

DISPERSION

DISPERSION OF LIGHT BY A PRISM:

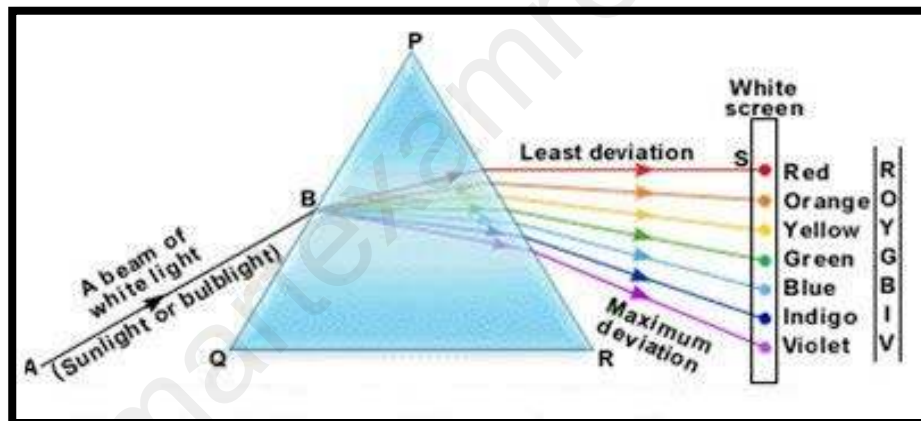
Dispersion: The separation of visible light into its different colors is known as dispersion.

Spectrum: A band of colours, as seen in a rainbow, produced by separation of the components of light by their different degrees of refraction according to wavelength.

Monochromatic light: Light of a single frequency is called as monochromatic light.

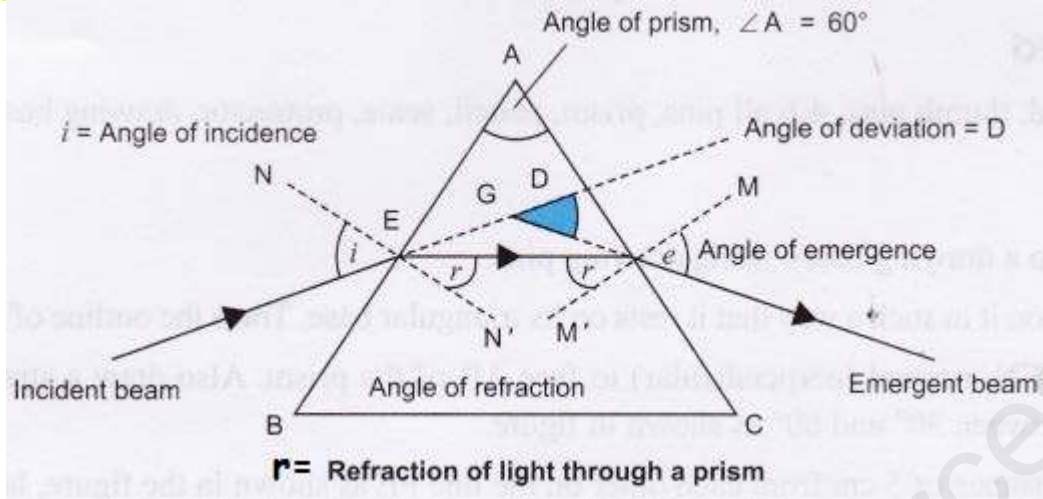
Explanation of dispersion:

- White light is a mixture of many different colours, each with a different frequency.



- White light can be split up into a spectrum of these colours using a prism, a triangular block of glass or Perspex.
- The different colours of light have a different frequency and a different wavelength.
- The different colours are refracted by different amounts.
- Red light has the longest wavelength and is refracted the least.
- Violet light has the shortest wavelength and is refracted most.

LABELLING THE ANGLE OF REFRACTIONS AND EMERGENCE IN A PRISM:

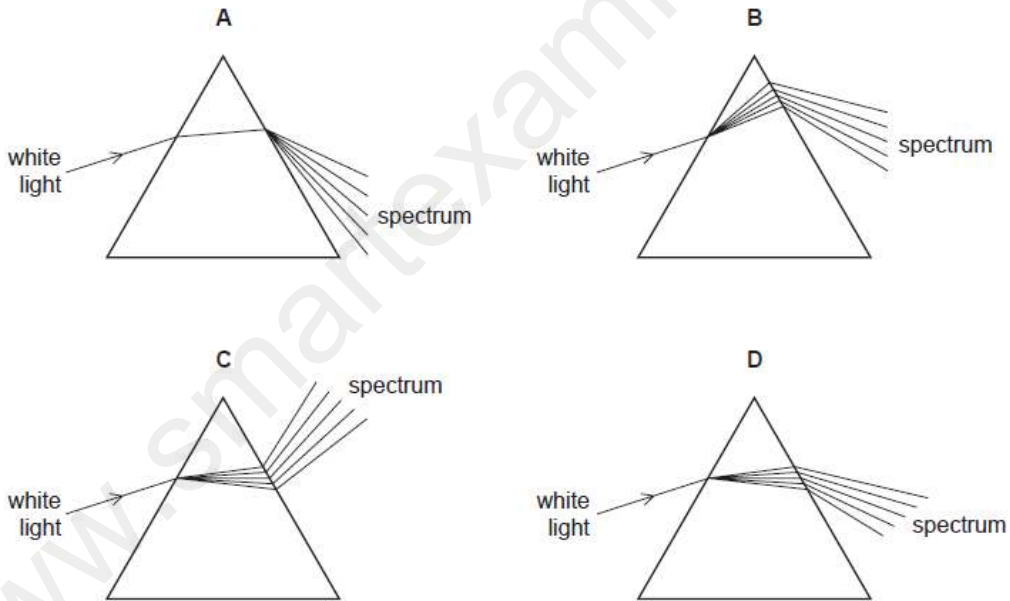


APPLICATION BASED QUESTIONS:

MCQ:

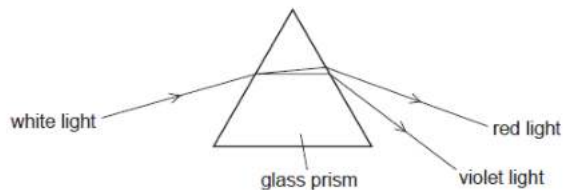
0625/11/M/J/09

21 Which diagram shows what happens when a ray of white light passes through a prism?



0625/12/M/J/11

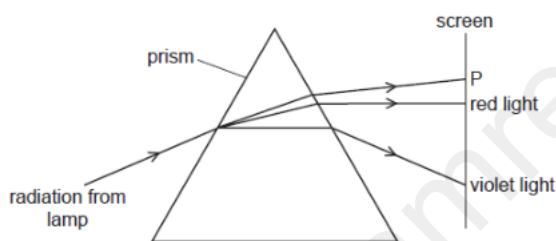
23 The diagram shows the dispersion of white light by a glass prism.



Why does dispersion occur when white light enters the glass?

- A The frequency of red light decreases more than that of violet light.
- B The frequency of violet light decreases more than that of red light.
- C The speed of red light decreases more than that of violet light.
- D The speed of violet light decreases more than that of red light.

22 The diagram shows radiation from a lamp passing through a prism. 0625/12/M/J/12

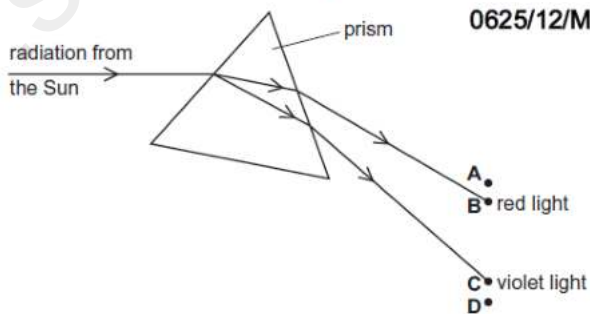


Which type of radiation is found at P?

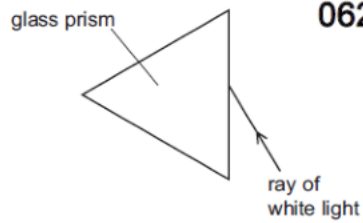
- A γ -rays
- B infra-red
- C ultraviolet
- D X-rays

21 Radiation from the Sun is dispersed by a prism. The prism does not absorb any of the radiation. Four identical thermometers are placed, one at each of the labelled positions.

In which position does the thermometer show the greatest rise in temperature?



22 The diagram shows a ray of white light incident on a triangular glass prism.

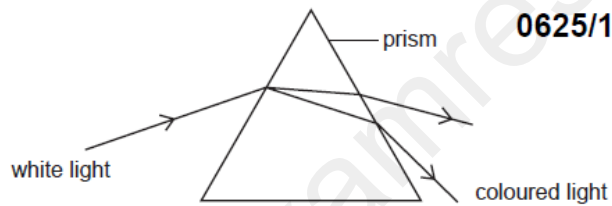


The ray enters the prism.

Which row correctly states if the light is refracted, and if the light is dispersed?

	refracted	dispersed
A	no	no
B	no	yes
C	yes	no
D	yes	yes

22 One of the effects of passing a ray of white light through a prism is to split the light into colours.



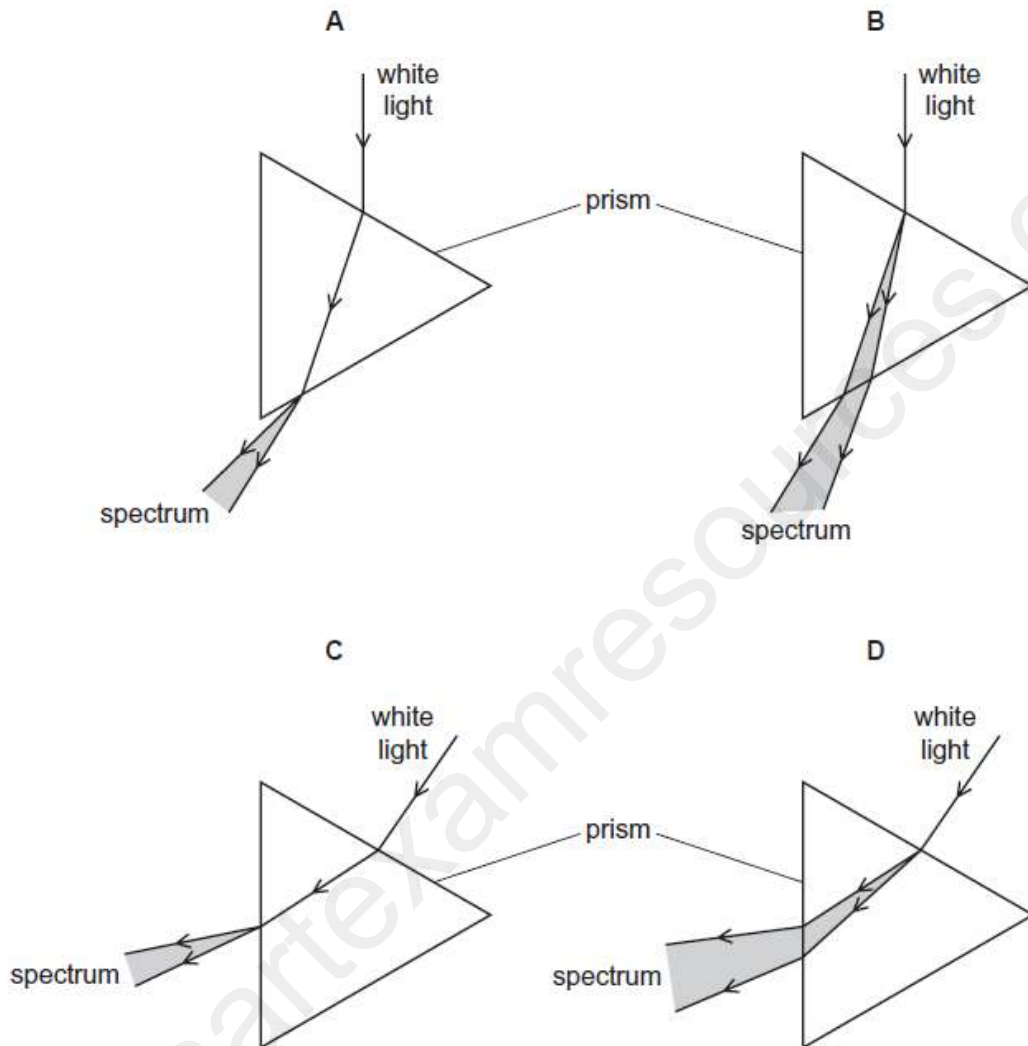
What is the name given to this effect?

- A deviation
- B dispersion
- C reflection
- D refraction

23 A teacher demonstrates the dispersion of white light using a triangular glass prism.

Which diagram shows how this dispersion happens?

0625/13/O/N/13



EXTENDED THEORY:

(b) Fig. 6.2 shows a ray of light incident on a glass prism.

M/J/14-P32-Q6

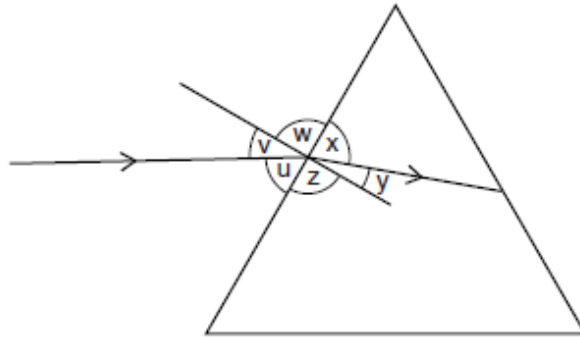


Fig. 6.2

Put **one tick only** in each line of the table to indicate which of the angles labelled in Fig. 6.2 are the angle of incidence and the angle of refraction.

	u	v	w	x	y	z
angle of incidence						
angle of refraction						

[2]
