Passage 7 (B1 Level):

Topic: The Vastness of the Universe

The universe is a vast and mysterious place, stretching far beyond our comprehension. Its immense size and scale leave us in awe and inspire countless questions about our place in the cosmos. Let's explore the fascinating dimensions of the universe and the wonders it holds.

The observable universe, the portion of the universe we can see, is estimated to be about 93 billion light-years in diameter. To put this into perspective, light travels at a mind-boggling speed of about 300,000 kilometers per second. Even at this incredible speed, it would take light 93 billion years to cross the entire observable universe. It's an unimaginable expanse of space, filled with galaxies, stars, planets, and other celestial objects.

Galaxies are the building blocks of the universe. They are vast systems composed of billions or even trillions of stars, held together by gravity. The Milky Way, our home galaxy, is just one of billions of galaxies in the observable universe. Each galaxy can vary in size, shape, and composition, ranging from small dwarf galaxies to massive elliptical or spiral galaxies.

Within galaxies, there are stars that light up the night sky. Stars come in various sizes and colors, from smaller, cooler red dwarf stars to massive, hot blue giants. Our own sun is an average-sized star, but there are stars that are many times larger and brighter than our sun. These stars are scattered across the universe, forming galaxies and constellations that captivate our imagination.

The universe is not just vast in terms of size, but also in age. It is believed to be around 13.8 billion years old. Scientists have developed theories about the origin of the universe, such as the Big Bang theory, which suggests that the universe began as a singularity and has been expanding ever since. This ongoing expansion continues to shape the universe and influence the movement of galaxies and other cosmic structures.

Comprehension Questions:

1. What is the estimated diameter of the observable universe?

a) 9.3 billion light-years

b) 93 million light-years

c) 930 billion light-years

d) 930 million light-years

2. How fast does light travel?

a) 30,000 kilometers per second

b) 300,000 kilometers per second

c) 3,000,000 kilometers per second

d) 30,000,000 kilometers per second

3. What holds galaxies together?

a) Light

b) Gravity

c) Dark matter

d) Electromagnetic force

4. What is the age of the universe?

a) 13.8 million years

b) 138 billion years

c) 13.8 billion years

d) 138 million years

5. According to the Big Bang theory, how did the universe originate?

a) From the explosion of a single star

b) From the collision of two galaxies

c) From the expansion of a singularity

d) From the collapse of a black hole

(c-b-b-c-c)