PEPERIKSAAN PERCUBAAN JOHOR SPM 2017

FIZIK KERTAS 1

Skema Jawapan

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | B | **11** | B | **21** | C | **31** | D | **41** | A |
| **2** | D | **12** | C | **22** | C | **32** | B | **42** | D |
| **3** | A | **13** | D | **23** | D | **33** | A | **43** | C |
| **4** | A | **14** | D | **24** | B | **34** | A | **44** | C |
| **5** | B | **15** | D | **25** | D | **35** | B | **45** | C |
| **6** | A | **16** | B | **26** | D | **36** | D | **46** | A |
| **7** | C | **17** | D | **27** | C | **37** | D | **47** | D |
| **8** | C | **18** | C | **28** | C | **38** | A | **48** | C |
| **9** | D | **19** | C | **29** | B | **39** | B | **49** | B |
| **10** | C | **20** | C | **30** | D | **40** | C | **50** | A |

**Fizik**

**4531/2**

**Ogos 2017**

**PEPERIKSAAN PERCUBAAN SPM**

**TAHUN 2017**

===================================================================

**PERATURAN PEMARKAHAN FIZIK**

**Fizik Kertas 2**

**PERATURAN PEMARKAHAN**

Peraturan Pemarkahan ini adalah **SULIT**.

Hanya untuk kegunaan Pemeriksa sahaja.

**Skrip Pemarkahan Ini Mengandungi 15 Halaman Bercetak**

**Skema Pemarkahan Kertas 2**

**Section A / *Bahagian* A**

**Question 1 / *Soalan* 1**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Soalan** | **Markah** | **Keterangan** | **Jumlah Markah** |
| (a) | M1 | Potential difference / Voltage*Beza keupayaan* / *Voltan* | **1** |
| (b)(i) | M1 | Answer with correct unit *Jawapan dengan unit betul* :0.8 V | **1** |
| (ii) | M1 | Deduct the reading observed with zero error // 0.8 V – zero error*Menolak bacaan dicerap dengan ralat sifar*// 0.8 V – *ralat sifar* | **1** |
| (c) | M1 | Answer with correct unit:*Jawapan dengan unit betul* :0.1 V[*Reject* : 0.10 V] | **1** |
| **Jumlah markah** | **4** |

**Question 2 / *Soalan* 2**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Soalan** | **Markah** | **Keterangan** | **Jumlah Markah** |
| (a) | M1 | Phenomenon : Reflection*Fenomena* : *Pantulan* | **1** |
| (b) | M1 | Characteristics of image :- Upright / virtual*Sifat-sifat imej* :- *Tegak* / *maya*[Accept any **one** / *Terima mana-mana***satu**] | **1** |
| (c) | M1M2M3 | Draw a line from mirror to F*Melukis satu garis lurus dari cermin ke* FDraw a line from head of object to C and extrapolate the line to mirror*Melukis satu garis lurus dari kepala objek ke* C *dan diekstrapolasikan ke cermin*Draw the image line at the intercept of F and C*Melukis garis imej pada persilangan garis* F *dan* C[Ignore the direction of arrow of light]- *Abaikan arah anak panah cahaya* | **3** |
| **Jumlah markah** | **5** |

**Question 3 / *Soalan* 3**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Soalan** | **Markah** | **Keterangan** | **Jumlah Markah** |
| (a) (i) | M1 | Parallel*Selari* | **1** |
|  (ii) | M1 | Series*Sesiri* [*Reject* : *Bersiri*] | **1** |
| (b) | M1M2 | Correct substitution into formula V = IR*Gantian yang betul ke dalam formula* V = IR 12 = I x 5 // I = 12 5Answer with correct unit */ Jawapan dengan unit betul* : I = 2.4 A | **2** |
| (c) | M1 | Increase / Larger / Bigger*Bertambah* / *Meningkat* / *Lebih besar* | **1** |
| (d) | M1 | Parallel *Selari* | **1** |
| **Jumlah markah** | **6** |

**Question 4 / *Soalan* 4**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Soalan** | **Markah** |  **Keterangan** | **Jumlah Markah** |
| (a) | M1 | Net force / resultant force is zero*Daya bersih* / *daya paduan adalah sifar* | **1** |
| (b) | M1 | Tension of the string*Tegangan tali* | **1** |
| (c) | M1 | 20 N | **1** |
| (d)(i) | M1M2 | Triangle shape with the correct direction and angle*Bentuk segitiga dengan arah dan sudut yangbetul*Length of Y / *Panjang* Y = 10 cm | **2** |
| (d)(ii) | M1M2 | F = 5.8 x 2 = 11.6 N ± 0.2 NX = 11.5 x 2 = 23.0 N ± 0.2 N | **2** |
| **Jumlah markah** | **7** |

**Question 5 / *Soalan* 5**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Soalan** | **Markah** | **Keterangan** | **Jumlah Markah** |
| (a) | M1 | *State the meaning of density correctly* :*Nyatakan maksud bagi ketumpatan dengan betul:*Mass per volume // Density = *Jisim per isipadu* //*Ketumpatan* = | **1** |
| (b) | M1 | Density of air at P is greater than density of air at Q / vice-versa*Ketumpatan udara di* P *lebih besar berbanding ketumpatan udara di* Q/ *sebaliknya* | **1** |
| (c) | M1 | Altitude of Q / in Diagram 5.1 is higher / altitude of P / in Diagram 5.2 is lower *Altitud* Q */ Pada Rajah* 5.1 *lebih tinggi* // *Altitud* P / *pada Rajah* 5.2 *lebih rendah*  | **1** |
| (d) | M1 | Height of mercury column of P / in Diagram 5.3 is higher // of Q / in Diagram 5.4 is lower*Ketinggian turus merkuri di* P/ *pada Rajah* 5.3 *lebih tinggi* // *di* Q */ pada Rajah* 5.4 *lebih rendah* | **1** |
| (e)(i) | M1 | When the altitude is higher / increases, the density of air is lower / decreases // Altitude is inversely proportional to density of air*Apabila altitud bertambah, ketumpatan udara berkurang* // *Altitud berkadar songsang dengan ketumpatan udara* | **1** |
| (ii) | M1 | When the altitude is higher / increases, the atmospheric pressure is lower / decreases // Altitude is inversely proportional to atmospheric pressure *Apabila altitud bertambah, tekanan atmosfera berkurang* // *Altitud berkadar songsang dengan tekanan atmosfera* | **1** |
| (f)  | M1M2 | Correct substitution into formulaP = ρhg*Gantian yang betul ke dalam formula* P = ρhgP = 0.75 x1.36 x104x 10 // 75 x1.36 x104x10Correct answer /*Jawapan betul* : = 102000 // 1.02 x105 | **2** |
| **Jumlah markah** | **8** |

**Question 6 / *Soalan* 6**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Soalan** | **Markah** | **Keterangan** | **Jumlah Markah** |
| (a) | M1 | Potential difference is directly proportional to current// *Beza keupayaan berkadar langsung dengan arus* [*Reject* : V is directly proportional to I // V α I] | **1** |
| (b)(i) | M1 | Bulb P and Q in Diagram 6.1 in parallel **and**bulb P and Q Diagram 6.2 in series*Mentol* P *dan* Q *pada Rajah* 6.1 *adalah selari* ***dan*** *mentol* P *dan* Q *pada Rajah* 6.2 *adalah sesiri*[*Reject* : mentol P dan Q pada Rajah 6.2 adalah **bersiri**] | **1** |
|  (ii) | M1 | Bulb P and Q in Diagram 6.1 are brighter //bulb P and Q Diagram 6.2are dimmer*Mentol* P *dan* Q *pada Rajah* 6.1 *lebih cerah* // *mentol* P *dan* Q *pada Rajah* 6.2 *lebih malap*/ *kurang cerah* | **1** |
|  (iii) | M1 | Potential difference in Diagram 6.1 is bigger //in Diagram 6.2 is smaller*Beza keupayaan pada Rajah* 6.1*lebih besar*// *pada Rajah* 6.2 *lebih kecil* / *lebih rendah* | **1** |
| (c) (i) | M1 | When bulbs are arranged in parallel, brightness of bulb increased // vice-versa*Apabila mentol-mentol disambung secara selari, kecerahan mentol bertambah*// *sebaliknya* | **1** |
|  (ii) | M1 | When bulbs are in parallel, potential difference is more / equal to potential difference of the battery // vice-versa*Apabila mentol-mentol disusun secara selari, beza keupayaan adalah lebih besar* / *sama dengan beza keupayaan bateri* | **1** |
| (d) (i) | M1 | Q is brighter than P **and**brightness of P is same with RQ *lebih cerah berbanding* P**dan** *kecerahan* P *sama dengan* R | **1** |
|  (ii) | M1 | Effective resistance of P and R is more than Q // Current is more in bulb Q / vice-versa*Rintangan berkesan pada* P *dan* R *lebih besar berbanding* Q *// Arus pada* Q *lebih besar / sebaliknya* | **1** |
| **Jumlah markah** | **8** |

**Question 7 / *Soalan* 7**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Soalan** | **Markah** | **Keterangan** | **Jumlah Markah** |
| (a) | M1M2 | High // *Tinggi*Bright // *Cerah* / *Terang* | **2** |
| (b) (i) |  | Alarm = 0 0 0 1*Loceng amaran* = 0 0 0 12M – all four output are correct // *keempat-empat output betul*1M – 3 output are correct // 3 *output betul*0M – 2 and less output are correct // 2 *dan kurang output betul* | **2** |
|  (ii) | M1 | Logic gate DAN*Get logik* DAN | **1** |
| (c)(i) | M1 | Vs is increasesVs*semakin meningkat*/ *bertambah* | **1** |
|  (ii) | M1M2M3 | - When Vs increases, Ic current / base current increases*Apabila* Vs*bertambah, arus* Ic/ *arus tapak bertambah*- Transistor is ON*Transistor dihidupkan*- Relay switch is ON  suis geganti dihidupkan[Any **two** are correct / *Mana-mana* **dua***betul*] | **2** |
|  (iii) | M1M2 | TermistorSwitch off the air conditioner automatically when the temperature is too low//*Mematikan penghawa dingin secara automatik apabila suhu sangat rendah* | **2** |
|  |  | **Jumlah markah** | **10** |

**Question 8 / *Soalan* 8**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Soalan** | **Markah** | **Keterangan** | **Jumlah Markah** |
| (a)(i) | M1 | Ratemeter reading increases abruptly // Ratemeter reading is the highest*Bacaan meter kadar meningkat dengan mendadak*// *bacaan meter kadar paling besar* | **1** |
|  (ii) | M1 | Geiger-Muller / GM tube*Tiub Geiger-Muller* / GM | **1** |
| (b) | M1 | Unstable isotope // Element with unstablenuclei*Isotop yang tidak stabil* // *unsur dengan nukleus tidak stabil* | **1** |
| (c)(i) | M1M2 | Half-life / *Separuh hayat* :- Shorter/ *Singkat*Reason / *Sebab* : Water will not be contaminated for a longer period // After short period of time the activity of the radioactive substance will become weak*Air tidak akan tercemar untuk tempoh masa yang lama* // *Selepas tempoh masa yang singkat aktiviti bahan radioaktif akan menjadi lemah* | **2** |
|  (ii) | M1M2 | Type of radiation / *Jenis sinaran* :- Gamma / *Gama*Reason / *Sebab* : High penetrating power // can penetrate through the soil and detected by detector*Kuasa penembusan tinggi* // *dapat menembusi tanah dan dikesan oleh pengesan* | **2** |
| (iii) | M1M2 | State of matter / *Keadaan jirim*:- Liquid / *cecair*Reason / *Sebab* : Dissolved in water easily *Melarut dalam air dengan mudah*  | **2** |
| (d) | M1 | Radioisotope S | **1** |
| (e) | M1M2 | Shows 3 times of decaying / *Menunjukkan* 3 *kali pereputan*100% $\rightarrow $ 50% → 25% → 12.5% // 3 x 5.27Correct answer */ Jawapan betul* : t = 15.81 years / *tahun* | **2** |
| **Jumlah markah** | **12** |

**Section B / *Bahagian* B**

**Question 9 / *Soalan* 9**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Soalan** | **Markah** | **Keterangan** | **Jumlah Markah** |
| (a) | M1 |  //  | **1** |
| (b) | M1M2M3M4M5 | Object distance / *Jarak objek* :Object distance of Diagram 9.1 is shortercompared to Diagram 9.2 //vice versa //*Jarak objek bagi Rajah* 9.1 *lebih pendekberbanding Rajah* 9.2 //*sebaliknya*Image distance / *Jarak Imej* : Image distance in Diagram 9.1 is longer compared to Diagram 9.2 // vice versa*Jarak imej dalam Rajah* 9.1 *lebih jauh berbanding Rajah* 9.2 // *sebaliknya*Image size */ Saiz imej :* Image size in Diagram 9.1 is bigger than Diagram9.2/ vice versa *//**Saiz imej pada Rajah 9.1 lebih besar berbanding Rajah 9.2* // *sebaliknya*When image distance increases, the object distance increases / vice-versa //*Semakin bertambah jarak imej, semakin bertambah jarak objek* /*/sebaliknya*When object distance increases, the image size decreases // vice-versa *Semakin bertambah jarak objek, semakin berkurang saiz imej* /*/sebaliknya* | **5** |
| (c)  | M1M2M3M4 | Object in between F and 2F*Objek diantara* F *dan* 2FLight ray parallel to principle axis converge to F after passing the lens **and** light passing through optical centre does not refract *Sinar cahaya selari dengan paksi utama mencapah kepada* F *selepas melalui kanta* ***dan*** *arah cahaya melalui pusat optik tidak dibiaskan*Image formed at the intersection of the two rays //*Imej yang terbentuk pada persilangan dua arah cahaya*Image is magnified, inverted and real // *Imej diperbesarkan, songsang dan nyata* | **4** |
| (d) |

|  |  |
| --- | --- |
| Modification/ *Ubahsuaian* | Explanation / *Penerangan* |
| M1 | A plane mirror mounted on an adjustable arm *Cermin satah dipasang pada boleh lengan laras* | M2 | Reflects light to the vertical screen, corrects lateral and vertical inversion*Memantulkan cahaya kepada skrin menegak, membetulkan songsang sisi dan tegak* |
| M3 | Use a converging mirror / concave mirror*Gunakan cermin menumpu*/ *cermin cekung* | M4 | Focus the light directly to the lens *Menumpukan lebih banyak cahaya pada kanta*Increase the intensity of light.*Meningkatkan keamatan cahaya* |
| M5 | Place the halogen lamp at the centre of curvature of the converging mirror*Letakkan lampu halogen di pusat lengungan cermin menumpu* | M6 | Light from the lamp will reflect back on the same path *Cahaya dari lampu akan dipantul balik pada laluan yang sama*Increase intensity of light towards the transparency*Meningkatkan keamatan cahaya ke transparensi* |
| M7 | Electric fan operates during and after the lamp is switched on*Kipas elektrik beroperasi semasa dan selepas lampu dihidupkan* | M8 | To cool down the projector *Untuk menyejukkan projektor.*To avoid over heating *Mengelakkan pemanasan terlampau* |
| M9 | Use heat filter*Gunakan penapis haba* | M10 | To absorb excess heat to the transparency *Untuk menyerap habayang berlebihan ke transparensi* |

 | **10** |
| **Jumlah markah** | **20** |

**Question 10 / *Soalan* 10**:

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| --- | --- | --- | --- |
| **Soalan** | **Markah** | **Keterangan** | **Jumlah Markah** |
| (a) | M1 | Number of complete oscillation / vibration per second*Bilangan ayunan* / *getaran lengkap per saat*[*Reject* : Frequency = // *Frekuensi* = ] | **1** |
| (b) | M1M2M3M4M5 | Frequency of the sound waves in Diagram 10.1 higher than Diagram 10.2*Frekuensi gelombang bunyi dalam Rajah* 10.1 *lebih tinggi berbanding Rajah* 10.2The distance between the two loud speakers in Diagram 10.1 equal to Diagram 10.2 *Jarak antara dua pembesar suara dalam Rajah* 10.1 *sama dengan Rajah* 10.2The distance between two consecutive loud sounds in Diagam 10.2 greater than Diagram 10.1*Jarak antara dua bunyi kuat yang berturutan dalam Rajah* 10.2 *lebih besar berbanding Rajah* 10.1When the wavelength of the sound waves increases, the distance between two consecutive loud sounds increases*Semakin bertambah panjang gelombang bunyi, semakin bertambah jarak antara dua bunyi kuat yang berturutan*Interference*Interferens* | **5** |
| (c) | M1M2M3M4 | When the waves move to the shore, the depth of sea water decreases.*Apabila gelombang air merambat ke pantai, kedalaman air berkurang.*Speed / wavelength of the waves decrease.*Laju*/ *panjang gelombang air berkurang*The waves is refracted *Gelombang air dibiaskan*The waves is bending towards the normal *Gelombang air membengkok mendekati garis normal*  | **4** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (d) |

|  |  |  |
| --- | --- | --- |
| Characteristics / *Ciri-ciri* |  | *Reason / Sebab* |
| M1 | Location at bay*Lokasi di teluk* | M2 | Waves diverge at bay // smaller amplitude of waves // smaller energy of waves*Gelombang mencapah di**teluk*// a*mplitud gelombang lebih kecil* // *tenaga gelombang lebih kecil* |
| M3 | Retaining wall made of concrete*Benteng diperbuat daripada konkrit* | M4 | Not easy to collapse / to crack // can withstand high force of waves impact*Tidak mudah runtuh / tumbang / retak // menahan daya hentaman ombak yang tinggi* |
| M5 | Retaining wall with narrow gaps*Benteng mempunyai celah kecil* | M6 | More diffraction of waves // amplitude/ energy of wavesdecreases*Gelombanglebih terbelau* // *amplitud* / *tenaga gelombang**berkurang* |
| M7 | Higher retaining wall*Benteng lebih tinggi* | M8 | No over spill ofthe sea waves // to protect the boats from high amplitudes of sea waves*Air laut tidak melimpah* // *melindungi bot daripada**amplitud gelombang laut yang tinggi* |
| M9 | Thicker at the bottom of retaining wall*Benteng lebih tebal di bahagian dasar* | M10 | Can withstand higherwater pressure // the deeper the depth of water, the bigger the water pressure*Dapat menahan tekanan air**yang lebih tinggi*// *semakin bertambah kedalaman air, semakin tinggi tekanan air* |
| M11 | The surface of retaining wall is uneven*Permukaan benteng yang tidak rata* | M12 | To reduce energy of waves*Mengurangkan tenaga gelombang* |

**Maximum marks / *Markah maksimum* : 10 Markah** | **10** |
|  |  | **Jumlah** | **20** |

**Section C / *Bahagian* C**

**Question 11 / *Soalan* 11**:

|  |  |  |  |
| --- | --- | --- | --- |
| **Soalan** | **Markah** | **Keterangan** | **Jumlah Markah** |
| (a)(i) | M1 | Rate of heat transfer is equal // Net heat transfer is zero*Kadar pemindahan haba adalah* ***sama***// *Pemindahan haba bersih adalah* ***sifar*** | **1** |
|  (ii) | M1M2M3M4 | Liquid X and liquid Y has same initial temperature.*Cecair* X *dan cecair*Y *mempunyai suhu awal yang sama*.Liquid X has smaller specific heat capacity compared to liquid Y.*Cecair* X *mempunyai muatan haba tentu yang lebih kecil berbanding cecair* Y. Liquid X experience increasing in temperature faster than Y.*Cecair* X *mengalami kenaikan suhu lebih cepat berbanding cecair* Y. The rising of temperature of liquid X is higher than that Y.*Kenaikan suhu cecair* X *lebih tinggi daripada cecair* Y. | **4** |
| (b)(i) | M1M2M3M4 | Correct substitution into formula for quantity of heat in liquid X*Gantian yang betul ke dalam formula bagi kuantiti haba dalam cecair* X: Q = mcӨ  = 0.3 x 2100 x (40o-25o) // 0.3 x 2100 x 15oCorrect answer with correct unit :*Jawapan betul dengan unit betul* := 9450 J Correct substitution into formula for quantity of heat in liquid Y*Gantian yang betul ke dalam formula bagi kuantiti haba dalam cecair* Y: Q = mcӨ  = 0.3 x 4200 x (30o – 25o) // 0.3 x 4200 x 5oCorrect answer with correct unit :*Jawapan betul dengan unit betul* := 6300 J  |  |
|  (ii) | M1 | No heat transfer to surrounding // all heat supplied is absorbed by liquid X and liquid Y*Tiada haba terbebas ke persekitaran* // *semua haba yang dibekalkan diserap oleh cecair* X *dan cecair* Y | **1** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| (a)(i) | M1 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Characteristics*Ciri-ciri* |  | Reason*Sebab* |
| M1 | Material of pot is steel*Bahan periuk ialah keluli* | M2 | Not easy to rust // not easy to oxidise*Tidak mudah berkarat*// *tidak mudah teroksida* |
| M3 | Has release valve*Mempunyai injap pelepas* | M4 | Release high pressure from the pot*Membebaskan tekanan gas yang tinggi dari periuk* |
| M5 | Has sealing ring*Mempunyai gegelung pengetat* | M6 | Avoid the leakage of pressure from the pot*Mengelakkan kebocoran tekanan dari periuk* |
| M7 | Pot has many layer*Periuk mempunyai banyak lapisan* | M8 | Withstand high pressure inside the pot*Menahan tekanan yang tinggi dalam periuk* |
| M9 | Q is chosenQ *dipilih* | M10 | Because material of pot is steel, has release valve, has sealing ringand pot has many layer*Kerana bahan periuk ialah keluli, mempunyai injap pelepas, mempunyai gegelung pengetatdan periuk mempunyai banyak lapisan* |

 | **10** |
|  |  | **Jumlah** | **20** |

**Question 12 / *Soalan* 12**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** |  | **Jawapan** | **Jumlah Markah** |
| (a) | (i) | M1 : Water from the reservoir flows down through water tunnel*Air dari takungan menuruni terowong*M2 : Turbine will rotated*Turbin akan berputar*M3 : Magnet in generator will rotated*Magnet dalam penjana akan diputarkan*M4 : Coil in generator experienced change in (magnetic) flux*Gegelung pada penjana mengalami perubahan fluks*(*magnet*)M5 : Induced e.m.f / voltage will be produced*D.g.e* / *voltan aruhan dihasilkan***Maximum : 4 Marks** | **4** |
|  | (ii) | M1 : **Gravitational** potential energy to kinetic energy to electrical energy*Tenaga keupayaan* ***graviti*** *kepada tenaga kinetik kepada tenaga*  *elektrik*[*Reject* : Potential energy / tenaga keupayaan] | **1** |
| (b) |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Characteristics*Ciri-ciri* |  | Reason*Sebab* |
| M1 | Type of wire is copper*Jenis dawai ialah kuprum* | M2 | Small resistance // produce less heat // good electrical conductor*Rintangan kecil* / *menghasilkan kurang haba* // *konduktor elektrik yang baik* |
| M3 | Type of core is soft iron*Jenis teras ialah besi lembut* | M4 | Easy to magnetized / demagnetized*Mudah dimagnetkan* / *dinyahmagnetkan* |
| M5 | Core is laminated*Teras besi berlamina* | M6 | Avoid / reduce eddy current*Elak* / *kurangkan arus pusar* |
| M7 | Method of winding the coil is winding the secondary coil on top of the primary coil*Kaedah lilitan gegelung ialah lilitan gegelung sekunder di atas gegelung primer* | M8 | Avoid / reduce flux leakage*Elak* / *kurangkan kebocoran fluks* |   |
| M9 | R is chosenR *dipilih* | M10 | Because type of wire is copper, type of core is soft iron, laminated soft iron and the secondary coil is winding on top of the primary coil*Kerana jenis dawai ialah kuprum, jenis teras ialah besi lembut, teras besi berlaminadan gegelung sekunder dililit di atas gegelung primer* |

 | **10** |
|  | (c) | (i) | M1 : Correct substitution into formula : *Gantian yang betul ke dalam formula* :Np = Vp Ns Vs1000 = 240 Ns 6M2 : Correct answer / *Jawapan betul* : Ns = 25 | **2** |
|  |  | (ii) | M1 : Write correct formula :*Menulis formulayang betul*: Efficiency = Po x 100%  VsIsM2 : Write correct substitution into formula : *Menulis gantian yang betul ke dalam formula* : 80 = Po x 100% 0.2 x 240M3 : Correct answer with correct unit :*Jawapan betul dengan unit betul* : Po = 38.4 W | **3** |
|  |  | **Jumlah** | **20** |

**END OF MARKING SCRIPT**

***SKEMA PEMARKAHAN TAMAT***

**PEPERIKSAAN PERCUBAAN SPM 2017 JOHOR**

**PERATURAN PEMARKAHAN**

**FIZIK KERTAS 3**

|  |  |  |
| --- | --- | --- |
| **1** (a) (i) | Mass of water // m | 1 |
| (a) (ii) | Increase in temperature // θ |  1 |
| (a) (iii) | Time of heating // power of heating element // quantity of heat supply, Q | 1 |
| (b) (i) | θ1 = 28 0C | 0 |
| (b) (ii) | θ2 = 48 0C, 38 0C, 35 0C, 33 0C, 32 0CAll correct : 2 marksAt least 3 correct : 1 mark | 2 |
|  | θ = θ2 - θ1 θ = 20, 10, 7, 5, 4All correct : 2 marksAt least 3 correct : 1 mark | 2 |
| (b) (i) |

|  |  |  |  |
| --- | --- | --- | --- |
| m/kg | θ2 / 0C | θ = θ2 - θ1 / 0C | 1/ θ , oC-1 |
| 0.4 | 48 | 20 | 0.05 |
| 0.6 | 38 | 10 | 0.10 |
| 0.8 | 35 | 7 | 0.14 |
| 1.0 | 33 | 5 | 0.20 |
| 1.2 | 32 | 4 | 0.25 |
|  1 mark – 4 columns  1 mark – correct units for each columns 1 mark – all values are consistent |

 | 3 |
| (c) | **Draw the graph of 1/θ against** m***.***A - Label y-axis and x-axis correctly√B -States the unit at the axis correctly√1. -Both axes with the even and uniform scale √
2. -5 points correctly plotted: √ √

 -at least 3 points correctly plotted √E -a smooth best straight line√F -minimum size of the graph is 5 x 4squares of 2 cmx 2cm.√ 7 √ - 5 marks 6-5 √ - 4 marks 3-4 √ - 3 marks 2 √ - 2 marks 1 √ - 1 mark  | 5 |
| (d) | 1/ θ is directly proportional m | 1 |
|  | **Total** |  **16** |
| **2** (a) (i) | decreases | 1 |
|  (ii) | Show an extrapolation line on the graphStraight line to Y axis at **V = 1.00 V** (with unit) |  11 |
| (iii) | Constant // unchange | 1 |
| (b) | Electromotive force / e.m.f | 1 |
| (c) (i) | -Show a triangle (enough size minimum 4 x 4)-Substitution 0.50 – 1.00 V 0.73 – 0.00 Ar = - 0.685 V A-1 or - 0.685 V/ A or - 0.685 Ω  ( answer with correct unit ) | 1st 2nd3rd |
| (ii) | r = - ( - 0.685 ) = 0.685 V A-1 or 0.685 V/ A or 0.685 Ω  ( answer with correct unit ) | 1 |
| (d) | E = V + Ir = .0.90 + ( 0.15 x 0.685 ) (V = 0.90 V and r =0.685 A) = 1.00 V ( answer with correct unit ) | 1st 2nd |
| (e) | 1.The position of eye position must be perpendicular to scale of ammeter/voltmeter to avoid parallax error.2. The connection must be tied3. Switch off the circuit when not taking any reading, so that the connecting wires are not hot  | 1 |
|  | **Total** |  **12** |

|  |  |  |
| --- | --- | --- |
| 3(a)  | *Inference:* The depth of water influence the pressure in liquid. // the pressure in liquid depend on the depth of water |  1 |
| (b) | *Hypothesis:* The deeper the water level/depth, the higher the pressure in liquid | 1 |
| (c) | *Aims:*To investigate the relationship between the depth of water and the pressure in liquid.Variable:*Manipulated variable*: depth of water, h*Responding variable*: pressure in water ( the difference in the level of water in the manometer ), *l**Fix variable* : Density of water*Apparatus and materials*:Thin piece of rubber, rubber tube, thistle funnel, tall plastic bottle, rubber band, retort stand and clamp, **metre rule\*** and manometer and **water\*.****\* must state either in procedure or arrangement**en hashim**\*\*one end of manometer must open**Setup up as shown in the labelled diagram or description in the procedure*Procedure:**Controlling the manipulated variables:*1. The thistle funnel is **immersed** into the water so that its depth, h=**5.0 cm**

*Measuring the responding variables*:1. The **difference in the levels, *l*** of water in the manometer **is measured (by using the ruler) and recorded**.

*Repeating experiment*:1. Procedures 2 and 3 are repeated for **h=10.0 cm, 15.0 cm, 20.0 cm and 25.0 cm**

**\*\*\*must state 4 different value exclude value in 1st procedur**1. The readings are tabulated

|  |  |
| --- | --- |
| Depth, h / cm | Difference in level, *l* / cm |
| 5.0 |  |
| 10.0 |  |
| 15.0 |  |
| 20.0 |  |
| 25.0 |  |

Analyzing data***l*/cm****h/cm** **Total:** | 11111111111**MAX 12** |

|  |  |  |
| --- | --- | --- |
| 4. (a)(b)(c) (i)(ii)(iii)(iv) | **Inference**The rotation speed of the motor influenced/depend on number of battery/ current flow | 1 |
| **Hypothesis**If the current increase, then the speed of rotation increase. | 1 |
| **Aim**To investigate the relationship between the current and distance/speed of the rod | 1 |
| **Variables*** + 1. **manipulated :**current
		2. **responding :** distance of the rod
		3. **fixed :**strength of magnet/ mass of the rod

 | 11 1 |
|  **List of apparatus and materials**barmagnet ,iron rod, **power supply\***, ammeter, **meter rule\*****\* must state either in procedure or arrangement** | 1 |
| **Arrangement of the apparatus**\*\*All connection must connected | 1 |
| (v) | *Controlling the manipulated variables:*1. Switch on power supply/close the circuit
2. Adjust current I = 0.5 A by using the rheostat.

*Measuring the responding variables*:1. Measured the distance of rod movement (by using the ruler).

*Repeating experiment*:1. Experiment is repeated 4 times with the difference current, I = 1.0 A, 1.2 A, 1.4A and 1.6A.

**\*\*\*must state 4 different value exclude value in 1st procedure** |  111 |
| (vi) | **Tabulate the data**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Current, I/A** | **0.5** | **1.0** | **1.2** | **1.4** | **1.6** | **1.8** |
| **Distance of the rod/cm** |  |  |  |  |  |  |

 | 1 |
| (vii) | **Analyse the data**Distance/cm Current,I/A | 1**MAX 12** |