

Guess Paper – 2014
Class – X
Subject – Science

LIGHT(Reflection,Refraction)
&Human Eye and colourful world

S.A-II (Physics)

TIME- 3 hrs

F.M-90

Q1 to 3= 1mark each Q4 to 7 = 2 marks each Q 8 to 19 = 3 marks each
Q20 to 24 = 5 marks each Q 25 to 42 = 1mark each

SECTION-A

- Q1:** In which type of lens linear magnification is always less than one? 1mark
- Q2:** Which mirror has a wider field of view? 1mark
- Q3:** What is the range of vision for a normal human eye? 1mark
- Q4:** Why is red colour usually used in danger signals? 2marks
- Q5:** Why does sky appear dark to an astronaut? 2marks
- Q6:** When a bright object is placed 10 cm away from a concave mirror, its real image is formed at a distance 40cm from the mirror. What is the focal length of the mirror? 2marks
- Q7:** A concave mirror produces three times magnified real image of an object placed at 10 cm in front of it. Where is the image located? 2marks
- Q8:** Which type of mirror is used in the headlights of a car? Why is it used for this purpose? An object is placed between the centre of curvature and focus of a concave mirror. Draw a simple ray diagram for the formation of image. 3 marks
- Q9:** A small object is placed in front of a convex lens of 10 cm focal length, such that a virtual image is formed at a distance of 25 cm. Find its magnification. 3 marks
- Q10:** When an object is placed at a distance of 60 cm from a convex mirror, the magnification produced is 1/2. Where should the object be placed to get a magnification of 1/3? 3 marks
- Q11:** The far point for a myopic person is 75 cm in front of the eye. What is the type and power of the lens required to correct this defect? 3 marks
- Q12:** Explain why we cannot see objects clearly when we enter a cinema hall from a brightly lit room. 3 marks
- Q13:** Give reasons for the following.
(i) Sky appears blue for an observer on the earth.
(ii) Sun appears white at noon.

Q14: Explain Tyndall effect. Give three examples. 3 marks

Q15: Draw a labelled diagram of the human eye showing its important parts. 3 marks

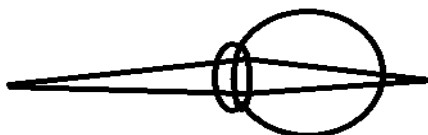
Q.16.: Rhea and Harnoor were at the dining table having their dinner. An argument broke out between them about convex and concave mirror as to which mirror forms an inverted image. Without wasting time Rhea took Harnoor look into the depressed surface of the spoon and then the bulging surface. The images formed in the two cases were different. In the first case the image formed was inverted while in the second case it was erect. Then she explained to Harnoor about the two surfaces acting as mirrors and also which formed an inverted image. This at once stopped the argument.

(a) Which of the two mirrors forms an inverted image; concave or convex? (b) What are the values shown by Rhea and Harnoor? (c) Give one use of a concave mirror. 3 marks

Q.17: A person with a defective eye vision is unable to see the objects nearer than 1.5 m. He wants to read books at a distance of 30 cm. Find the nature, focal length and power of the lens he needs in his spectacles.

3 marks

Q.18 Study the diagram given below and answer the questions that follow it: 3 marks



(a) Which defect of vision is represented here?

(b) Draw ray diagram to show the correction of this defect by the use of a suitable lens.

Q19. A concave lens of focal length 15 cm forms an image 10 cm from the lens. How far is the object placed from the lens? Draw the Ray diagram. 3 marks

Q20. Draw ray diagrams to show the formation of image of an object by a concave mirror, when it is placed (i) between its centre of curvature C and focus F (ii) between pole P of mirror and its focus F. Write its nature and position.

5 marks

Q21. Explain short sightedness and how it can be rectified. Draw simple ray diagrams for the same.

5 marks

Q22. (a) What is dispersion of white light? What is the cause of such dispersion? Draw a ray diagram, to show the dispersion of white light by a glass prism.

(b) A glass prism is able to produce a spectrum when white light passes through it but a glass slab does not produce any spectrum. Explain why it is so. 5 marks

Q23. (a) Name the type of mirror used in the following:- (i) Headlight of a car. (ii) Rear view mirror of a vehicle. Support your answer with reason.

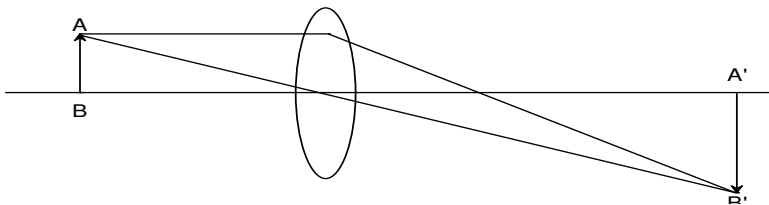
(b) When an object is placed at a distance of 60 cm from a diverging spherical mirror, the magnification produced is 0.5. Where should the object be placed to get a magnification of $\frac{1}{3}$? 5 marks

Q24.(a) Define power of lens. Write its SI units. (b) You are provided with two convex lenses of focal length 15cm and 25 cm respectively. Which of the two is of larger power ? Give reason for your answer.

(c) A 20 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 10 cm. The distance of the object from the lens is 15 cm. Find the nature, position and size of the image. Also find its magnification. 5 marks

SECTION-B (1 x 18 = 18)

Q25: In the fig. is shown the image A'B' of object AB formed by a convex lens. The position of the object is:



- (a) at 2f (b) beyond 2f (c) between f and 2f (d) at f

Q26: A real inverted magnified image of an object is formed by a convex lens. To obtain a virtual magnified image of the same object:

- (a) lens should be moved away from the object (b) object should be moved away from the lens
(c) object should be moved towards the lens (d) none of these

Q27: A convex lens of power 5D is combined with a concave lens of power 4D, the focal length of the combination is:

- (a) 20 cm (b) 25 cm (c) 100 cm (d) 11.1 cm

Q28: For no refraction at the interface of two mediums the angle of incidence should be

- (a) 30° (b) 45° (c) 60° (d) 90°

Q29: Magnification produced by a rear view mirror fitted in vehicles

- (a) is less than one (b) is more than one (c) is equal to one

(d) can be more or less than one depending upon the position.

Q30: Magnification produced by a mirror is +1.5. The mirror is

- (a) Concave (b) Convex (c) May be concave or convex (d) None

Q31: A student obtained a sharp image of the grill of a window on a screen using a convex lens. For better results, the teacher suggested focussing of a distant tree instead of the grill. In what direction should the lens be moved for this purpose?

- (a) Away from the screen (b) Very far away from the screen (c) Behind the screen (d) Towards the screen

Q32. The clear sky appears blue because

- (a) blue light gets absorbed in the atmosphere (b) ultraviolet radiation are absorbed in the atmosphere (c) violet and blue lights get scattered more than all other colours by the atmosphere (d) light of all other colours is scattered more than the violet and blue colour lights by the atmosphere

Q33. The intensity of light of light entering the eye is controlled by

- (a) pupil (b) ciliary muscles (c) vitreous humour (d) retina

Q34. Electric nerve pulses from retina to brain are conveyed by

- (a) ciliary muscles (b) optic nerve (c) aqueous humour (d) pupil

Q35. Twinkling of stars is due to

- (a) reflection (b) atmospheric refraction (c) dispersion (d) scattering

Q36. Ciliary muscles can change the focal length of eye lens. This phenomenon is responsible for

- (a) accommodation (b) persistence of vision (c) astigmatism (d) colour blindness

Q37. Which of the following phenomena contributes significantly to the reddish appearance of the sun at sunrise or sunset?

- (a) Dispersion of light (b) Scattering of light (c) Total internal reflection of light (d) Reflection of light from the earth

Q38. In optical fibres, the principle used is

- (a) scattering (b) reflection (c) refraction (d) total internal reflection

Q39. Light travels slowest in

- (a) vacuum (b) air (c) glass (d) diamond

.Q40. You are given water, mustard oil, glycerine and kerosene. In which of these media a ray of light incident obliquely at same angle would bend the most?

- (a) Kerosene (b) Water (c) Mustard oil (d) Glycerine

Q41. While trying to identify convex lens from a group of glass pieces lying on a table, Asha found that there is lens that always forms a virtual and diminished image. The kind of this lens is:

- (a) Plane convex lens (b) Double concave lens (c) Double convex lens (d) Plane glass sheet

Q42. A convex lens forms a virtual and magnified image of an object, the position of the object must be :

- (a) just beyond f (b) between focus and optical centre (c) between f and $2f$ of the lens (d) can't say anything with certainty



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