Physics 1 Topic 5: EM Spectrum and Space

Extended Writing Task: **Thinking Backwards**

Many scientists believe that the universe started from one concentrated point with a ‘Big Bang’ however, there’s more to the theory than this. Explain what the Big Bang theory is and explain how scientists came up with it. You should include:

* What is red shift and how it happens
* How this led to the idea that the universe is expanding
* How this led to the Big Bang theory
* What cosmic background radiation is
* How this supports the Big Bang theory
* Why people may not believe the theory.

Continue this task on lined paper if needed and attach it behind this sheet.

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Physics 1 Topic 5: EM Spectrum and Space Extended Writing Task: **Thinking Backwards**

This work was done by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and was marked by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| P | **Praise. What were the positive aspects of the work? What did they do well? What skills did they demonstrate?** |
|  |
| I | **Improvements. What were the literacy issues in the piece of work?** | *Write in ink.*  |  | *Draw in Pencil.* |  | *Use a ruler.* |  |
| Always use capital letters at the beginning of a sentence. |  | Learn the spellings identified in your work. |  |
| Always use capital letters for proper nouns. |  | Ensure sentences make sense. |  |
| Make sure you write on the line and not above or below it. |  | Use correct punctuation. |  |
| Use scientific vocabulary appropriate to the task. |  | Vary your sentences to demonstrate your understanding. |  |
|  |
| **D answer** | **B answer** | **A\* answer** |
| Red shift is described as light appearing redder because it is stretched. |  | Red shift is described as light from start being shifted to the red end of the spectrums because it is moving away. |  | Red shift is described as light from stars/galaxies having a longer wavelength than it should because the star is moving away from the observer. |  |
| There is a statement that red shift was observed from all the stars that we see... |  | ...suggesting that they are all moving away from each other... |  | ...and the universe is expanding.  |  |
| The furthest stars show the biggest red shift. |  |
| There is a statement that scientists arrived at the Big Bang theory by thinking backwards or thinking in reverse. |  | Scientists arrived at the Big Bang theory by thinking that if every star is moving away from every other... |  | ...they all could have started in the same point before the expansion/explosion. |  |
| Cosmic Background Radiation is described as radiation coming from space. |  | Cosmic Background Radiation is described as microwave radiation that has been detected coming from space... |  | ..in/from all directions. |  |
| CBR is linked to the Big Bang theory in terms of it being the echo from the bang (or the heat that remains). |  | CBR is linked to the Big Bang theory in terms of (gamma) radiation being present just after the Big Bang... |  | ...which has stretched over time (red shifted) to become microwaves. |  |
| It is explained that some people may not believe it for religious reasons... |  | ...it is based on theory and not observation... |  | ...people may not understand the evidence or the evidence may be interpreted in a different way. |  |
| N | **Next Steps. How can they move their work onto the next grade? What didn’t they include?** | **Grade** | **Effort** |
|  |  |  |