

# Doppler Effect [25 marks]

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1a. [2 marks]

## Markscheme

force is proportional to product of masses and inversely proportional to square of distance apart;  
reference to point masses;

1b. [3 marks]

## Markscheme

(i) order of 1 cm;  
(ii)  $3 \times 10^8 \times 67 \times 10^{-3}$ ;  
 $2.0 \times 10^7 \text{m}$ ;

2. [1 mark]

## Markscheme

A

3. [1 mark]

## Markscheme

A

4. [1 mark]

## Markscheme

D

5. [1 mark]

## Markscheme

D

6. [1 mark]

## Markscheme

B

7. [1 mark]

**Markscheme**

A

8. [1 mark]

**Markscheme**

B

9. [1 mark]

**Markscheme**

B

10. [1 mark]

**Markscheme**

A

11. [1 mark]

**Markscheme**

C

12. [1 mark]

**Markscheme**

C

13. [1 mark]

**Markscheme**

C

14. [1 mark]

**Markscheme**

A

15. [1 mark]

**Markscheme**

D

16. **Markscheme** [1 mark]  
A

17. **Markscheme** [1 mark]  
A

18. **Markscheme** [1 mark]  
C

19. **Markscheme** [1 mark]  
C

20. **Markscheme** [1 mark]  
D

21. **Markscheme** [1 mark]  
D