1. The Big Bang can best be described as:
   A. the creation of matter from nothing
   B. the creation of energy from nothing
   C. the explosion of space at the beginning of time
   D. the explosion of radiation and matter into space

2. In the following diagram:

   ![Diagram](image)

   the symbols $\lambda$ and $A$ stand for:

   A. Wavelength and half the amplitude
   B. Wavelength and amplitude
   C. Wavelength and intensity
   D. Frequency and amplitude
3. Study the diagram below showing a waveform.

![Waveform Diagram]

Such a waveform is typical of:

A. An echo
B. An electromagnetic wave
C. A beat
D. A diffraction pattern

4. An alpha particle moves into the space between two oppositely charged plates. Due to the electric field present, the alpha particle will experience a force:

A. Towards the positive plate
B. Towards the negative plate
C. Sideways out of the field
D. In the opposite direction to its motion
5. The scientist who predicted the expansion of the universe from Einstein’s Theory of General Relativity was:
   A. Ariella Stavros
   B. Albert Einstein
   C. Edwin Hubble
   D. Alexander Friedmann

6. Of the following stars, the one that would have the highest luminosity would be:
   A. supergiant
   B. red giant
   C. brown dwarf
   D. white dwarf

7. The energy source for a main sequence star is:
   A. Hydrogen fusion
   B. Hydrogen fission
   C. Helium fusion
   D. Helium fission

8. Sunspots are:
   A. Areas of the sun of lower temperature and higher magnetic field
   B. Areas of the sun of higher temperature and lower magnetic field
   C. Areas of the sun of lower temperature and higher electric field
   D. Areas of the sun of higher temperature and lower electric field
9. In a collision between two cars, air bags can reduce injuries. This is due to their ability to:

A. Increase the time it takes for the change of momentum of the passengers to occur.
B. Decrease the time it takes for the change of momentum of the passengers to occur.
C. Increase the change of momentum experienced by the passengers.
D. Decrease the change of momentum experienced by the passengers.

10. In an electric circuit an ammeter should:

A. Have a low resistance and be connected in series
B. Have a high resistance and be connected in series
C. Have a low resistance and be connected in parallel
D. Have a high resistance and be connected in parallel

11. If the velocity of an object changes, we can be certain that:

A. A single force acted on the object
B. A net external force acted on the object
C. The momentum of the object has been conserved
D. The direction of the object must have changed

12. A 1 metre length of copper wire has a total resistance of 0.01Ω. The resistance of a 2 metre length of copper wire of equal cross-sectional area at the same temperature would most likely be:

A. 0.005Ω
B. 0.01Ω
C. 0.02Ω
D. 2Ω
ANSWERS:

1. C
2. B
3. C
4. B
5. D
6. A
7. A
8. A
9. A
10. A
11. B
12. C