paddy
- (iii) – Populasi tikus menurun
Rat's population decrease
- Bilangan padi berkurang
Number of paddy decrease
- Belalang yang banyak makan padi
Grasshoppers eat paddy
- (iv) Padi → Belalang → Katak → Burung hantu
Paddy → Grasshopper → Frog → Owls
Atau / Or
Padi → Tikus → Ular → Burung hantu
Paddy → Rats → Snake → Owls
- (v) Tenaga hilang dalam bentuk tenaga haba atau tenaga kimia dalam makanan yang tidak tercerna / dalam tinja
Energy loss in form of heat energy or chemical energy in undigested food / in faeces
- (b) – Menggunakan burung hantu / Kaedah kawalan biologi
Use owls / Biological control
- Burung hantu atau pemangsa ular memakan ular
Owls or snake's predator eats snake

- 2 (a) X : Persaingan / *Competition*
Y : Mangsa-pemangsa / *Prey predator*
Z : Komensalisme / *Commensalism*
- (b) Z
- (c) Paku pakis langsuir pada dahan pokok
Bird's nest fern on branches of tree
- (d) Mutualisme dan parasitisme
Mutualism and parasitism
- (e) (i) Cacing pita ialah parasit yang menyerap nutrien dalam usus manusia
Tapeworm is a parasite that absorb nutrient inside human intestine
(ii) Kutu / *Lice*
- 3 (a) Y : Penyejatan / *Evaporation*
Z : Kondensasi / *Condensation*
- (b) – Proses W dan Proses X meningkatkan kandungan wap air di atmosfera
Process W and Process X increase the amount of water vapour in atmosphere
– Proses W hanya dilakukan oleh tumbuhan manakala Proses X dilakukan oleh semua benda hidup
Process W only done by plant while Process X done by all living things
– Proses W ialah transpirasi manakala Proses X ialah perkumuhan, penyahtinjaan dan respirasi
Process W is transpiration while Process X is excretion, defecation and respiration
- (c) – Akar tumbuhan mencengkam tanah
Plants roots hold the soil
– Struktur tanah akan lebih kukuh
Structure of soil more compact
– Dapat mengelakkan hakisan tanah
Prevents soil erosion
- (d) – Penebangan hutan tidak terkawal
Unrestricted logging
– Pembakaran bahan api fosil
Burning of fossil fuels
– Penggunaan sumber air berlebihan
Overconsumption of water resources

BAB 3 Nutrisi/Nutrition

BAHAGIAN A

- | | | | | |
|------|-----|-----|-----|------|
| 1 B | 2 B | 3 A | 4 C | 5 C |
| 6 D | 7 B | 8 C | 9 A | 10 C |
| 11 A | | | | |

BAHAGIAN B

- 1 (a) P : Karbohidrat / *Carbohydrate*
Q : Protein / *Protein*
- (b) (i) Membekalkan tenaga / *Supplies energy*
(ii) Melindungi organ badan / *Protects the organ body*
- 2 (a) (i) Benar / *True* (ii) Palsu / *False*
(iii) Benar / *True*
- (b) Iodin – Kanji ; Benedict – Glukosa
Iodine – Starch Benedict – Glucose
- 3 (a) (i) Rabun malam / *Night blindness*
(ii) Riket / *Rickets*
- (b) (i) peristalsis / *peristalsis* (ii) asid amino / *amino acid*

BAHAGIAN C

- 1 (a) (i) Protein / *Protein*
(ii) Untuk pertumbuhan dan pembaikan tisu yang rosak / Menggantikan sel-sel yang telah mati
For growth and repair of damage tissue / Replace the dead cells
- (b) (i) Karbohidrat / Kanji / *Carbohydrate / Starch*
(ii) Amilase liur / *Salivary amylase*
(iii) – Proses peristalsis / *Peristalsis process*

- Menolak bolus (makanan) ke dalam perut
Push bolus (food) into stomach
- (c) (i) $(1 \times 2\ 675) + (2 \times 1\ 567) + (1 \times 550) = 6\ 359\ \text{kJ}$
(ii) – Tidak / *No*
– Kerana tiada buah dan sayur / Tiada pelawas
Because did not have fruits and vegetables / No fibre
- 2 (a) (i) Lakteal - Menyerap lemak yang dicerna
Lacteal - Absorb digested fat
(ii) Dinding vilus sangat nipis, setebal satu sel sahaja untuk meningkatkan kadar penyerapan
The wall of the villus is very thin, it is one cell thick to increase the rate of absorption
- (b) (i) Pemboleh ubah dimanipulasikan:
Manipulated variable
Jenis kandungan di dalam tiub Visking
Content in Visking tube
Pemboleh ubah dimalarakan:
Constant variable
Isi padu bahan/ Masa/ Suhu
Volume of substance / Time / Temperature
(ii) Mendakan merah bata terbentuk di dalam tabung uji B
Brick-red precipitate is formed in test tube B
(iii) Mendakan merah terbentuk di dalam tabung uji B kerana larutan glukosa meresap daripada tiub Visking
Brick-red precipitate is formed in test tube B because glucose solution permeate from Visking tube.
(iv) Tiub Visking / *Visking tube*:
Dinding vilus / *Wall of villus*
Air suling / *Distilled water*:
Kapilari darah / *Darah*
Blood capillaries / Blood

BAB 4 Kesihatan Manusia/Human Health

BAHAGIAN A

- | | | | | |
|------|------|-----|-----|------|
| 1 C | 2 D | 3 C | 4 D | 5 D |
| 6 D | 7 B | 8 A | 9 D | 10 C |
| 11 B | 12 C | | | |

BAHAGIAN B

- 1 (a) (i) Sentuhan / *Touch* (ii) Air / *Water*
(b) (i) Selsema / *Flu* (ii) Kolera / *Cholera*
- 2 (a) (i) Benar / *True* (ii) Palsu / *False* (iii) Benar / *True*
(b) (i) pernafasan / *respiratory* (ii) putih / *white*
- 3 (a) (i) Lalat / *Fly* (ii) Nyamuk / *Mosquito*
(b) (i) pasif / *passive* (ii) lemah / *weak*

BAHAGIAN C

- 1 (a) (i) Mekanisme pertahanan tidak spesifik
Non-specific body defence mechanism
(ii) – Kulit terdiri daripada lapisan yang liat dan sukar ditembusi patogen
Skin is made of a tough layer and is difficult to be penetrated by pathogen
– Hanya dapat ditembusi jika terdapat luka atau kecederaan
Only can get into the body if there is a wound or injury
– Peluh dan sebum yang dirembeskan boleh memusnahkan patogen
Sweat and sebum secreted can kill pathogens
** mana-mana dua diterima
any two is accepted
(iii) – Melapisi salur pernafasan dan salur pencernaan
Lines the respiratory and digestive tract
– Memerangkap mikroorganisma yang memasuki salur pernafasan
Traps microorganism that enter respiratory tract

- (b) – Tidak / No
 – Alahan tidak memudaratkan orang lain yang tiada alahan / Alahan merupakan satu tindak balas sistem keimunan badan terhadap bahan penyebab alahan
Allergy is harmless for most people that do not have allergy. / Allergy is the response of body's immune system to substance that cause allergies
- (c) (i) A : Keimunan aktif buatan
 A : Artificial active immunity
 B : Keimunan pasif buatan
 B : Artificial passive immunity
- (ii) – Keimunan A menggunakan vaksin dalam suntikan manakala keimunan B menggunakan antiserum dalam suntikan
Immunity A use vaccine in injection while immunity B use antiserum in injection
 – Keimunan A berpanjangan manakala keimunan B adalah sementara
Immunity A lasts long while immunity B is temporary
 – Badan menghasilkan antibodi sendiri dalam keimunan A manakala badan memperoleh antibodi dari luar dalam keimunan B
Body produce its own antibody in immunity A while body gets antibody from external sources in immunity B
- (iii) – Keimunan B / Immunity B
 – Kerana keimunan B adalah segera
Because immunity B is fast

BAB 5 Air dan Larutan/Water and Solution

BAHAGIAN A

- | | | | | |
|------|-----|-----|-----|------|
| 1 B | 2 D | 3 C | 4 D | 5 B |
| 6 D | 7 B | 8 A | 9 C | 10 B |
| 11 A | | | | |

BAHAGIAN B

- 1 (a) (i) meningkatkan / increase
 (ii) peleburan / melting
 (b) (i) Benar / True (ii) Benar / True (iii) Palsu / False
- 2 (a) (i) Minyak wangi / Perfume
 (ii) Pengekstrak minyak / Oil extractor
 (b) Gula / Sugar : Zat terlarut / Solute
 Air / Water : Pelarut / Solvent
 Air gula / Sugar water : Larutan / Solution
- 3 (a) (i) Membunuh mikroorganisma / Kills microorganism
 (ii) Memisahkan bendasing terampai
Suspended particles
 (b) (i) halus / Fine (ii) panas / hot

BAHAGIAN C

- 1 (a) X : Pengoksidaan / Oxidation
 Y : Penurasan / Filtration
 Z : Pengklorinan dan pemfluoridaan
Chlorination and fluoridation
 (b) – Klorin digunakan untuk membunuh mikroorganisma dalam air
Chlorine is added to kill microorganisms in water
 – Natrium fluorida dimasukkan untuk mengelakkan pereputan gigi
Sodium fluoride is added to prevent tooth decay
 (c) Menyingkirkan bendasing / Remove impurities
 (d) Mendidik petani menggunakan baja dan racun perosak yang bersifat terbiodegradasi
Educate farmers to use biodegradable fertilisers and pesticides
- 2 (a) (i) Gula dalam bikar P lebih cepat larut daripada bikar Q / Sugar in beaker P dissolve more quickly than beaker Q
 (ii) Gula dalam bikar P lebih cepat larut kerana gula halus / Gula dalam bikar P lebih cepat larut kerana luas permukaan gula lebih besar

Sugar in beaker P dissolve more quickly because fine sugar / Sugar in beaker P dissolve more quickly because surface area of sugar is bigger

- (b) (i) Saiz gula / Size of sugar
 (ii) Isi padu air suling / Volume of distilled water
 (c) Semakin kecil saiz gula, semakin cepat gula melarut
The smaller the size of sugar, the faster sugar dissolve

BAB 6 Asid dan Alkali/Acid and Alkali

BAHAGIAN A

- | | | | | |
|------|------|-----|-----|------|
| 1 A | 2 B | 3 C | 4 A | 5 C |
| 6 D | 7 D | 8 C | 9 B | 10 D |
| 11 D | 12 A | | | |

BAHAGIAN B

- 1 (a) (i) Bertindak balas dengan logam
React with metal
 (ii) Berasa pahit / Taste bitter
 (b) (i) Palsu / False (iii) Benar / True
 (ii) Benar / True
- 2 (a) (i) alkali / alkaline (ii) 7
 (b) (i) Merah / Red
 (ii) Merah jambu / Pink
 (iii) Hijau / Green
- 3 (a) (i) Bateri kereta / Car battery
 (ii) Pil antasid / Antacid pills
 (b) (i) kurang / less
 (ii) berasid / acidic

BAHAGIAN C

- 1 (a) Menunjukkan sifat asid dengan kehadiran air.
Show acid properties with presence of water
 (b) – Penunjuk semesta / Universal indicator
 – Metil jingga / Methyl orange
 (c) 7
 (d) Semakin tinggi kekuatan asid, semakin rendah nilai pH
The higher the strength of acid, the lower the pH value
 (e) – Pil antasid / Antacid pills
 – Mengandungi magnesium hidroksida / Bersifat alkali
Contain magnesium hydroxide / Alkaline
 – Boleh meneutralkan asid hidroklorik berlebihan dalam perut
Can neutralise excess hydrochloric acid in stomach
- 2 (a) Pentitratan / Titration
 (b) Tindak balas antara asid dengan alkali menghasilkan garam dan air
Reaction between acid and alkali produce salt and water
 (c) Asid hidroklorik + Natrium hidroksida → Natrium klorida + Air
Hydrochloric acid + Sodium hydroxide → Sodium chloride + Water
 (d) – Merah jambu kepada tidak berwarna
Pink to colourless
 – Asid hidroklorik meneutralkan larutan natrium hidroksida / Larutan menjadi neutral
Hydrochloric acid neutralise sodium hydroxide solution / Solution becomes neutral
 (e) Tanah yang berasid dirawat dengan kapur mati yang bersifat alkali / Acidic soil can be treat with slaked lime that is alkaline

BAB 7 Keelektrikan dan Kemagnetan Electricity and Magnetism

BAHAGIAN A

- | | | | | |
|-----|-----|-----|-----|------|
| 1 A | 2 B | 3 C | 4 A | 5 A |
| 6 A | 7 C | 8 C | 9 A | 10 A |

BAHAGIAN B

- (a) P : Air / Water Q : Angin / Wind

(b) (i) Benar / True (iii) Palsu / False
(ii) Palsu / False
- (a) (i) tidak menyala / do not light up
(ii) berbeza / different

(b) (i) Mentol / Bulb
(ii) Sel kering / Dry cell
- (a) (i) A (ii) R

(b) (i) menarik / attract (ii) selatan / south

BAHAGIAN C

- (a) Dua bahan yang berlainan jenis digosok bersama
Two different types of object rubbed together

(b) – Cas negatif bergerak dari kain bulu ke belon
Negatively charged particle from wool cloth move to balloon
– Elektron bergerak dari kain bulu ke belon
Electron from wool cloth moves to balloon
– Belon menerima elektron(cas negatif dari kain bulu)
Balloon receives electron(negatively charged particle) from wool cloth

(c) (i) Konduktor kilat menyediakan satu lintasan bagi cas-cas elektrik daripada kilat masuk ke dalam Bumi
The lightning conductor provides a path for the electric charges to flow into the ground.
(ii) Tidak berteduh di bawah pokok
Do not shelter under the tree
- (a) Bilangan jarum peniti ditarik kepada rod besi bagi bilangan lilitan 60 lebih banyak kerana kekuatan medan magnet yang tinggi
Number of pins attract to iron rod when number of turns is 60 is because higher magnetic field

(b) (i) Bilangan jarum peniti yang tertarik kepada rod besi
Number of pins attracted to iron rod
(ii) Arus / Current

(c) Jika bilangan lilitan bertambah(tinggi), maka bilangan jarum peniti ditarik kepada rod besi bertambah(tinggi) / Semakin banyak lilitan gegelung, semakin tinggi kekuatan medan magnet.
If number of turns increase(higher), then number of pins attract to iron rod is increase(higher) / The more the number of turns of a coil, the stronger the magnetic field.

BAB 8 Daya dan Gerakan/Force and Motion

BAHAGIAN A

- 1 C 2 C 3 A 4 C 5 D

BAHAGIAN B

- (a) (i) lebih tinggi / higher (ii) graviti / gravitational

(b) (i) Tuas kelas kedua / Second class lever
(ii) Tuas kelas ketiga / Third class lever

BAHAGIAN C

- (a) – Tekanan udara dalam penyedut minuman lebih rendah dari tekanan udara di luar (tekanan atmosfera)
Air pressure inside straw is lower than air pressure outside (atmospheric pressure)
– Tekanan udara di luar (tekanan atmosfera) akan menolak air masuk ke dalam penyedut minuman dan ke mulut
Air pressure outside (atmospheric pressure) will push air inside straw and then inside mouth

(b) (i) Tekanan udara di J lebih tinggi daripada tekanan udara di K / Air pressure at J is higher than air pressure at K
(ii) – Tolak dan tarik pelocok di atas lubang sinki
Push and pull the plunger over the sink hole

- Apabila pelocok ditolak dan ditarik, tekanan udara di K berkurang / When the plunger is pushed and pulled, the air pressure at K is decrease
- Tekanan udara yang lebih tinggi dalam paip akan menolak bahan tersumbat keluar.
The higher air pressure inside the pipe can push the blockage out
- (c) (i) – Tekanan air di dasar lebih tinggi
Water pressure at the base is higher
– Dinding yang tebal dapat menahan tekanan tersebut.
Thick wall can overcome the pressure
- (ii) Tidak kerana kedalaman air akan berkurang
No because the depth of water will decrease
- (iii) Badan kapal selam diperbuat daripada bahan yang kuat supaya tidak kemik akibat tekanan air yang tinggi
The body of a submarine is made of strong material, so that it will not be crushed by high water pressure

BAB 9 Haba/Heat

BAHAGIAN A

- 1 B 2 B 3 A 4 C 5 D
6 B 7 C 8 D 9 A 10 A

BAHAGIAN B

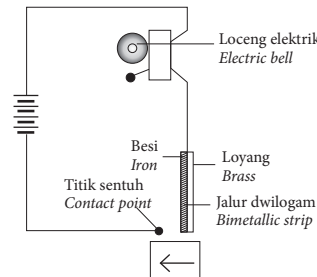
- (a) (i) cecair / liquid (ii) sinaran / radiation
(b) (i) Sinaran / Radiation
(ii) Perolakan / Convection
- (a) (i) Benar / True (iii) Palsu / False
(ii) Benar / True



BAHAGIAN C

- (a) (i) Prinsip pengembangan dan pengecutan jirim
Principle of expansion and contraction of matter
(ii) – Apabila bebuli menyentuh objek panas, merkuri mengembang
When bulb touch hot object, mercury expands
– Apabila bebuli menyentuh objek sejuk, merkuri mengecut
When bulb touch cold object, mercury contract

(b) Logam Q mengembang lebih cepat berbanding logam P
Metal Q expand faster than metal P

(c) (i) 
Loceng elektrik Electric bell
Besi Iron
Loyang Brass
Jalur dwilogam Bimetallic strip
Titik sentuh Contact point

(ii) – Apabila litar terdedah kepada haba, loyang mengembang lebih cepat daripada besi
When the circuit is expose to heat, brass expand faster than iron
– Jalur dwilogam membengkok ke arah skru sentuhan
Bimetallic strip bent towards contact point.
– Sistem litar lengkap dan loceng elektrik berbunyi
The circuit system complete and electric bell rings

(d) – Benar / True.
– Penutup logam mengembang apabila dipanaskan
Metal cap will expand when heated

BAB 10

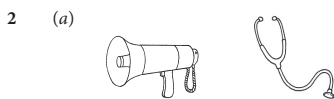
Gelombang Bunyi/Sound Waves

BAHAGIAN A

- | | | | | |
|------|------|-----|-----|------|
| 1 D | 2 A | 3 A | 4 A | 5 D |
| 6 D | 7 D | 8 A | 9 C | 10 A |
| 11 B | 12 A | | | |

BAHAGIAN B

- 1 (a) (i) Penyerap bunyi yang baik
A good absorber of sound
(ii) Pemantul bunyi yang baik
A good reflector of sound
(iii) Pemantul bunyi yang baik
A good reflector of sound
(b) (i) Palsu / False
(ii) Benar / True
(iii) Benar / True



- (b) (i) Bunyi nyaring dihasilkan
Louder sound is produced
(ii) Bunyi langsing dihasilkan
Higher pitch is produced

BAHAGIAN C

- 1 (a) (i) Kesan Doppler / *Doppler's effect*
(ii) – Pemerhati A / *Audience A*
– Frekuensi meningkat apabila motosikal mendekati pemerhati A
Frequency increase as motorcycle getting near to audience A
(iii) Bunyi ambulans lebih kuat apabila mendekati pemerhati pegun
Ambulance sound getting louder when getting near static audience
(b) – Bunyi jam loceng tidak kedengaran
The sound of alarm clock is not heard
– Kerana gelombang bunyi memerlukan medium untuk merambat / Kerana gelombang bunyi tidak boleh merambat dalam vakum.
Because sound wave needs medium to propagate / Because sound wave cannot propagate in vacuum.
(c) (i) – Tidak / No
– Kerana julat pendengaran manusia sehingga 20 000 Hz sahaja.
Because range of hearing frequency is below 20 000 Hz only
(ii) Ultrabunyi / *Ultrasound*

BAB 11

Bintang dan Galaksi dalam Alam Semesta Stars and Galaxies in the Universe

BAHAGIAN A

- | | | | | |
|-----|-----|-----|-----|-----|
| 1 A | 2 D | 3 B | 4 C | 5 A |
| 6 A | 7 B | | | |

BAHAGIAN B

- 1 (a) (i) Galaksi elips / *Elliptical galaxy*
(ii) Galaksi berpilin / *Spiral galaxy*
(b) (i) Benar / True
(ii) Palsu / False
(iii) Benar / True

BAHAGIAN C

- 1 (a) (i) P : Kerdil putih / *White dwarf*
Q : Super raksasa / *Supergiant*
R : Supernova / *Supernova*
(ii) Tidak membolehkan sebarang jirim terlepas daripadanya
Any matters enter it cannot escape including light
(iii) – Bintang super besar mengembang membentuk raksasa merah (super raksasa)
Super-giant star expand form red giant (supergiant)
– Letupan supernova berlaku dan terhasil S (lohong hitam)
Supernova explosion then happen and produce S (black hole)
(iv) Gas hidrogen dan helium
Hydrogen and helium gas
(b) (i) Galaksi berpilin / *Spiral galaxy*
(ii) Matahari / *Sun*
(iii) Andromeda / *Andromeda*
(c) Jarak Matahari lebih dekat dengan Bumi berbanding bintang lain
Distance of Sun is more near to Earth than other stars

BAB 12

Sistem Suria/Solar System

BAHAGIAN A

- | | | | | |
|-----|-----|-----|-----|-----|
| 1 B | 2 A | 3 D | 4 D | 5 D |
|-----|-----|-----|-----|-----|

BAHAGIAN B

- 1 (a) (i) Zuhrah / *Venus*
(ii) Marikh / *Mars*
(iii) Musytari / *Jupiter*
(b) Uranus ; Zuhah ; Neptun
Uranus ; Saturn ; Neptune

BAHAGIAN C

- 1 (a) Mempunyai atmosfera / *Has atmosphere*
(b) Saiz dan usia yang hampir sama
Size and age almost the same
(c) – Tidak / No
– Kerana mempunyai iklim yang mencabar / Kandungan gas karbon dioksida yang terlalu tinggi di dalam atmosfera
Because has challenging climate / Higher quantity of carbon dioxide in its atmosphere
(d) Bumi berputar dari barat ke timur manakala Zuhrah berputar dari timur ke barat
Earth rotates from west to east while Venus rotates from east to west
(e) – Pasang surut air laut / *High and low tides*
– Kejadian siang dan malam
Day and night event
2 (a) Kerana jaraknya lebih dekat dengan Matahari
Because its distance is near to the Sun
(b) Q
(c) Semakin besar saiz orbit, semakin lama masa yang diambil oleh planet untuk mengelilingi Matahari
The bigger the size of the orbit, the longer the time taken to orbit the Sun
(d) R
(e) S, R, P, Q

BAB 13

Meteoroid, Asteroid, Komet Meteoroid, Asteroid, Comet

BAHAGIAN A

- | | | | | |
|-----|-----|-----|-----|-----|
| 1 D | 2 C | 3 D | 4 A | 5 B |
| 6 C | 7 B | | | |

BAHAGIAN B

- 1 (a) Marikh dan Musytari
Mars and Jupiter
- (b) (i) Jasad kecil yang terdiri daripada campuran ais, gas dan debu beku yang bergerak mengelilingi Matahari mengikut orbitnya sendiri
Small body made up of a mixture of ice, gas and frozen dust and travels around the Sun in its own orbit
- (ii) Batuan besar dan logam yang mengelilingi Matahari mengikut orbitnya sendiri
Large metal and rocky body that travels around the Sun in its own orbit

BAHAGIAN C

- 1 (a) U : Lingkaran Kuiper / Kuiper belt
V : Awan Oort / Oort cloud
- (b) Mengelilingi Matahari / Terdiri daripada campuran ais, gas dan debu beku
Orbiting the Sun / Consist of mixture of ice, gas and frozen dust
- (c) Komet semakin laju, mencair dan kelihatan seperti berekor panjang
Comet increases in speed, melts and appears to have a long tail
- (d) Apabila komet terkeluar dari orbit kerana tarikan graviti planet luar yang kuat
When comet out of its orbit because strong gravitational pull of outer planet
- 2 (a) (i) Asteroid / Asteroid
(ii) Antara Marikh dan Musytari
Between Mars and Jupiter
- (b) (i) Meteoroid bergerak di ruang angkasa lepas manakala meteor adalah meteoroid yang telah memasuki atmosfera Bumi.
Meteoroid moves in outer space while meteor is meteoroid that has reach Earth's atmosphere
- (ii) Meteorit / Meteorite

UJIAN PERTENGAHAN SESI AKADEMIK

BAHAGIAN A

1 C	2 C	3 C	4 A	5 B
6 C	7 C	8 B	9 B	10 A
11 D	12 D	13 B	14 D	15 C
16 D	17 D	18 D	19 A	20 A

BAHAGIAN B

- 1 (a) (i) Bernafas melalui peparu
Breath through lungs
- (ii) Poikiloterma
Poikilothermic
- (b) (i) PALSU / FALSE (iii) PALSU / FALSE
(ii) BENAR / TRUE
- 2 (a) (i) pengeluar / producer
(ii) parasit / parasite
- (b) (i) Persaingan / Competition
(ii) Simbiosis / Symbiosis
- 3 (a) (i) Protein / Protein (ii) Lemak / Fat
- (b) (i) pencernaan / Digestion
(ii) usus kecil / small intestine
- 4 (a) (i) PALSU / FALSE (iii) BENAR / TRUE
(ii) PALSU / FALSE
- (b) (i) Udara / Air (ii) Air / Water
- 5 (a) (i) ✓ (ii) ✗ (iii) ✗
(b) (i) neutral / neutral (ii) beralkali / alkaline

BAHAGIAN C

- 1 (a) (i) – Poikiloterma / Poikilothermic
– Melakukan persenyawaan luar
Undergo external fertilisation
- (ii) Bertelur / Lay eggs
- (b) (i) Organisma X bernafas melalui insang sahaja manakala bagi organisma Y, anak bernafas melalui insang manakala organisma Y dewasa bernafas melalui kulit lembap dan peparu
Organism X breath through gills only, meanwhile young organism Y breath through gills and adult organism Y breath through lungs and moist skin
- (ii) Daun berurat selari / Parallel vein leaves
- (b) (i) – Paku-pakis adalah tumbuhan tidak berbunga manakala pokok jagung dan pokok bunga raya adalah tumbuhan berbunga.
Ferns is a non-flowering plant while maize plant and hibiscus plant is a flowering plant.
- (ii) – Pokok jagung adalah tumbuhan monokotiledon manakala pokok bunga raya adalah tumbuhan dikotiledon
Maize plant is a monocotyledon plant while hibiscus plant is a dicotyledon plant
- 2 (a) (i) Sel darah putih / White blood cell
- (ii) – Proses fagositosis
Phagocytosis process
- Sel X menelan dan mencerna patogen menggunakan enzim
Cell X swallow and digest pathogen using enzyme
- (b) (i) Badan menghasilkan antibodi sendiri apabila dirangsang oleh antigen
Body produce antibody by itself when stimulate by antigen
- (ii) – Mengandungi patogen yang mati atau lemah
Consist of dead or weak pathogen
- Sistem keimunan bergerak balas dan menghasilkan antibodi
Immunity system react and produce antibody
- (iii) Mudah terkena jangkitan penyakit kerana kepekatan antibodi di bawah aras keimunan
Easy to get infect by disease because antibody concentration below immunity level
- 3 (a) (i) Gabungan beberapa rantai makanan
Combination of several food chain
- (ii) Rumput → Arnab → Helang /
Grass → Rabbit → Eagle
- Rumput → Belalang → Katak → Helang /
Grass → Grasshopper → Frog → Eagle
- Rumput → Arnab → Ular → Helang /
Grass → Rabbit → Snake → Eagle
- Rumput → Tikus → Ular → Helang
Grass → Mouse → Snake → Eagle
- **mana satu diterima / **any one accepted**
- (iii) Pengeluar – Menghasilkan makanan sendiri melalui fotosintesis
Producer – Produce its own food by photosynthesis
- (iv) Populasi tikus bertambah dan populasi rumput berkurang
Rat's population increase and grass's population decrease
- (b) (i) Mangsa pemangsa / Prey-predator
- (ii) Kawalan biologi / Biological control
- (iii) Kedua-dua organisma mendapat manfaat dalam mutualisme manakala satu organisma mendapat mudarat dalam parasitisme
Both organisms get benefit in mutualism while one organisms is harm in parasitism
- (iv) Ikan jerung dan ikan remora / Paku-pakis langsuir dan pokok
Shark and remora fish / Bird's nest fern and tree
- 4 (a) (i) Limau berasa masam manakala peria berasa pahit
Lemon taste sour while bitter gourd taste bitter
- (ii) – Gelembung gas terhasil / Gas bubble produced
– Gas hidrogen terhasil
Hydrogen gas is produced

- Limau bersifat asid yang bertindak balas dengan logam menghasilkan gas hidrogen
Lemon is acidic which react with metal producing hydrogen gas
 - (b) (i) Menunjukkan sifat alkali di dalam air
Shows alkaline properties inside water
 - (ii) - Kertas litmus merah dalam tabung uji P tidak berubah warna
Red litmus paper in test tube P do not change colour
 - Kertas litmus merah dalam tabung uji Q berubah warna kepada biru
Red litmus paper in test tube Q change colour to blue
 - (c) (i) - Peneutralan / Neutralisation
 - Asid bertindak balas dengan alkali menghasilkan garam dan air
Acid react with alkali producing salt and water
 - (ii) Meneutralkan asid yang dihasilkan oleh bakteria
Neutralise acid that produce by bacteria
- 5 (a) (i) Untuk memastikan tindak balas enzim berlaku / Enzim bertindak balas pada suhu 37°C
To ensure enzymatic reaction happen / Enzyme react at temperature of 37°C
- (ii) Larutan iodine / Iodine solution
- (iii) - Terdapat enzim di dalam air liur
There are enzyme in saliva- Enzim mencerna kanji kepada bahan lain (maltosa)
Enzyme digest starch to another substance (maltose)

(iv) Mulut ; Duodenum / Mouth ; Duodenum

(v) Maltosa / Maltose

(vi) - Karbohidrat / Carbohydrate
- Membekalkan tenaga
Provide energy

(b) (i) $2\ 675 + 550 + 1\ 567(2) = 6359\text{ kJ}$

(ii) - Pisang / Tembikai
Banana / Watermelon- Mengandungi pelawas / vitamin / mineral
Contain fibre / vitamin / mineral

6 (a) (i) - Untuk meningkatkan takat didih air
To increase the boiling point of water- Mi dapat direbus dengan suhu yang lebih panas
Noodle can be boiled at higher temperature

(ii) Air tersejat, berubah daripada cecair ke gas
Water evaporate , change from liquid to gas

(b) (i) Pemboleh ubah dimanipulasikan
Manipulated variable

Kehadiran air / Kelembapan udara
Presence of water / Air humidity

Pemboleh ubah dimalarkan

Constant variable

Saiz kertas kobalt lembap

Size of moist cobalt chloride paper

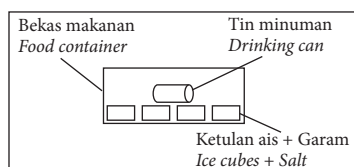
- (ii) Warna kertas kobalt klorida lembap merah jambu dalam serkup kaca P kerana ianya masih lembap. / Warna kertas kobalt klorida lembap biru dalam serkup kaca Q kerana ianya telah kering

The colour of moist cobalt chloride paper in glass cover P is pink because it still moist. / The colour of moist cobalt chloride paper in glass cover Q is blue because it has dry.

- (iii) Jika kelembapan udara rendah, maka kertas kobalt klorida lembap kering / Jika kelembapan udara rendah, maka kadar penyejatan air tinggi

If air humidity is low, then moist cobalt chloride paper dry / If air humidity is low, then rate of water evaporation is high

(b)



Penerangan / Explanation

- Ketulan ais dicampurkan dengan garam dan dimasukkan ke dalam bekas makanan
Ice cubes mix with salt and put inside food container
- Tin minuman dimasukkan ke dalam bekas makanan dan bekas makanan ditutup
Drinking can is put inside food container and close
- Takat lebur ais berkurang apabila ditambah garam. Suhu di dalam bekas makanan semakin rendah
Melting point of water is decrease when adding salt. Temperature inside food container decrease

UJIAN AKHIR SESI AKADEMIK

BAHAGIAN A

1 B	2 C	3 B	4 D	5 B
6 B	7 B	8 A	9 A	10 B
11 C	12 D	13 C	14 D	15 C
16 A	17 A	18 B	19 B	20 C

BAHAGIAN B

- 1 (a) (i) Tumbuhan tidak berbunga / Non-flowering plant
- (ii) Tumbuhan tidak berbunga / Non-flowering plant
- (iii) Tumbuhan berbunga / Flowering plant
- (b) (i) ✓ (ii) ✓
- 2 (a) (i) masam / sour
- (ii) lebih daripada / higher than
- (b) (i) Merah jambu / Pink (iii) Merah / Red
- (ii) Hijau / Green
- 3 (a) (i) Benar / True (iii) Palsu / False
- (ii) Palsu / False
- (b) (i) Daya elastik / Elastic force
- (ii) Daya apungan / Buoyant force
- 4 (a) (i) tenaga / energy
- (ii) bergetar / vibrating
- (b) (i) Benar / True
- (ii) Palsu / False
- (iii) Benar / True
- 5 (a) (i) Zuhrah / Venus
- (ii) Marikh / Mars
- (iii) Musytari / Jupiter
- (b) (i) Palsu / False
- (ii) Benar / True

BAHAGIAN C

- 1 (a) Menyambung atau memutuskan litar
Connect or disconnect the circuit
- (b) X : Kutub utara / North pole
- Y : Kutub selatan / South pole
- (c) - Klip kertas tertarik pada paku besi
Paper clip attract to iron nail- Kesan magnet sementara waktu berlaku pada paku besi apabila arus elektrik mengalir melaluinya
Temporary magnetic effect happen to the iron nail when electric current flows through it
- Menambah arus elektrik / Menambah bilangan sel kering
Increase electrical current / Adding the number of dry cell
- Menambahkan lilitan gegelung wayar kuprum
Increase number of turns of copper wire
- Untuk meningkatkan kekuatan medan magnet ke atas paku besi
To increase the strength of the magnetic field

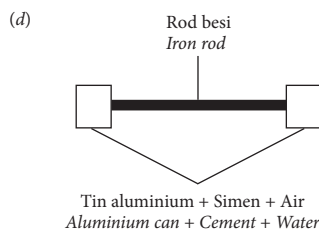
2 (a) - Berkurang / Mati
Decrease / Die- Padi merupakan makanan bagi belalang / Belalang memerlukan padi sebagai sumber makanan.
Paddy is food for grasshopper / Grasshopper needs paddy as food source

- (b) Pengguna tertier
Tertiary consumer
- (c) (i) Semakin tinggi jumlah penjualan racun serangga jenama Y, semakin tinggi pengeluaran padi di daerah X
The higher the total sales of pesticide of brand Y, the higher production of paddy at district X
- (ii) - Membunuh serangga perosak
Kills pest insect
- Meningkatkan pengeluaran padi
Increase the production of paddy
- (iii) - Kawalan biologi
Biological control
- Menggunakan pemangsa semula jadi untuk mengurangkan bilangan haiwan perosak
Use natural prey to decrease the number of pest animal

- 3 (a) (i) Keimunan aktif semula jadi
Natural active immunity
- (ii) - Antibodi / *Antibody*
- Antibodi semasa jangkitan pertama adalah rendah dan tidak mencapai aras keimunan
Antibody during first infection is lower and does not achieve the immunity level
- (b) - Keimunan pasif semula jadi
Natural passive immunity
- Bayi mendapat antibodi daripada susu ibu / Bayi mendapat antibodi daripada darah ibu melalui plasenta
Baby gets antibody from breast milk/ Baby receives antibody from blood through placenta
- Keimunan bersifat sementara
The immunity is temporary
- (c) (i) Keimunan aktif buatan
Artificial active immunity
- (ii) - Keimunan berkurang / *Immunity decrease*
- Keimunan warga emas dan pesakit diabetes lebih rendah
Immunity of old people and diabetes patient is lower
- 4 (a) (i) Perolakan / *Convection*
- (ii) - Udara panas di darat kurang tumpat naik ke atas
Warm air on land less dense and rise up
- Udara sejuk lebih tumpat turun dan bergerak dari permukaan laut menggantikan udara panas di darat
Cold air that is more dense move downwards and move from the surface of sea replace warm air on land
- (b) (i) F
- (ii) - Udara panas di ruang tamu kurang tumpat dan naik ke atas
Warm air in living hall less dense and rise up
- Alat penghawa dingin menyejukkan udara panas di atas dan menjadi lebih tumpat lalu turun ke bawah
Air conditioner cooled the warm air and become more dense and move downwards
- (c) (i) - Malik
- Haba mudah terbebas keluar dari permukaan yang gelap // Baju hitam merupakan pembebas haba yang lebih baik.
Heat easily release from darker surface. Black cloth is a good heat radiator
- (ii) - Farid
- Baju putih tidak menyerap haba dengan baik.
White cloth is not a good heat absorber

- 5 (a) (i) Lemak /Protein / Karbohidrat / Pelawas / Vitamin / Mineral
Fats / Protein / Carbohydrate/Fibre / Vitamin / Mineral

- (ii) - Pelawas : Menghalang sembelit /Merangsang peristalsis
Fibre : Prevent constipation /Stimulate peristalsis
(atau / or)
- Vitamin : Mengekalkan kesihatan badan
Vitamin :Maintain health body
(atau / or)
- Mineral : Mengawal atur proses badan / Mengekalkan kesihatan
Mineral : Control body process / Maintain health body
- (b) - Menu A kerana tiada pelawas
Menu A because no fibre
- Pelawas menghalang sembelit / Merangsang peristalsis
Fibre prevent constipation / Stimulate peristalsis
- (c) 570 kJ



- Simen dibancuh bersama air dan dimasukkan ke dalam tin aluminium
Cement mix with water and put inside aluminium can
- Tin aluminium dilekatkan di kiri dan kanan rod besi
Aluminium can is paste on left and right side of steel rod
- Alat ini dapat membantu mengurangkan lemak / Meningkatkan otot tangan
This equipment can reduce fat / Increase hand muscle strength

- 6 (a) (i) - Larutan cair / *Dilute solution*
- Kerana sedikit zat terlarut (gula) dimasukkan
Because little solute is insert
- (ii) - Kacau larutan
Stir the solution
- Keterlarutan bertambah apabila larutan dikacau
Solubility increase when the solution is stir
- (b) - B
- Cerek B mempunyai teh yang merupakan bendasing
Kettle B has tea that are impurities
- Bendasing meningkatkan takat didih air
Impurities increase the boiling point of water
- (c) (i) Gula di dalam bikar P larut lebih cepat kerana gula halus digunakan. / Gula dalam bikar Q larut lebih lambat kerana gula kiub digunakan
Sugar in beaker P dissolve faster because sugar powder is use / Sugar in beaker Q dissolve slower because sugar cube is use
- (ii) Kurang daripada 15 saat
Less than 15 seconds
- (iii) Jisim gula /Kadar kacauan /Suhu air suling / Isi padu air suling
Mass of sugar /Rate of stirring /Temperature of distilled water / Volume of distilled water