PEPERIKSAAN PERCUBAAN SPM
TINGKATAN 5
SKEMA KERTAS 1

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

11	B
12	D
13	C
14	D
15	B
16	A
17	D
18	D
19	D
20	C

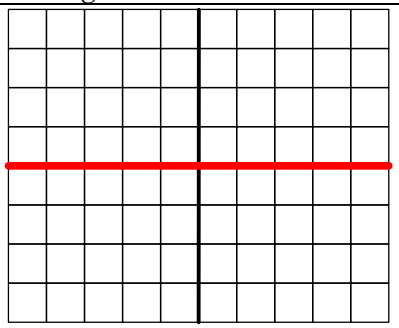
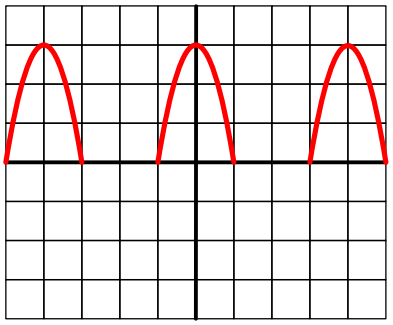
21	B
22	B
23	C
24	A
25	B
26	D
27	A
28	D
29	B
30	A

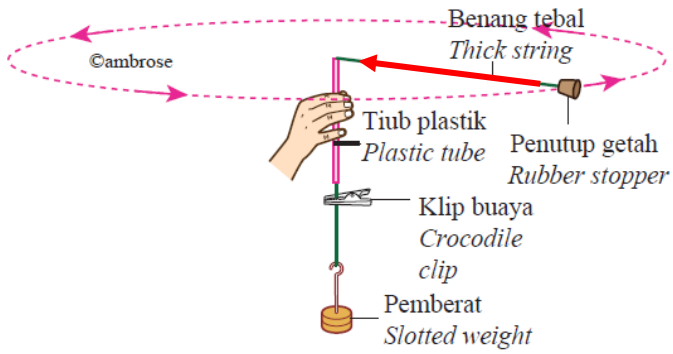
31	A
32	D
33	D
34	B
35	D
36	A
37	D
38	B
39	A
40	A

SKEMA KERTAS 2

No Soalan		*Jawapan / Answer*	Markah
1.	(a)	Kuantiti asas / Kuantiti skalar *Basic quantity / Scalar quantity*	1
	(b)	$\frac{24}{20}$ $= 1.2s$	1 1
	(c)	Berkurang / *Decreasing*	1

No Soalan		*Jawapan / Answer*	Markah
2.	(a)	Jarak terpendek di antara dua titik pada arah tertentu *Shortest distance between two points in specific direction*	1
	(b)	Tidak bergerak / Berhenti / Pegun *Not moving / Stop / Stationary*	1
	(c)	− 40 m	1
	(d)	$\frac{-40}{20}$ $= -2ms^{-1}$	1 1

No Soalan		*Jawapan / Answer*	Markah
3.	(a)	Membenarkan arus mengalir sehala sahaja *Allow current flow in one direction only*	1
	(b)(i)	Tidak menyala *Not lights up*	1
	(b)(ii)	Sambungan diod dalam keadaan pincang songsang *Connection of diode in reversed bias.* Rintangan diod sangat tinggi *Resistance of diode too high*	1
	(c)	 Rajah 3.2.2  Rajah 3.3.2	1 1
	(d)	Rektifikasi *Rectification*	1
No Soalan		*Jawapan / Answer*	Markah

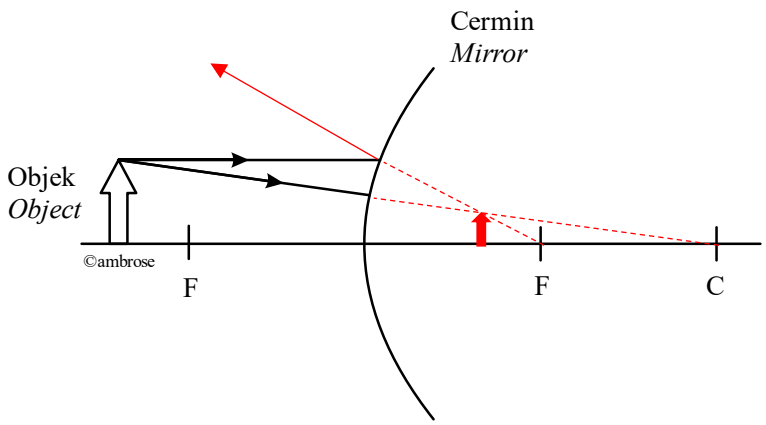
4.	(a)(i)	Kerana ada daya graviti yang saling bertindak di antara dua jasad. *Because there is a gravitational force acting between two bodies.*	1
	(a)(ii)	$g = \frac{GM}{R^2}$ $g = \frac{6.67\times10^{-11} \bullet 5.97\times10^{24}}{\left(6.37\times10^{6}\right)^2}$ $g = 9.81 ms^{-2}$	1 1
	(a)(iii)	$F = mg = 1.5 \bullet 9.81$ $F = 14.715N$	1 1
	(b)(i)		1
	(b)(ii)	$F = \frac{0.2(4)^2}{1.0}$ $F = 3.2N$	1 1
	(b)(iii)	Berkurang / *Decreasing* ** Jejari, r berkadar terus dengan v^2	1

No Soalan (Extra)		*Jawapan / Answer*	Markah
4.	(a)(i)	Kelvin	1
	(a)(ii)	Untuk mencapai keseimbangan terma *To achieve thermal equilibrium*	1
	(a)(iii)	$T = \frac{7}{12}\times100°C$ $T = 58.33°C$	1 1
	(b)(i)	Untuk mengelak haba dibebaskan ke persekitaran *To avoid heat loss to surrounding*	1
	(b)(ii)	$E = Pt = 20(10\times60) = 12000J$ $12000 = (0.5)(c)(26.6)$ $c = 902 Jkg^{-1}°C^{-1}$	1 1 1
	(b)(iii)	Bertambah / *Increasing*	1

No Soalan		*Jawapan / Answer*	Markah
5.	(a)	Frekuensi minimum foton cahaya yang diperlukan untuk menghasilkan kesan fotoelektrik. *The minimum frequency of light photon required to produce photoelectric effect*	1
	(b)(i)	A < B	1
	(b)(ii)	A < B	1
	(b)(iii)	Semakin tinggi frekuensi, semakin tinggi tenaga kinetik maksimum elektron yang dipancarkan. *The greater the frequency, the greater the minimum kinetic energy of electron emitted.*	1
	(c)(i)	$W = hf_o$ $3.00\left(1.6\times10^{-19}\right) = \left(6.63\times10^{-34}\right) f_o$ $f_o = 7.24\times10^{14}\,Hz$	1 1
	(c)(ii)	$E = W + K$ $E = 3.00 + 0.60$ $E = 3.60eV$ Or $E = 5.76\times10^{-19}\,J$	1 1
	(d)	Tidak berubah *Remain unchanged*	1

No Soalan (Extra)		*Jawapan / Answer*	Markah
5.	(a)	Pembelauan *Diffraction*	1
	(b)	Tenaga // Amplitud *Energy // Amplitude*	1
	(c)(i)	Rajah 5.1 > Rajah 5.2 *Diagram 5.1 > Diagram 5.2*	1
	(c)(ii)	Rajah 5.2 lebih membulat daripada Rajah 5.1 *Diagram 5.2 is more circular than Diagram 5.1*	1
	(c)(iii)	Semakin kecil saiz celah, semakin membulat bentuk gelombang *The smaller the size of slit, the more circular the shape of wave*	1
	(d)(i)	Sinar-X *X-ray*	1
	(d)(ii)	Mengesan keretakan tulang Mengimbas bagasa di lapangan terbang Menentukan keaslian lukisan *Detect bone fracture* *Scanning luggage in airport* *To authenticity of painting*	1
	(d)(iii)	$v = f\lambda$ $3\times10^{8} = \left(2\times10^{13}\right)\lambda$ $\lambda = 1.5\times10^{-5}\,m$	1 1

No Soalan		*Jawapan / Answer*	Markah
6.	(a)	Kadar perubahan momentum *Rate change in momentum*	1
	(b)(i)	$F_x = 800kos40$ $F_x = 612.84N$	1 1
	(b)(ii)	$F_x = 800kos15$ $F_x = 772.74N$	1 1
	(c)(i)	Rajah 6.1 > Rajah 6.2 *Diagram* 6.1 > *Diagram* 6.2	1
	(c)(ii)	Rajah 6.1 < Rajah 6.2 *Diagram* 6.1 < *Diagram* 6.2	1
	(d)(i)	Semakin besar sudut, semakin kecil F_x *The greater the angle, the smaller the* F_x	1
	(d)(ii)	Semakin besar F_x, semakin besar pecutan *The greater the* F_x*, the greater the acceleration*	1

No Soalan		*Jawapan / Answer*	Markah
7.	(a)(i)	Pantulan cahaya *Reflectionof light*	1
	(a)(ii)	Diperkecilkan // Tegak // Maya *Diminished // Upright // Virtual*	1
	(a)(iii)	 1 m –garis putus-putus ke C / *dotted line to* C 1 m –garis putus – putus ke F / *dotted line to* F 1 m – lukis imej / *draw image*	3
	(b)(i)	Cermin cekung. Memantul dan memfokus cahaya dengan lebih baik // Imej lebih terang. *Concave mirror* *Reflect and focus the light better // Prpduced brighter image*	1 1
	(b)(iii)	Kurang daripada jarak fokus. Menghasilkan imej yang lebih besar. *Less than focal length.* *Produce large image.*	1 1

No Soalan		*Jawapan / Answer*	Markah
8.	(a)(i)	$E = Pt$ $E = 2kW\left(6j \times 30\right)$ $E = 360kWj$	 1 1
	(a)(ii)	360×0.20 $= RM\,72$	1 1
	(b)(i)	Dawai gegelung. Rintangan tinggi. *Coiled wire.* *High resistance*	1 1
	(b)(ii)	Nikrom. Kerintangan tinggi // rintangan tinggi. *Nichrome.* *High resistivity // High resistance*	1 1
	(d)	N	1

No Soalan		*Jawapan / Answer*	Markah
9.	(a)	Ketumpatan cecair // graviti / *Density of liquid // gravity*	1
	(b)(i)	X < Y	1
	(b)(ii)	X < Y	1
	(b)(iii)	X < Y	1
	(c)(i)	Semakin bertambah tekanan air, semakin bertambah jarak mengufuk pancutan air. *The greater the pressure of water, the greater the horizontal distance of water spurting out.*	1
	(c)(ii)	Semakin bertambah kedalaman air, semakin bertambah tekanan air. *The greater the depth of water, the greater the pressure of water.*	1
	(d)(i)	$P = hpg$ $P = \left(10\right)\left(1000\right)\left(9.81\right)$ $P = 9.81 \times 10^4\,Pa$	 1 1
	(d)(ii)	$P = hpg$ $P = \left(10 + 5\right)\left(1000\right)\left(9.81\right)$ $P = 1.47 \times 10^5\,Pa$ Or $P = 10 + 5$ $P = 15m$ air	 1 1
	(e)	Ciri-ciri / *Characteristics* — Penerangan / *Explanation* Kedudukan baldi: Atas lantai / *Position of pail: On the floor* — Menghasilkan kawasan tekanan rendah / *Create low pressure region* Kedudukan akuarium: Atas meja / *Position of aquarium: On the table* — Menghasilkan kawasan tekanan tinggi / *Create high pressure region* Diameter hos: Besar / *Diameter of hose: Big* — Boleh mengalirkan isipadu air dengan banyak / *Large volume of water flowing* Perbezaan ketinggian: Tinggi / *Different in height: High* — Perbezaan tekanan yang tinggi. / *Large different in pressure* Pilih N	1,1 1,1 1,1 1,1 1,1

No Soalan		*Jawapan / Answer*	Markah
10.	(a)(i)	Pembelahan nukleus *Nuclear fission*	1
	(a)(ii)	1.00867 + 235.04392 – 91.92611 – 140.91441 – 3(1.00867) = 0.18606 u = 3.088596×10^{-28} kg	1 1 1
	(a)(iii)	$E = mc^2$ $E = \left(3.088596 \times 10^{-28}\right)\left(3 \times 10^{8}\right)^2$ $E = 2.78 \times 10^{-11} J$	 1 1
	(c)	Nuklues uranium-235 ditembak dengan satu neutron. Menghasilkan nukleus yang tidak stabil. Pembelahan nukleus berlaku menghasilkan nukleus kripton, barium dan tiga neutron yang baru. Tiga neutron yang terhasil akan menembak nukleus uranium yang lain. Proses ini berterusan menghasilkan tindak balas berantai. *Uranium-235 nucleus is bombarded with a neutron.* *Uranium nucleus is unstable.* *Nuclear fission is occurred and produce nucleus of krypton, barium and three new neutrons.* *Three neutrons bombarded another uranium nucleus.* *The process is continuing to produce chain reaction*.	1 1 1 1

	(e)		

Ciri-ciri *Characteristics*	Penerangan *Explanation*	
Rod kawalan: Boron *Control rod: Boron*	Menyerap neutron yang berlebihan *Absorb excess neutron*	1,1
Moderator: Grafit *Moderator: graphite*	Memperlahan neutron yang bergerak pantas *Slow down fast-moving neutron*	1,1
Bahan api: Uranium *Fuel: Uranium*	Menghasilkan tenaga yang banyak *Produce large amount of energy*	1,1
Dinding reaktor: Konkrit tebal *Wall of reactor: concrete wall*	Menghalang sinaran radioaktif yang merbahaya ke persekitaran *Prevent dangerous radiation emitted to surrounding.*	1,1
Pilih: P		1,1

<table>
<tr><th colspan="2">No Soalan</th><th>Jawapan / Answer</th><th>Markah</th></tr>
<tr><td>11.</td><td>(a)</td><td>Arus yang terhasil apabila konduktor memotong fluks magnet.
Current produced when conductor cuts magnetic flux.</td><td>1</td></tr>
<tr><td></td><td>(b)(i)</td><td>Arah gerakan: Rajah 11.1 = Rajah 11.2
Luas keratan rentas rod kuprum: Rajah 11.1 < Rajah 11.2
Magnitud pesongan jarum galvanometer: Rajah 11.1 < Rajah 11.2

Direction of motion: Diagram 11.1 = Diagram 11.2
The cross-sectional area of copper rod: Diagram 11.1 < Diagram 11.2
Magnitude of deflection of galvanometer pointer: Diagram 11.1 < Diagram 11.2.</td><td>1
1
1</td></tr>
<tr><td></td><td>(b)(ii)</td><td>Semakin bertambah luas keratan rentas rod kuprum, semakin bertambah magnitud pesongan jarum galvanometer.
The greater the cross-sectional area of copper rod, the greater the magnitude of deflection of galvanometer pointer.

Semakin bertambah luas keratan rentas rod kuprum, semakin bertambah arus auhan.
The greater the cross-sectional area of copper rod, the greater the induced current.

Konsep fizik: Aruhan elektromagnet
Physical concept: electromagnetic induction</td><td>1

1

1</td></tr>
<tr><td></td><td>(c)</td><td>Apabila magnet bar ditolak masuk ke dalam solenoid, hujung P menjadi kutub Utara.
Arus aruhan terhasil.
Jarum galvanometer terpesong ke kiri.
Hukum fizik yang terlibat adalah Hukum Lenz.

When the bar magnet is pushed into the solenoid, the end of P become North.
Induced current is produced.
The pointer of galvanometer deflected to the left.
The law of physics involved is Lenz Law</td><td>1
1
1
1
1

Max: 4</td></tr>
<tr><td></td><td>(d)</td><td>
<table>
<tr><th>Ciri-ciri
Characteristics</th><th>Penerangan
Explanation</th></tr>
<tr><td>Guna magnet yang kuat // Guna magnet neodimium
Use stronger magnet // Use neodymium magnet</td><td>Menghasilkan medan magnet yang kuat
Produce stronger magnetic field</td></tr>
<tr><td>Menambah bilangan lilitan gegelung.
Increase the number of turns of coil</td><td>Meningkatkan pemotongan fluks magnet.
Increase the cut of magnetic flux.</td></tr>
<tr><td>Menggunakan dawai kuprum
Use copper wire</td><td>Rintangan rendah
Low resistance</td></tr>
<tr><td>Luas keratan rentas dawai gegelung lebih besar
Cross sectional area of wire coil is larger</td><td>Mengurangkan rintangan
Reduce resistance</td></tr>
<tr><td>Tukar komutator with gelang gelincir
Change commutator with slip rings</td><td>Menghasilkan arus ulang-alik
Produce alternating current</td></tr>
</table>
</td><td>1,1

1,1

1,1

1,1

1,1</td></tr>
</table>