<u>**Answer Scheme**</u>

OBJECTIVE QUESTIONS

1. B	2. C	3. B	4. A	5. D
6. A	7. C	8. A	9. C	10. D
11. A	12. C	13. B	14. D	15. A
16. A	17. B	18. B	19. A	20. E
21. B	22. B	23. A	24. D	25. C
26. E	27. D	28. E	29. D	30. D
31. A	32. B	33. A	34. D	35. B
36. C	37. B	38. E	39. B	40. B
41. B	42. A	43. C	44. A	45. D
46. D	47. B	48. B	49. B	50. C

STRUCTURE QUESTIONS

QUESTION 1

1. Star Z

2. Star U

3. The difference between significant and absolute magnitude values is large - its brightness is high even at very long distances.

4. Rearrange equation:

$$m_v - M_v = 5log_{10}\left(\frac{d}{10}\right)$$
$$d = 10^{\left(\frac{m_v - M_v + 5}{5}\right)}$$
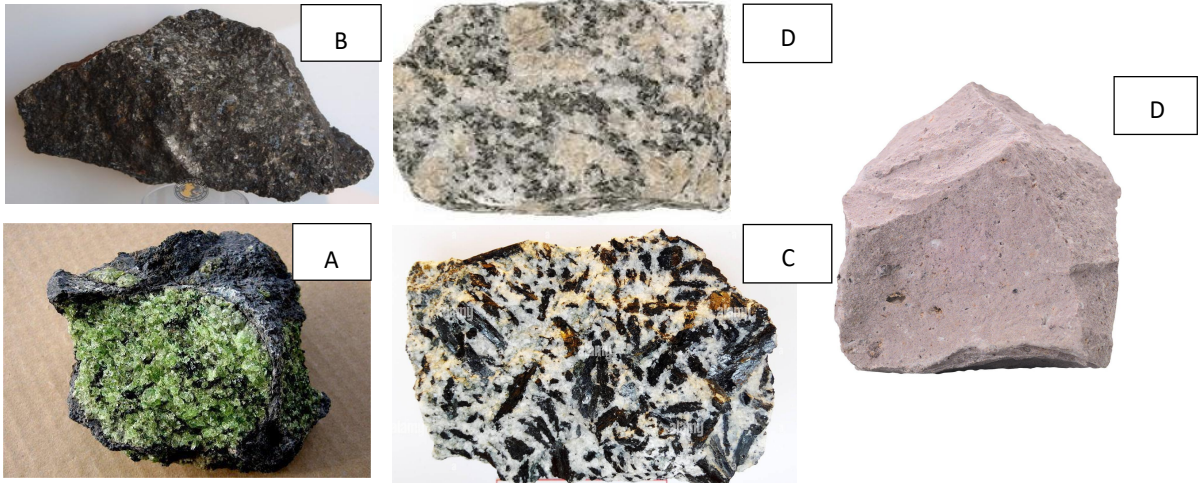$$d = 10^{\left(\frac{(-0.72)-(-2.5)+5}{5}\right)}$$
$$\underline{d = 22.69\ pc}$$

Converting pc to ly:

$$1pc = 3.26ly$$
$$if\ 22.69\ pc = 22.69\ pc\ \times 3.26\ ly$$
$$\underline{= 73.99\ ly}$$

QUESTION 2

QUESTION 3

A. Fog
B. Stratocumulus
C. Cirrus
D. Cumulus Congestus
E. Nimbostratus

QUESTION 4

Schema (**1 mark each**):

During the southwest monsoon season, a strong southwesterly wind blows over this region.

As it is located on the northern hemisphere, the Ekman transport acts on the right side towards the sea.

Therefore it pushes the cooler water from the bottom layer to the surface along with rich nutrient water.

This rich nutrient water enhances the productivity in the region.

The existence of elongated cooler SST and high nutrient along the coast indicates an upwelled water presence in the region.

QUESTION 5

i. Find the velocity for first layer and second layer of the subsurface.

$$slope = \frac{1}{velocity}$$ (**1 mark**)

$$slope\ layer\ 1 = \frac{15\ x10^{-3}\ s}{30\ m} = 0.5\ x10^{-4}\ sm^{-1}$$

$$velocity\ layer\ 1 = \frac{1}{0.5\ x10^{-4}} = 2000\ ms^{-1}$$ (**1 mark**)

$$slope\ layer\ 2 = \frac{5\ x10^{-3}\ s}{45\ m} = 1.11\ x10^{-4}\ sm^{-1}$$

$$velocity\ layer\ 2 = \frac{1}{1.11\ x10^{-4}} = 9000\ ms^{-1}$$ (**1 mark**)

ii. Which part from the graph (A or B) has no refraction occur and give reason for your answer?

Answer

A   (**1 mark**)

Any of these answer

because it is at critical refracted ray or

V2 > V1 or

slope 1/v2 < 1/v1.   (**1 mark**)