SAMPEL PERCUMA

Kertas Trial STPM Semester 1 Fizik Terengganu 2024

Set penuh: Kertas Percubaan STPM

Sem 1 · Fizik

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KEMENTERIAN PENDIDIKAN
JABATAN PENDIDIKAN NEGERI TERENGGANU

STPM 2024

PEPERIKSAAN PERCUBAAN SEMESTER 1

PHYSICS

960/1

Nama :.....

Kelas :.....

DIBIAYAI OLEH KERAJAAN NEGERI TERENGGANU

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ANJAKAN MUAFAKAT NEKAD

Section A [15 *marks*]
Answer **all** *questions in this section*.

1. The tensile strength of a wire is the maximum stress on the wire just before it breaks. What is the dimension of tensile strength?

A $ML^{-1}T^{-1}$ **B** MLT^{-1}
C $ML^{-1}T^{-2}$ **D** MLT^{-2}

2. A helicopter of mass 3.0 x 10^3 kg rises vertically with a constant velocity of 25 ms^{-1}. By taking the acceleration of free fall as 10 ms^{-2}, calculate the resultant force acting on the helicopter.

A zero **B** 3.0 x 10^4 N downwards
C 4.5 x 10^4 N upwards **D** 7.5 x 10^4 N upwards

3. A car of mass 1250kg accelerates from 0 to 100 kmh^{-1} in 4.0s. The average power of the car is

A 121 kW **B** 341 kW
C 484 kW **D** 681 kW

4. A body is launched vertically upwards from the ground. It reaches a maximum height and then falls back to the ground. If the air resistance can be neglected, the physical quantity which remains constant throughout the whole journey is

A force **B** velocity
C momentum **D** kinetic energy

5 A car of mass 1100 kg is moving with constant velocity of 22 ms^{-1} along horizontal road. The output power of the car is 25 kW. The output power is then suddenly increased to 80 kW. What is the acceleration of the car ?

A 0.8 ms^{-2} **B** 1.6 ms^{-2}
C 1.8 ms^{-2} **D** 2.3 ms^{-2}

6. An aircraft is moving in a horizontal plane at a constant speed of 400 ms-1 with a turning circle of radius 100 km. What is the ratio of the centripetal force to the weight of the aircraft ?

A 220 **B** 58
C 0.16 **D** 0.0037

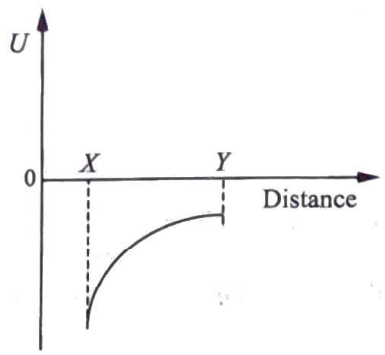
7 The acceleration due to gravity at the equator and the pole are g_e and g_p respectively. Which of the following statements about g_e and g_p is true ?

A $g_e < g_p$ because the Earth rotates
B $g_e > g_p$ because the Earth rotates
C $g_e < g_p$ because the Earth rotates and it is not a perfect sphere
D $g_e > g_p$ because the Earth rotates and it is not a perfect sphere

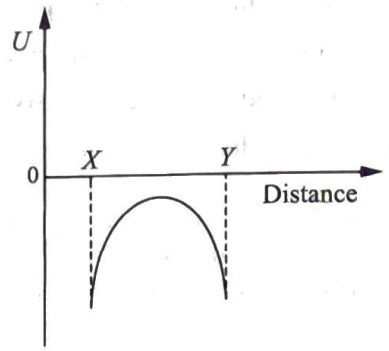
8 The movement of a spacecraft from X at the surface of the Earth to Y at the surface of the Moon along a straight line XY is shown in the diagram below.



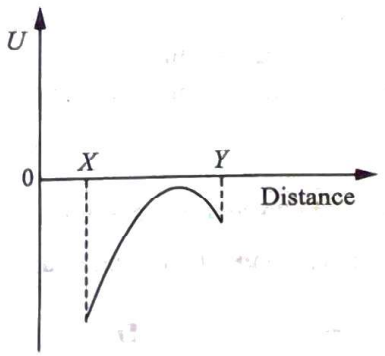
Which graph represents the variation of the potential energy U of the spacecraft with the distance from X to Y ?



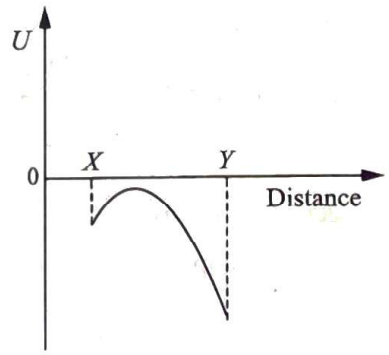
A



B



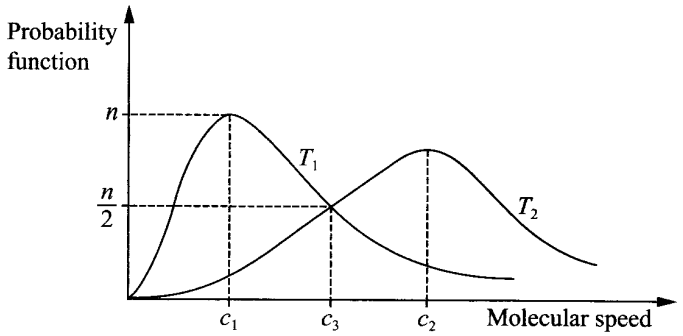
C



D

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11. The variation of probability function with molecular speed for a gas at temperature T_1 and T_2 where $T_1 < T_2$ is shown in the graph below.



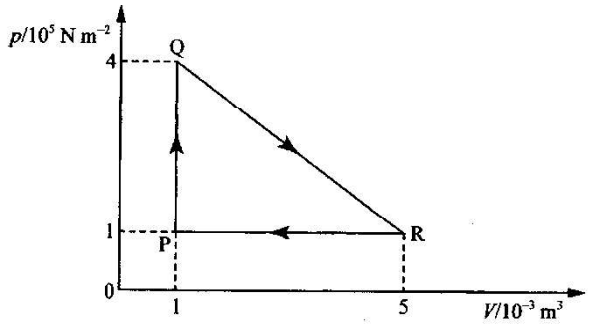
Which statement is true of the above graph?

A The r.m.s. speed greater than the molecular speed c_2 at T_2.
B The molecular speed c_3 is the r.m.s. speed of the gas at both temperatures
C At T_2, less than half of the number of the molecules n move faster than the molecular speed c_1
D When the temperature increases from T_1 to T_2, the number of molecules n with the most probable speed is half of the original number of molecules.

12. What is the number of degrees of rotational freedom for a monatomic gas and diatomic gas at room temperature?

	Monatomic	Diatomic gas
A	0	2
B	0	3
C	1	2
D	2	3

13. The graph below shows the variation of pressure p with volume V of an ideal gas undergoing a cyclic process. The points P, Q and R represent three states of the gas.



Which states of the gas are the coldest and the hottest ?

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TAMAT SAMPEL

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