# DELEGATE BOOKLET

# Getting Ready to Teach the Pearson Edexcel International GCSE Physics (9-1) (4PH1) for first assessment in May/June 2019

Course code: 4PH1-19IF01

## About this event

**Course Title:** Getting Ready to Teach the Pearson Edexcel International GCSE Physics (9-1) (4PH1) for first assessment in May/June 2019

**Course Code:** 4PH1-19IF01

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## Aims and Objectives of the event

During the event you will have the opportunity to:

- Consider the structure, content and assessment of this qualification, and the support available to guide you through these changes
- Consider the key changes from 4PH0
- Explore possible teaching and delivery strategies for the new qualification
- Explore exemplar student work
- Have the opportunity to network, discuss best practice, take away resources to help with your planning and delivery, and share ideas with other teachers
- Learn about the introduction of the new 9–1 grading scale.

This event can count as 5 hours of Continuing Professional Development (CPD).

## Agenda

| | |
|---|---|
| 10:00 | Welcome & Introductions |
| 10:05 | Brief overview of Pearson Edexcel |
| 10:10 | International GCSE Features |
| 10:15 | Introduction to the new International GCSE in Physics (9-1) |
| 11:00 | Contents and Networking activities |
| 13:00 | **LUNCH** |
| 14:00 | Contents and Networking activities continued |
| 15:30 | Support, resources and final questions |
| 16:00 | **FINISH** |

**This pack contains all you will need**

**This should include these materials:**

- **Specification**
- **Sample Papers and mark schemes**
- **Editable scheme of work**
- **Glossary of terms**

## Activity 1

Using the revised methodology for energy, how is energy transferred when an electric car accelerates?
Discuss in groups which ***stores*** and ***transfers*** are involved and put them into a sequence.

**Activity 2**

Discuss classroom activities that could be used to teach one (or more) statements from the new Astrophysics topic.
You may also find it beneficial to share resources (online or otherwise) that could be used when teaching this topic.

## Activity 3

An editable scheme of work is provided as part of the teaching and learning materials that support this new qualification.
The scheme of work was written by a teaching professional and includes many suggested activities to enrich the delivery of the specification in classrooms.
Discuss in groups how you would plan to teach the specification over a two year period.

- If topic by topic, which order would you choose?
- Is a spiral curriculum possible e.g. a little of each topic taught every year to make progress more gradual?

**Activity 4**

Design a mark scheme for the stellar evolution question (Paper 1 question 8) – what points would you expect to be given credit by the examiner?

## Activity 5

You will now see some student responses to the SAMs questions seen earlier.
These questions specifically target new points from the specification.
Mark each of the responses using the relevant mark scheme.
You will have the opportunity to discuss your mark with the presenter and be told the true score, as given by an examiner.

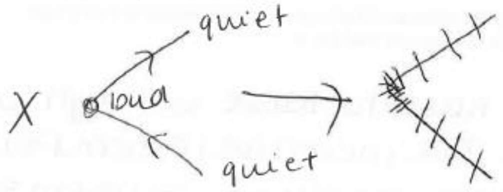
Paper 1 Q8d – response 1

When the buzzer is thrown, student A notices that the sound produced changes.

Explain how the sound heard by student A changes.

You may include a diagram in your answer.

**(3)**




When the sound is closer to person A, it produces a larger sound as the buzzer is in close proximity meaning that the sound waves don't have to travel very far to reach the ear drum but as the ball is thrown the distance between buzzer and person A increases, meaning more particles to vibrate in order for the sound to be heard.

**(Total for Question 8 = 10 marks)**

My mark:

Examiner's mark:

Notes

Paper 1 Q8d – response 2

When the buzzer is thrown, student A notices that the sound produced changes.

Explain how the sound heard by student A changes.

You may include a diagram in your answer.

**(3)**


doppler shift, as the buzzer moves away, the wavelength increases.

My mark:

Examiner's mark:

Notes

| Paper 1 Q8d – response 3 |
|---|
| When the buzzer is thrown, student A notices that the sound produced changes.<br><br>Explain how the sound heard by student A changes.<br><br>You may include a diagram in your answer.<br><br>**(3)**<br><br>As the buzzer approaches student B the waves become blue shifted (squashed) and so the amplitude and frequency ~~frequency~~ of the wave increases ~~changes~~, altering the sound as well. Similarly, as the buzzer moves away from A the waves become red shifted and the frequency and amplitude decreases and so the sound changes. |
| My mark:<br><br>Examiner's mark: |
| Notes |

| Paper 1 Q8d – response 4 |
|---|
| When the buzzer is thrown, student A notices that the sound produced changes.<br>Explain how the sound heard by student A changes.<br>You may include a diagram in your answer.<br>**(3)**<br>The sound heard by student A will get lower as the wavelength of the sound increases as it moves away from her. This is because the wave is being stretched out as it moves away. |
| My mark:<br><br>Examiner's mark: |
| Notes |

Paper 1 Q8d – response 5

When the buzzer is thrown, student A notices that the sound produced changes.

Explain how the sound heard by student A changes.

You may include a diagram in your answer.

**(3)**

~~In~~ The sound shifts ~~low~~ to a lower frequency, because as the buzzer progresses away from the student A, the wave length becomes longer, but the speed remains constant

My mark:

Examiner's mark:

Notes

Paper 1 Q11 – response 1

(11) Main sequence stars can vary in brightness, colour and mass.

Describe the evolution of both low mass stars and high mass stars after they join the main sequence.

**(6)**

high mass stars ~~have~~ live very short lives as they have ~~alot~~ a bigger mass and require more energy unlike low mass stars that can live for millions and millions of years as they have a smaller mass and require less energy so don't get used up. Low mass stars are at the bottom left of the Hertz-sprang russel diagram and the high mass stars are at the top right of the diagram.

My mark:

Examiner's mark:

Notes

| Paper 1 Q11 – response 2 |
| --- |
| (11) Main sequence stars can vary in brightness, colour and mass.<br><br>Describe the evolution of both low mass stars and high mass stars after they join the main sequence.<br><br>**(6)**<br><br>low mass stars become red giants, high mass stars become red Supergiants. |
| My mark:<br><br>Examiner's mark: |
| Notes |

Paper 1 Q11 – response 3

(11) Main sequence stars can vary in brightness, colour and mass.

Describe the evolution of both low mass stars and high mass stars after they join the main sequence.

**(6)**

for both stars, tong

~~A low mass star has a short life.~~ When the hydrogen in the core runs out the radiation pressure stops and the stars collapses inwardly due to gravity. The temperature then rise until hydrogen can start fusing in a shell around an hot helium core. Low mass stars have a long life. The outer layers of a low mass star is blown out in a shell of expanding gas called a planetary nebula and the inner core forms a white dwarf or a red giant depending on the mass of it. A large mass star's outer core explodes violently as a supernova and the inner core forms a supernova remnant. This is either a neutron star or a black hole (if the ~~original~~ star has a mass greater than three solar masses).

My mark:

Examiner's mark:

Notes

Paper 1 Q11 – response 4

(11) Main sequence stars can vary in brightness, colour and mass.

Describe the evolution of both low mass stars and high mass stars after they join the main sequence.

**(6)**

Low mass stars stay in main sequence for longer as although they have less fuel the don't use it as quickly as high mass stars. ~~Low mass stars~~ ~~ex~~ High mass stars, once they burn through their fuel will ~~expand~~ collapse and expand once helium is beginning to be used. Redgiants or ~~se~~ Red supergiants

My mark:

Examiner's mark:

Notes

| Paper 1 Q11 – response 5 |
|---|

(11) Main sequence stars can vary in brightness, colour and mass.

Describe the evolution of both low mass stars and high mass stars after they join the main sequence.

**(6)**

The low mass stars have quite a long lige for a star, but when nearly all hydrogen has been gused inside og the core, and Iron starts to appear inside og the star, it becomes a red giant because it starts expanding rapidly. Agter that, it will shrink to a white dwarg which is a size og a planet.

Large stars have a shorter lige, and then when iron starts to appear, it expands rapidly, and then either blows up in a supernova, (and form a neutron star) or ig the star was absolutelly gigantic, it would turn into a black hole with inginite density

My mark:

Examiner's mark:

Notes

| Paper 1 Q11 – response 6 |
|---|
| (11) Main sequence stars can vary in brightness, colour and mass.<br><br>Describe the evolution of both low mass stars and high mass stars after they join the main sequence.<br><br>**(6)**<br><br>Low mass stars burn at a much lower temperature than high mass stars. High mass stars burn much brighter than low mass stars and so their colour is typically red or orange, whereas low mass stars can be blue. High mass stars can explode into supernova or collapse into black holes. Low mass stars can become brown dwarfs, white dwarfs or explode into a nebula |
| My mark:<br><br>Examiner's mark: |
| Notes |

| Paper 2 Q6ci-ii – response 1 |
|---|
| (i) Calculate the change in wavelength, $\Delta\lambda$, for the line at the red end of the spectrum. (2)<br>~~wavelength = $\frac{v}{frequency}$~~<br>760 ~ 655<br>$\Delta\lambda$ = ~~200~~ 105 nm<br><br>(ii) Calculate a value for the recessional velocity of the quasar using your value for $\Delta\lambda$.<br>speed of light in free space, $c = 3.0 \times 10^5$ km/s (3)<br>~~105 × 3.0 × 10^5~~ $\frac{v}{c} = \frac{105}{655} \times c$<br>~~= 31500000~~<br>recessional velocity = 48091.6 km/s |
| My mark:<br><br>Examiner's mark: |
| Notes |

Paper 2 Q6ci-ii – response 2

(i) Calculate the change in wavelength, $\Delta\lambda$, for the line at the red end of the spectrum.

(2)

760 - 655 = 105

$\Delta\lambda$ = 105 nm

(ii) Calculate a value for the recessional velocity of the quasar using your value for $\Delta\lambda$.

speed of light in free space, $c = 3.0 \times 10^5$ km/s

(3)

$\frac{105}{655} \times 3 \times 10^5 = 48092$

$\approx 48000$

recessional velocity = 48000 km/s

My mark:

Examiner's mark:

Notes

| Paper 2 Q6ci-ii – response 3 |
| --- |

(i) Calculate the change in wavelength, $\Delta\lambda$, for the line at the red end of the spectrum.

(2)

770 - 655 = 115

$\Delta\lambda$ = 115 nm

(ii) Calculate a value for the recessional velocity of the quasar using your value for $\Delta\lambda$.

speed of light in free space, $c = 3.0 \times 10^5$ km/s

(3)

diff

$\frac{115}{655} = \frac{\text{recession}}{c}$

0.175572519

recessional velocity = 52672 km/s

My mark:

Examiner's mark:

Notes

| Paper 2 Q6d – response 1 |
| --- |
| Explain what information the two spectra give about the movement of the galaxy. (3)<br>the left side of galaxy has more redshift than right, they both have more than centre. the sides are expanding around the centre. |
| My mark:<br><br>Examiner's mark: |
| Notes |

Paper 2 Q6d – response 2

Explain what information the two spectra give about the movement of the galaxy.

(3)

The galaxy is spinning anti-clockwise as the right side is redshifted therefore moving away whilst the left is blue shifted and is moving towards us.

My mark:

Examiner's mark:

Notes

| Paper 2 Q6d – response 3 |
|---|
| Explain what information the two spectra give about the movement of the galaxy. (3)<br><br>It is rotating anti-clockwise, because the right side of the galaxy is more red-shifted then the left side, which means that the right side is going away from us, and the left side is moving closer |
| My mark:<br><br>Examiner's mark: |
| Notes |

## PERSONAL LEARNING

**Things to do:**

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**Things to avoid**

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-
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**Your ideas:**