SMJK YU HUA KAJANG
PEPERIKSAAN PERTENGAHAN TAHUN 2014

Subject: Physics Paper 1
Form: 4A – 4F
Date: 15-5-2014
Time:10.45 – 12.00 (1 ¼ Jam)
No of Candidates: 274
No of printed Pages: 12

Set by : En Pradeep Kumar
Checked by : Pn Juzira Bahiki
Approved by : Pn Juzira Bahiki
Verified by : Pn Lew Poh Peng
(KB Sains & Matematik)
Approved by : Pn Ean Yong Moon
(Penolong Kanan Pentadbiran)

INFORMATION FOR CANDIDATES

1. This question paper consist of 50 questions.
2. Answer all questions in the answer sheet provided
3. The diagrams in the questions provided are not drawn to scale unless stated.
4. You may use non-programmable scientific calculator.

1. Which physical quantity does not have the correct S.I. unit

	Physical Quantity	**S.I. Unit**
A	Temperature	Kelvin
B	Momentum	Ns^{-1}
C	Force	Newton
D	Length	meter

2. A student says that he is listening to an FM radio station called Lite & Easy at 105.7
What will be the physical quantity of that number stated
A. speed B. velocity C. Frequency D. wavelength

3. Which measurement is the shortest
A. 4.5×10^4 µm B. 4.5×10^2 mm
C. 4.5×10^2 cm D. 4.5×10^{-1} m

4. The physical quantities below have a corresponding SI unit. Which one is matched correctly?

	Physical Quantity	**S.I. Unit**
A	Velocity	$km\ h^{-1}$
B	Force	$kg\ ms^{-1}$
C	Acceleration	ms^{-3}
D	Density	$kg\ m^{-3}$

5. Ahmad says that the mass of a proton is miniscule. He wrote the mass in decimal form 0.000 000 000 000 000 000 000 000 00167 kg. He told Ah Kow to convert that number as a scientific notation. Ah Kow should write it as
A. 1.67×10^{-21} kg B. 1.67×10^{27} kg
C. 1.67×10^{-27} kg D. 1.67×10^{-30} kg

6. Convert the volume of an air balloon 25 m^3 into dm^3
A. 2.5×10^1 B. 2.5×10^3
C. 2.5×10^2 D. 2.5×10^4

7. Which of the following quantities is **not** derived from time and length only?
   A. Velocity B. Density
   C. Acceleration D. Momentum

8. Ahmad travels by car from X to Y as shown in the diagram 1 below.

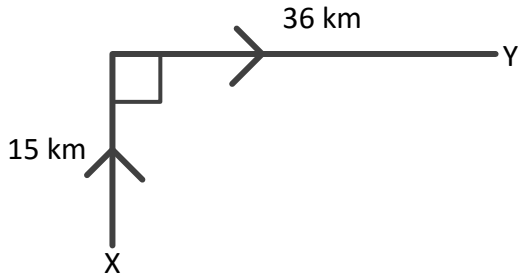


Diagram 1

Calculate the displacement of the car?
A. 51 km B. 16km C. 39 km D. 21 km

9. Lim walked a distance of 100m in a straight line. He then returns back on the same track and walked another 145m passing his starting point. Calculate his displacement and total distance walked

	Displacement	**Total distance**
A	245 m	245 m
B	45 m	245 m
C	- 45 m	245 m
D	245 m	45 m

10. Azlan says that his father drove the car with a constant speed of 72kmh^{-1} on the highway. Amir says that his mother drove at 19 ms^{-1}. What can you say about their speed?

   A. Azlan's father drove faster than Amir's mother
   B. Both Azlan's father and Amir's mother drove at the same speed
   C. Amir's mother drove faster than Azlan's father

11. Diagram 2 shows a conical flask.

Which of the following instrument is the most suitable to be used to measure X.
A. Micrometer screw gauge
B. Vernier Caliper
C. Measuring Tape
D. Meter Ruler

Diagram 2

12. A police cadet undergoes shooting practice. The results that shows good consistence in shooting but very poor accuracy as shown in diagram 3 is

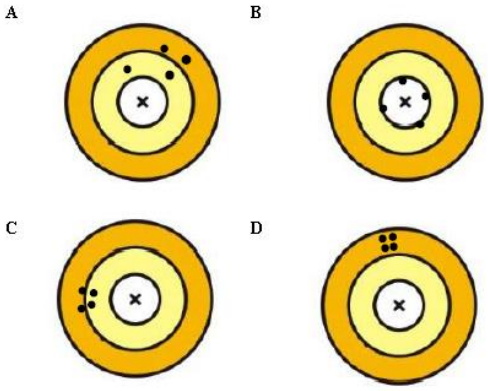


Diagram 3

13. Diagram 4 shows a micrometer screw gauge that made a measurement.

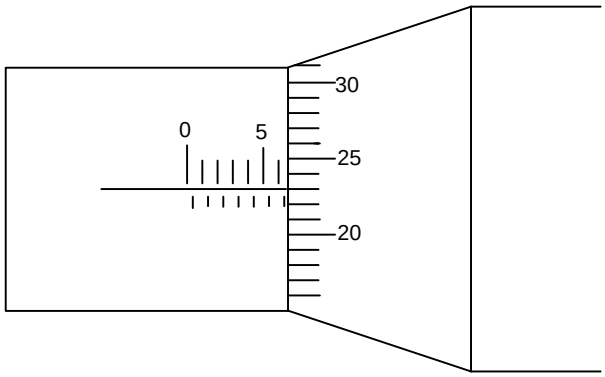


Diagram 4

What is the reading of the micrometer

A. 6.73 cm B. 0.673 cm C. 6.50 mm D. 6.23 mm

14. What is the zero error of the vernier calipers show in Diagram 5

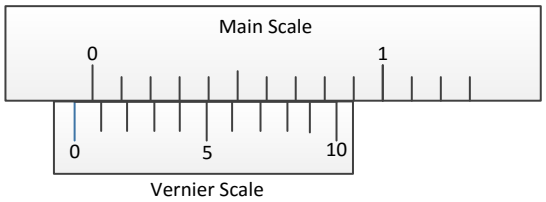


Diagram 5

A. + 0.06 cm B. + 0.04 cm C. – 0.06 cm D. -0.04 cm

15. A student was asked to measure the external diameter of a beaker. Diagram 6 below shows the reading of the vernier calipers.

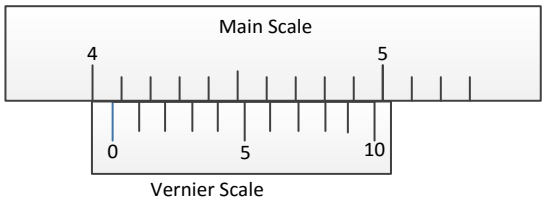


Diagram 6

What is the external diameter of the beaker?

A. 4.08 cm B. 4.58 mm
C. 4.18 cm D. 4. 08 mm

16. Figure 7 shows the zero error of a micrometer screw gauge. To get the actual reading of a measurement, the reading should be corrected by

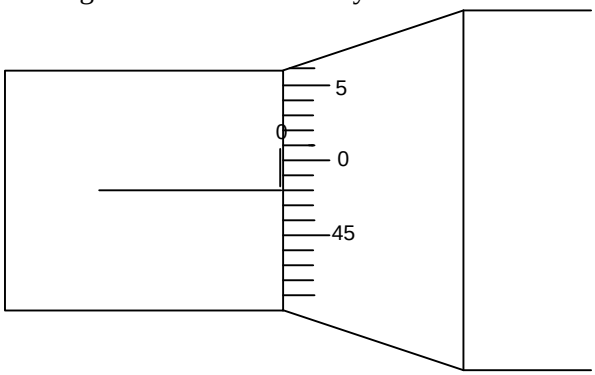


Diagram 7

A. subtracting 0.002 cm from a reading
B. adding 0.002 cm to a reading
C. subtracting 0.02 cm to a reading
D adding 0.02 cm to a reading

17. Table below shows measurement of different objects by using three different instruments.

Instrument	Reading (cm)
X	2.34
Y	10.9
Z	0.625

Which of the following is the correct instrument used?

	X	Y	Z
A	Meter Ruler	Micrometer Screw gauge	Vernier Caliper
B	Vernier Caliper	Meter Ruler	Micrometer Screw gauge
C	Micrometer Screw gauge	Vernier Caliper	Meter Ruler

18. Diagram 8 show a ticker tape obtained when a trolley is given a push. Determine the correct answer from the table of answers.

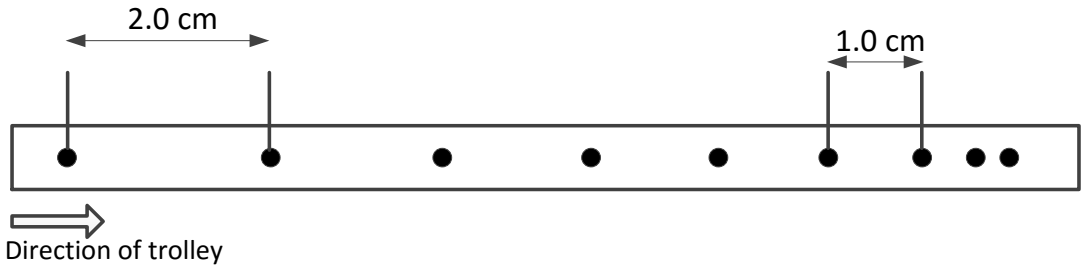


Diagram 8

A. $-5.00\ ms^{-2}$ B. $4.17\ ms^{-2}$ C. $-4.17\ ms^{-2}$ D. $5.00\ ms^{-2}$

19. Diagram 9 shows a vernier caliper with nothing in its jaw. Diagram B shows a measurement being made with the same vernier caliper with an object inside its outer jaws.

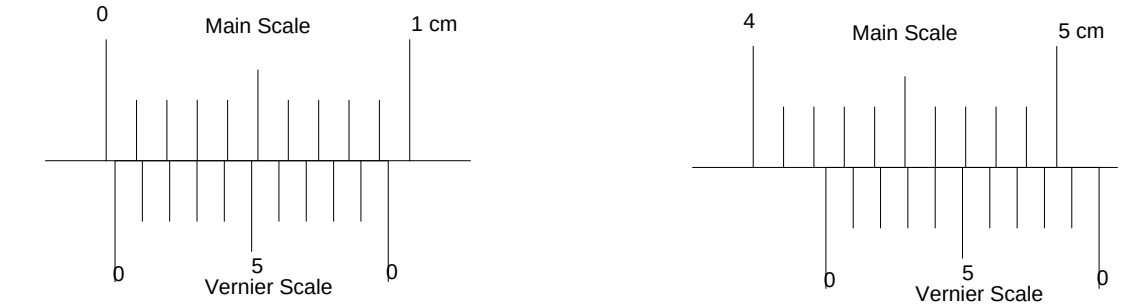


Diagram 9

What is the actual reading of the caliper (take into account the zero error)

A. 4.24 cm B. 4.18 cm C. 4.21 cm D. 4.27 cm

20. Diagram 10 shows an athlete bending his legs upon landing in a long jump event.

Diagram 10

The athlete bent his legs to reduce the

A. impulse on his feet
B. impulsive force on his feet
C. time of impact between his feet and sand
D. velocity just before landing

21. Diagram 11 shows a velocity-time graph for a motion of a toy car

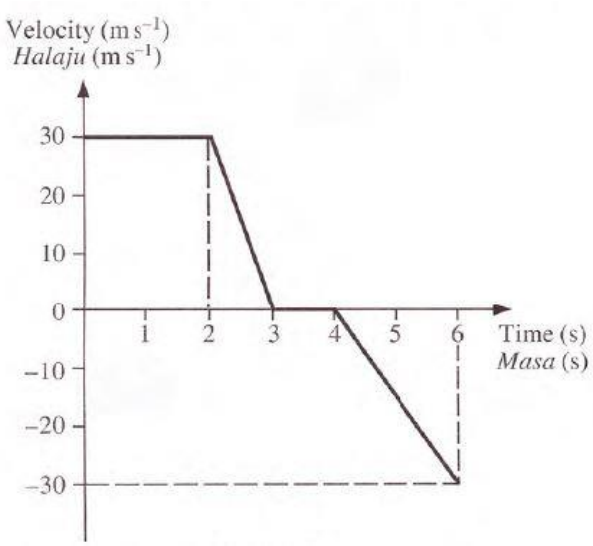


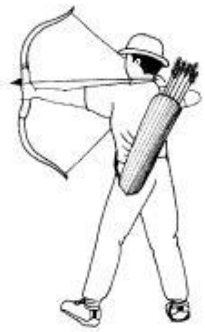
Diagram 11

What is the displacement of the car in 6 s?

A. 0 m B. 30m C. 45m D. 75m

22. Which of the phenomenon shows the effect of inertia?

A



B

C

D

23. Diagram 12 shows a woman pushing a trolley

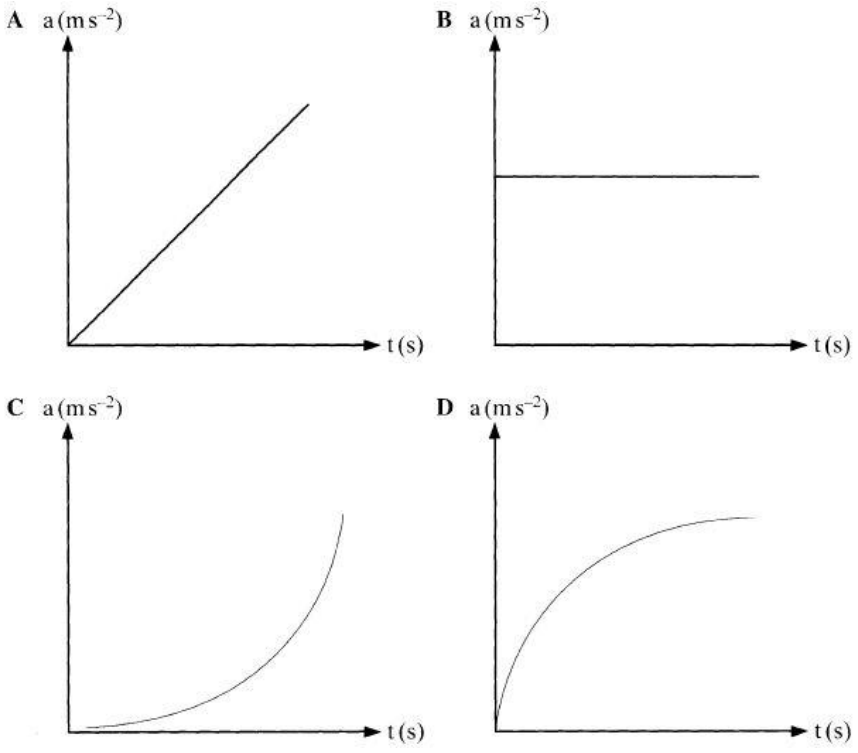
Diagram 12

The total downward force is

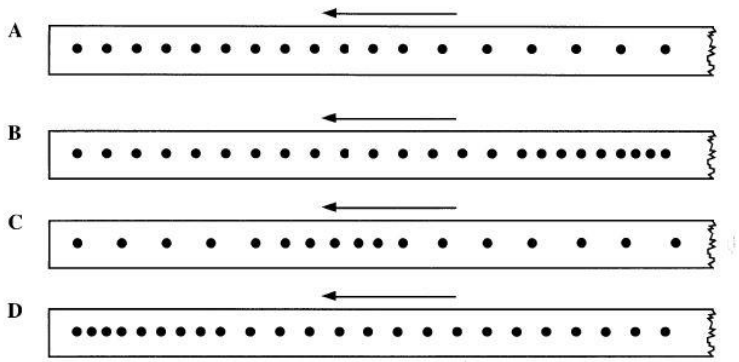
A. $F_y + mg$ B. $F_y + F$

C. $F - F_x$ D. $F + mg$

24. A mango falls from a tree. Which acceleration time graph represents the motion of the mango?



25. Which tape shows a movement with acceleration followed by uniform velocity



26. Diagram 13 shows two steel ball bearings, X and Y, of different masses is dropped near the surface of the earth from the same height.

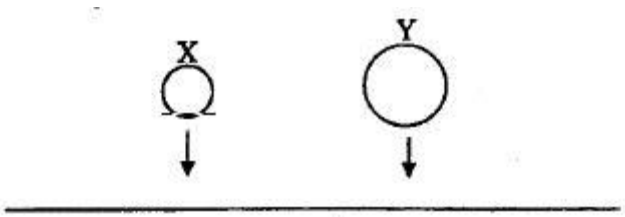
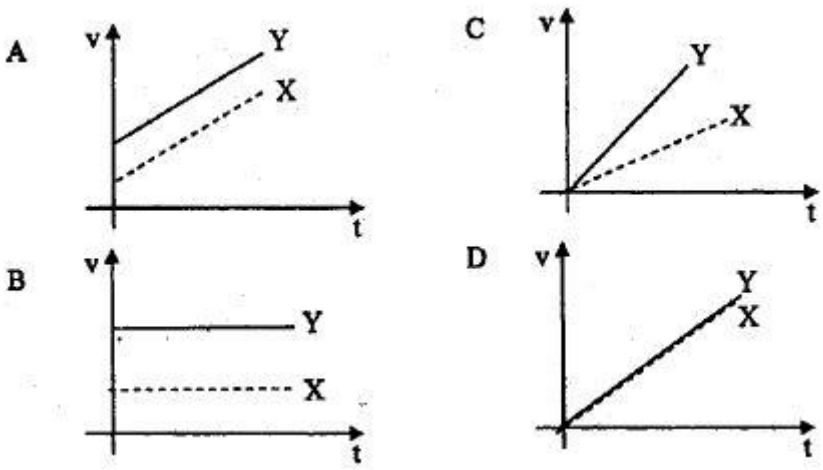


Diagram 13

Which is the correct v-t graph for the motion of the ball bearing X and Y?



27. A ball of mass 0.5kg is being kicked by a force of 10N. If the time of impact is 0.2s, what is the impulse experienced by the ball

A. 0.8 Ns B. 2.0 Ns C. 25 Ns D. 50.0 Ns

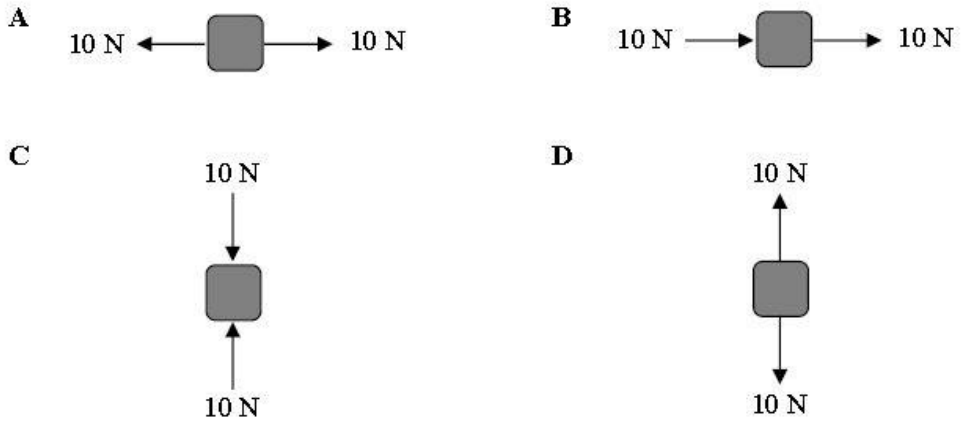
28. Which of the following phenomenon experiences force in equilibrium

A. A rocket accelerates upwards
B. A ship floats at rest in the sea
C. A during falling from a tree
D. A car descending a hill at an increasing velocity

29. What can you say about the inertia of an astronaut walking on the moon as compared to that of earth
A. increases B. decreases C. unchanged

30. The following items are safety feature of a vehicle except
A. rubber bumper B. larger rim C. ABS
D. anti-shatter windscreen

31. In which situation will the block move with an acceleration



32. Diagram 14 shows a micrometer screw gauge with its jaw closed.

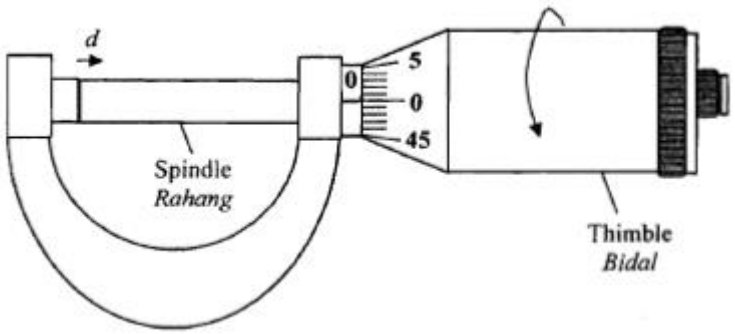


Diagram 14

What is the distance , d, moved by the spindle when the thimble is rotated through 2 complete rotation
A. 0.02mm B. 0.01mm C. 1.00mm D. 1.50mm

33. The speed of sound in air is 330 ms^{-1}. What is this speed in km h^{-1}
A. 19.8 B. 91.7 C. 1188 D. 5500

34. Some one says to you that there is a rate of change of displacement on that vehicle. What physical quantity does it represent
A, Momentum B. velocity C. Acceleration D. Force

35. A coconut falls from a height of 12.8m to the ground. What is the velocity of the coconut just before it hits the ground in ms^{-1}.
A. 6.4 B. 16.0 C. 57.2 D. 128

36. Diagram 15 shows the forces acting on a piece of stone that has just been dropped into water

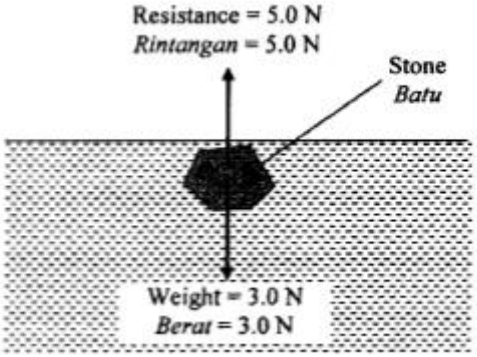


Diagram 15

The mass of the stone is 0.3kg. What is the deceleration of the stone in ms^{-2}?

A. 6.67 B. 10.00 C. 16.67 D. 26.67

37. Diagram 16 shows a set of high jump apparatus.

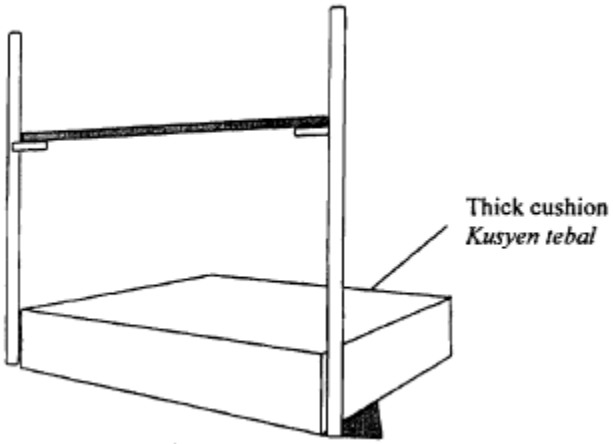


Diagram 16

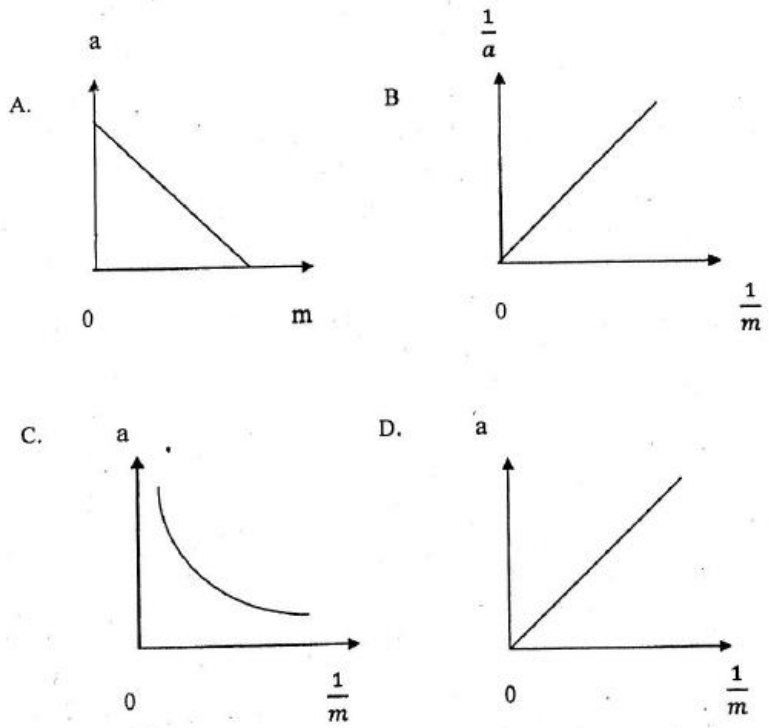
The thick cushion is used to increase the

A. impulse on the body of the athlete
B. impulsive force acting on the athlete
C. the time of impact
D. height during the jump

38. Which statement correctly define Newton's 2nd Law of motion

A. An object at rest remains at rest. An object in motion continues its motion unless compelled by an external force
B. The applied force is directly proportional to the rate of change of velocity
C. The applied force is directly proportional to the rate of change of momentum
D. Forces in equilibrium will form a closed polygon

39. Which of the following graph shows the relationship between mass and acceleration when the force is kept constant



40. An astronaut who has a mass of 60kg on earth and weights 102N on the moon. What is the gravitational field strength on the surface of the moon in Nkg^{-1}

A. 0.3 B. 1.7 C. 9.1 D. 9.8

41. When a pistol is fired, the bullet moves forward and the pistol recoils. What law of Physics can be applied here

A. Law of conservation of momentum
B. Law of conservation of Force
C. Newton's 2nd law of motion
D. Gravitational Law of attraction

42. Diagram 17 shows a graph of velocity against time of a moving car

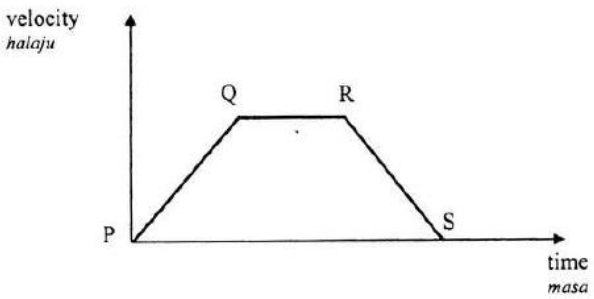


Diagram 17

Which of the following statement is true

A. Acceleration increases at a uniform rate at PQ
B. Deceleration is a constant at RS
C. Velocity increases at a constant rate at RS
D. The area under the graph represent acceleration

43. A horizontal force of 25N is exerted on a box of mass 10kg on a horizontal floor. The box accelerates at 2.0 ms^{-2}.
What is the magnitude of the frictional force between the box and the floor
A. 0N B. 5N C, 10N D. 25N

44. Which of the following situations does not require large impulsive force
A. A baseball competition
B. A karate expert breaking a piece of plank with his bare hands
C. A high jumper jumping across the pole and lands on a thick matress
D. A housewife pounding chillies with a pestle

45. In an accident, the neck of the driver and passenger are protected by
A. rubber bumpers
B. air bags
C. seatbelt
D. headrest

46. Which property of an object is affected by a change in gravitational field
A. Weight B. Volume C. Density D. Mass

47. A ball of mass 10kg is thrown vertically downwards from a building of 45m.
Calculate the time taken to reach the ground (g = 10 ms^{-2})
A. 1 s B. 3 s C. 4 s D. 5 s

48. A man of mass 65kg is standing on a weighing scale inside a life moving down at constant velocity of 8ms^{-1}. The cable of the life suddenly snaps. Which of the following is correct

	Scale reading when lift moving at constant velocity	Scale reading when cable snaps
A	65 kg	65 kg
B	0 kg	65 kg
C	65kg	0 kg
D	0 kg	0 kg

49. An astronaut brought back a moon rock that has a mass of 4kg measured on the moon. It is brought back to earth. On earth , the rock will have
A. less mass and less weight
B. have the same mass and more weight
C. have more mass and more weight
D. have the same mass and less weight

50. An object is moving in a straight line under the action of a constant net force. What change will occur on the object
A. change in acceleration B. change in velocity
C. change in inertia D. change in mass

E n d o f P a p e r