Chapter five summary

1-define refraction of light ?

Ans : refraction of light: is the bending of light when it goes from one transparent medium to another.

2-state rules of refraction of light?

Ans :

A) any ray of light travelling obliquely in an optically rarer medium on passing through optically denser medium, bends towards normal, drawn at the point of incidence.

B) any ray of light travelling obliquely in an optically denser medium on passing through optically rarer medium bends away from the normal drawn at the point of incidence.

C) the angle between incident ray and normal is called angle of incidence

d) the angle between the refracted ray and the normal is called angle of refraction

e) the refraction of light is due to change in the speed of light on going from one medium to another and light travel faster in air but slower in glass.

3- define Snell's law?

Ans : Snell's law: the ratio of sine of angle of incidence to the sine of angle of refraction is constant .

4-leteral displacement :the perpendicular shift in the path of incident ray ,while emerging out of rectangular optical slab .

5-define optical density ?

Ans :the ability of medium to refract light is expressed interms of optical density .

6-how to distinguish between a rarer and denser media?

Ans: the media with lesser refractive in index is called rarer denser media.

Ans: the media with more refractive in index is called denser media

7-define lenses?

Ans:lens: is a piece of transparent glass bounded by two spherical surfaces .

8-state types of lenses and define?

Ans : they are two types of lenses :

- ✓ **Convex lens or converging lens: a piece of transparent optical material ,having one or two spherical surfaces ,such that it is thicker in the middle and tapering at the edges .**
- ✓ **Concave lens or diverging lens: a piece of transparent optical material ,having one or two spherical surfaces , such thatit is tapering in the middle and thicker at its edges**

9-define the following terms:

a) **principle axis: an imaginary line joining the center of curvature C1 and C2 of two spherical surfaces of the lens.**
b) **Optical centre: appoint within the lens where aline drawn through the aperture meets the principle axis>**
c) **Principal focus: it is a point on the principal axis of the lens such that beam of light parallel to the principal axis after refraction through the lens either actually meet or appear to come from this point .**

9-tell rules for drawing images in concave lens:

- ✓ **A ray of light travelling parallel to the principal axis of concave lens , after refraction appear to come from its first principal focus.**
- ✓ **A ray of light initially travelling along the direction of the second principal focus after refraction travels parallel to the principal axis of the concave lens**
- ✓ **A Ray of light which passes through the optical center of concave lens does not suffer any refraction, it passes through the lens without any deviation**

10- state characterstics of the images of concave lens when the object is located at infinity?

- ✓ **The image is virtual**

- ✓ **The image is erect**
- ✓ **The image diminished to a point**
- ✓ **The image formed at f1 on the same side as the object**

11- tell rules for drawing images in concave lens:

- ✓ **A ray of light travelling parallel to the principal axis ,after refraction through the ray of light passes through the second principal focus of the lens.**
- ✓ **Ray of light which first passes through the first principal focus of the convex lens after refraction the ray of light travels parallel to the principal axis.**
- ✓ **A Ray of light which passes through the optical center of convex lens does not suffer any refraction, it passes through the lens without any deviation .**

12-satae characteristics of the image of convex lens when the object is located at infinity ?

- ➢ **The image is real**
- ➢ **The is inverted**
- ➢ **The image is diminished to appoint**
- ➢ **The image is formed at f2 on the other side of the lens**

13--satae characteristics of the image of convex lens when the object is located beyond 2f but not infinity?

- ➢ **The image is real**
- ➢ **The is inverted**
- ➢ **The image is diminished**
- ➢ **The image is formed between f2 and 2f2 on the side of the lens.**

14- satae characteristics of the image of convex lens when the object is located 2f?

- ➢ **The image is real**
- ➢ **The image is inverted**
- ➢ **The image is of the same size as the object**

- **The image is formed at 2f2 on the other side of the lens**

15- satae characteristics of the image of convex lens when the object is located between 2f1 and f1?

- **The image is real**
- **The is inverted**
- **The image is enlarged**
- **The image is formed beyond 2f2, but not at infinity on the other side of the lens**

16- satae characteristics of the image of convex lens when the object is located f1?

- **The image is real**
- **The is inverted**
- **The image is formed at infinity on the other side of the lens**
- **The image is highly enlarged;**

17- satae characteristics of the image of convex lens when the object is located the optical center and first principal focus?

- **The image is virtual**
- **The image is erect**
- **The image is enlarged**
- **The image is informed on the same side as the object.**

18- define the following:

- **Linear magnification: the ratio between the height of the image produced by the lens to the height of the object.**
- **Power of lens:as the reciprocal of its focal length in metres.**
- **Accommodation :the ability of an eye to focus on the distant object as well as the near by objects on the retina by changing the focal length.**

Every student must read deeply

prepared by lecture: Isse Mohamed ahmed