

Cambridge O Level

Physics P1 Topical

Multiple Choice Questions

Paper 11 & 12 with Keys

2002-2018

Compiled By:

5681 @ < 5 ? 99 A

UVXi \ U_YYa \$- - 4 [a U]'Wta +92300(, %\$% *

5 `@j Y `D\ ng]Wg' Visiting Faculty Member at:

Beaconhousež @ Gž; Uff]gcbž5 @A5 / `Fcchg

Senior A Level D\ ng]Wg'HYUW Yf

Endorsed By:

Javed Sulehri (Senior A Level Physics Teacher)

Farooq Sabir (O/A Level Physics Teacher)

Mobeen Ahmad (O/A Level Physics Teacher)

Ahmad Zunair (O Level Physics Teacher)



Airport Road :

Shop 23-24, Basement FAYSAL BANK,
Opp. BYCO Petrol Pump, Airport Road,
Bhatta Chowk Lahore.

Tel:

0321-4567519 / 0320-4567519 / 35700707

Johar Town :

Opp. Beaconhouse School
Johar Town Campus, PIA Society
Shadewal Chowk, Johar Town Lahore.

Tel:

0313-4567519 / 0321-4567519 / 35227007

Bahria Town:

70 - Umer Block
Main Boulevard Commercial Area
Bahria Town Lahore.

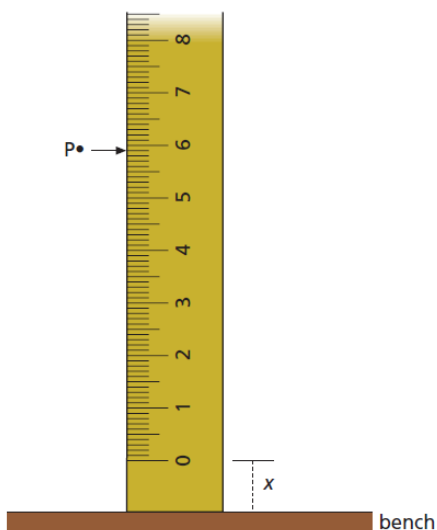
Tel:

0315-4567519

Content

1.	Physical Quantities, Units and Measurement.....	5
2.	Kinematics.....	25
3.	Dynamics.....	51
4.	Mass, Weight and Density.....	77
5.	Turning Effect of Forces.....	93
6.	Deformation.....	109
7.	Pressure.....	121
8.	Energy Sources and Transfer of Energy.....	149
9.	Transfer of Thermal Energy.....	169
10.	Temperature.....	185
11.	Thermal Properties of Matter.....	197
12.	Kinetic Model of Matter.....	209
13.	General Wave Properties.....	223
14.	Light.....	239
15.	Electromagnetic Spectrum.....	269
16.	Sound.....	277
17.	Magnetism and Electromagnetism.....	289
18.	Static Electricity.....	307
19.	Current Electricity.....	323
20.	D.C. Circuits.....	341
21.	Practical Electricity.....	361
22. & 23	Electromagnetism / Electromagnetic Induction.....	377
24. & 25	Introductory Electronics / Electronic Systems	395
26.	Radioactivity and Nuclear Atom.....	411
27.	The Nuclear Atom.....	431
	Answer Key	440

CHAPTER 1: PHYSICAL QUANTITIES, UNITS AND MEASUREMENT



Syllabus Content

- 1.1 Scalars and vectors
- 1.2 Measurement techniques
- 1.3 Units and symbols

Learning outcomes

Candidates should be able to:

- a) Define the terms *scalar* and *vector*.
- b) Determine the resultant of two vectors by a graphical method.
- c) List the vectors and scalars from distance, displacement, length, speed, velocity, time, acceleration, mass and force.
- d) Describe how to measure a variety of lengths with appropriate accuracy using tapes, rules, micrometers and calipers. (The use of a vernier scale is **not** required.)
- e) Describe how to measure a variety of time intervals using clocks and stopwatches.
- f) Recognise and use the conventions and symbols contained in 'Signs, Symbols and Systematics',

ABDUL HAKEEM
0300-4810136
O / AS & A Level Physics

Topic 1 Physical Quantities, Units and Measurement

5054/01/M/J/02/Q1

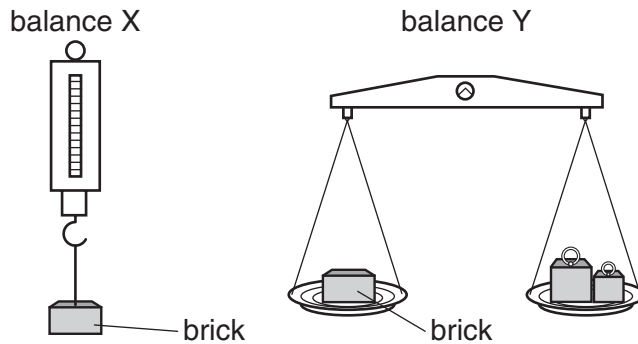
1 A plumber needs to measure the internal diameter of a water pipe as accurately as possible.

Which instrument should be used?

- A measuring tape
- B metre rule
- C micrometer
- D vernier calipers

2 A brick is placed on a newton balance X and then on a beam balance Y.

5054/01/M/J/02/Q4



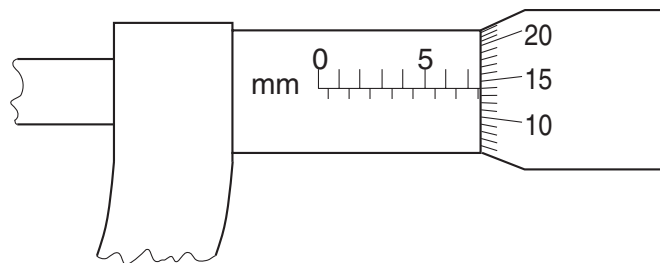
What is measured by each balance?

- | | | | | |
|---|------------------|------------------|---|--------------------------------|
| | <i>balance X</i> | <i>balance Y</i> | | |
| A | mass | mass | C | weight mass |
| B | mass | weight | D | weight weight |

5054/1/M/J02

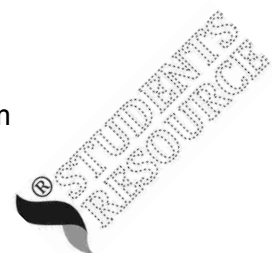
3 The diagram shows a micrometer scale.

5054/\$1/O/N/\$&Q%



Which reading is shown?

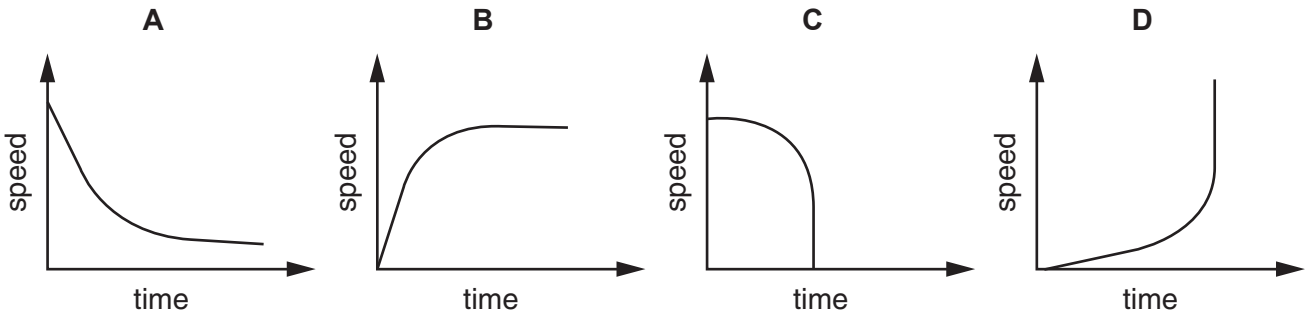
- A 5.64 mm
- B 7.14 mm
- C 7.16 mm
- D 7.64 mm



Topic 2 Kinematics

5054/01/M/J02/Q2

1 Which graph represents the motion of a body falling vertically that reaches a terminal speed?

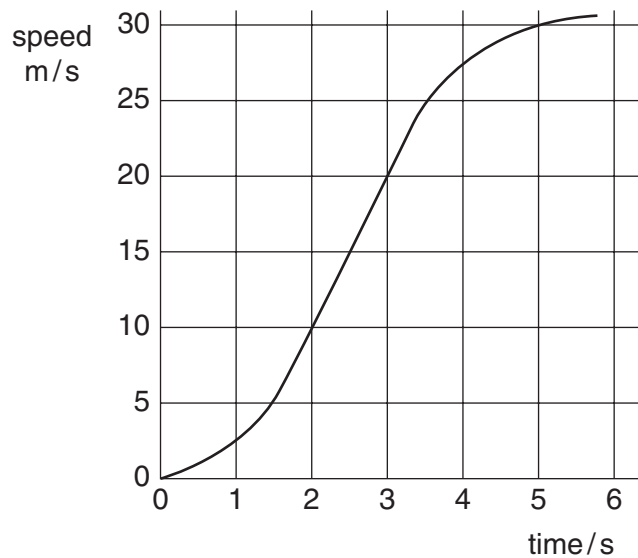


5054/1/M/J02

2 The graph shows the speed of a car as it accelerates from rest.

5054/01/M/J02/Q3

During part of this time the acceleration is uniform.



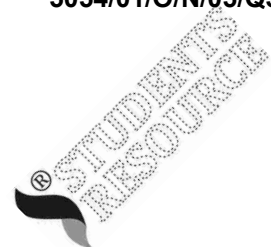
What is the size of this uniform acceleration?

- A 5 m/s^2 B 6 m/s^2 C 10 m/s^2 D 20 m/s^2

3 What **must** change when a body is accelerating?

5054/01/O/N/05/Q3

- A the force acting on the body C the speed of the body
 B the mass of the body D the velocity of the body



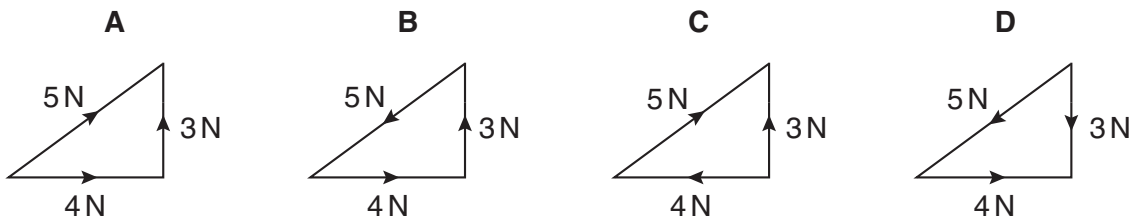
Topic 3 Dynamics

1 A body is moving in a circle at a constant speed. 5054/01/M/J/02Q5

Which of the following statements about the body is true?

- A There is no acceleration.
- B There is a force acting at a tangent to the circle.
- C There is a force acting away from the centre of the circle.
- D There is a force acting towards the centre of the circle.

2 Which diagram correctly shows the addition of a 4 N and a 3 N force? 5054/01/O/N/03/Q7

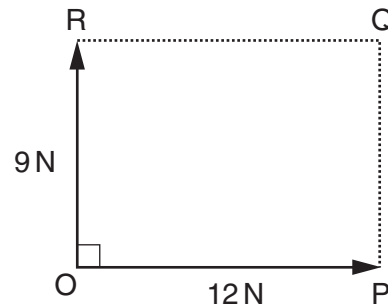


3 Two forces act at right angles at a point O as shown.

What is the resultant of the forces?

5054/01/O/N/05/Q10

	magnitude	direction
A	15 N	OQ
B	15 N	PR
C	21 N	OQ
D	21 N	PR



5054/01/O/N/02/Q4

4 In a laboratory on Earth, balances show that an object has a mass of 2 kg and a weight of 20 N. The same balances and object are then taken to the Moon, where the gravitational field strength is less than on the Earth.

Are the mass and weight of the object the same, or less, than before?

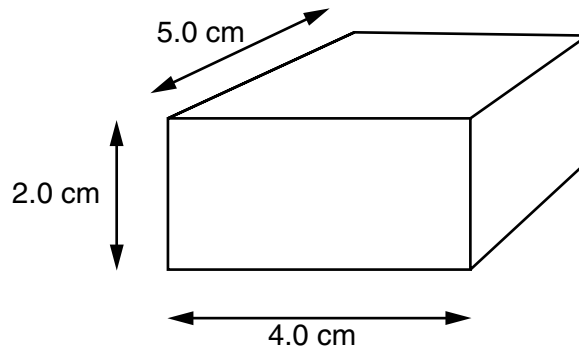
- | | | | | | |
|---|-------------|---------------|---|-------------|---------------|
| | <i>mass</i> | <i>weight</i> | | <i>mass</i> | <i>weight</i> |
| A | less | less | C | same | less |
| B | less | same | D | same | same |



Topic 4 Mass, Weight & Density

5054/01/O/N/02/Q5

- 1 The diagram shows a material with dimensions 5 cm × 4 cm × 2 cm. It has a mass of 100 g.



What is the density of the material?

- A 0.40 g/cm³ B 2.5 g/cm³ C 5.0 g/cm³ D 10 g/cm³

5054/01/M/J/03/Q3

- 2 On the Earth, the gravitational field strength is 10 N/kg. On the Moon, the gravitational field strength is 1.6 N/kg.

If an object has a weight of 50 N on Earth, what is its weight on the Moon?

- A 1.6 N B 5.0 N C 8.0 N D 80 N

5054/01/M/J/03/Q4

- 3 Ten identical steel balls, each of mass 27 g, are immersed in a measuring cylinder containing 20 cm³ of water.

The reading of the water level rises to 50 cm³.

What is the density of the steel?

- A 0.90 g/cm³ B 8.1 g/cm³ C 9.0 g/cm³ D 13.5 g/cm³

5054/12/M/J/14/Q10

- 4 A man uses clay to make a pot. He wants the pot to be as stable as possible when placed on a flat surface.

Which two features of the pot must the man consider?

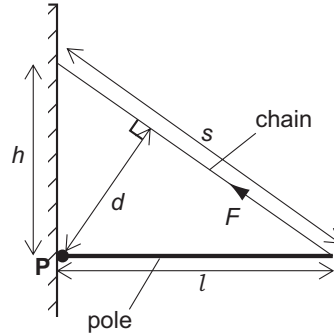
- A the area of the base and the height of the centre of gravity
 B the density of the clay and the area of the base
 C the density of the clay and the height of the centre of gravity
 D the weight and the height of the centre of gravity



Topic 5 Turning Effect of Forces

5054/01/M/J/04/Q8

- 1 A horizontal pole is attached to the side of a building. There is a pivot **P** at the wall and a chain is connected from the end of the pole to a point higher up the wall.



There is a tension force F in the chain.
What is the moment of the force F about the pivot **P**?

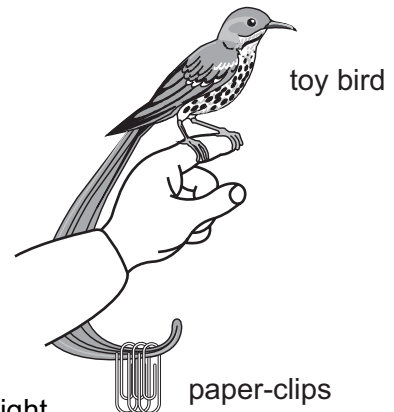
- A $F \times d$ B $F \times h$ C $F \times l$ D $F \times s$

- 2 A girl uses paper-clips to balance a toy bird on her finger as shown.

5054/01/O/N/04/Q9

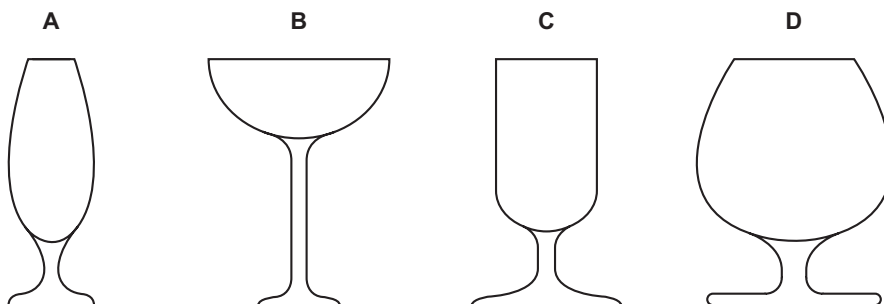
What is the effect of the paper-clips?

- A They help to raise the centre of mass above her finger.
B They help to raise the centre of mass to her finger.
C They help to lower the centre of mass below her finger.
D They do not affect the centre of mass but increase the weight.



- 3 The diagrams show the cross-sections of different glasses.
Which one is the least stable when filled with a liquid?

5054/01/M/J/05/Q7



Topic 1: Physical Quantities, Units & Measurement

1. D
2. C
3. D
4. B
5. D
6. B
7. A
8. B
9. D
10. C
11. B
12. A
13. D
14. C
15. B
16. A
17. D
18. B
19. B
20. D
21. B
22. D
23. D
24. C
25. B
26. B
27. C
28. B
29. A
30. D
31. A
32. C

33. D
34. D
35. B
36. A
37. A
38. A
39. D
40. D
41. C
42. C
43. C
44. D
45. B
46. A
47. A
48. C
49. A
50. A
51. D
52. D
53. A
54. 6
55. C
56. A
57. B
58. A
59. B



Topic 2: Kinematics

1. B
2. C
3. D
4. C
5. C
6. D
7. A
8. C
9. A
10. C
11. C
12. D
13. C
14. C
15. C
16. C
17. C
18. D
19. C
20. C
21. B
22. C
23. C
24. B
25. A
26. C
27. C
28. A
29. C
30. D
31. D
32. B
33. D
34. B

35. C
36. C
37. B
38. C
39. C
40. C
41. D
42. A
43. A
44. A
45. C
46. D
47. B
48. B
49. C
50. D
51. A
52. A
53. C
54. A
55. A
56. A
57. A
58. C
59. D
60. C
61. C
62. A
63. B
64. D
65. C
66. A
67. D
68. C

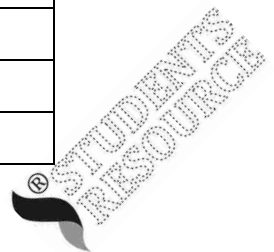
69. B
70. A



Topic 3: Dynamics

1. D
2. A
3. A
4. C
5. D
6. A
7. A
8. D
9. C
10. D
11. D
12. A
13. B
14. D
15. B
16. A
17. D
18. B
19. B
20. B
21. D
22. A
23. B
24. B
25. A
26. C
27. B
28. B
29. B
30. D
31. A
32. D
33. C
34. D
35. B

36. C
37. D
38. A
39. A
40. C
41. C
42. B
43. C
44. D
45. C
46. B
47. D
48. A
49. D
50. B
51. B
52. D
53. D
54. B
55. C
56. B
57. D
58. B
59. A
60. D
61. B
* & . 7
* ' . 8
* (. 7
*) . 6
* * . 6
* + . 5
* , . C
* - . 6



Topic 4: Mass, Weight & Density

1. B
2. C
3. C
4. A
5. A
6. C
7. A
8. D
9. C
10. B
11. A
12. C
13. B
14. A
15. B
16. D
17. D
18. C
19. A
20. B
21. D
22. C
23. B
24. A
25. B
26. C
27. D
28. C
29. D
30. C
31. C
32. A
33. C
34. A
35. B

36. B
37. C
38. D
39. C
40. C
41. A
42. D
43. B
44. B
45. C
46. C
47. A



Topic 5: Turning Effect of Forces

1. A
2. C
3. B
4. D
5. A
6. A
7. A
8. A
9. C
10. C
11. C
12. B
13. B
14. A
15. B
16. D
17. D
18. C
19. A
20. C
21. C
22. C
23. D
24. A
25. D
26. B
27. B
28. A
29. A
30. A
31. A
32. A
33. A
34. A
35. B

36. C
37. B
38. B
39. D
40. D
41. C
42. B
43. D
44. B

