	EXEF	RCIS								
1. 2.	OBJECTIVE QUESTIONS Light causes the sensation of : (A) Vision (B) Sight (C) Both (A) and (B) (D) None Light is : (A) an electromagnetic radiation (B) form of energy	12.	Objects that allow the partial passage of light through them are called (A) transparent object (B) translucent object (C) opaque object (D) None of these							
3.	 (C) massless (D) all of the above Which of the following is a natural luminous source of light ? (A) Sun (B) Wood (C) Electric lamp (D) Torch 	13.	(A) r (B) v (C) o (D) A Whic	The image formed by pinhole camera is (A) real and inverted (B) virtual and erect (C) of a size larger than object (D) All of these Which of the following is a luminous object?						
4.	Light shows : (A) Random propagation (B) Curvilinear propagation (C) Rectilinear propagation (D) None of these	15.	 (A) Sun (B) Electric bulb (C) Candle (D) All of these 5. Which of the following is a non-luminous object ? (A) Chair (B) Tube light (C) Star (D) None of these 							
5.	Which of the following is reflector of light ?(A) Sun(B) Star(C) Filament(D) Moon	16.	Spee (A) 3 (C) 3	d of lig × 10^9 × 10^7	ht is - ms ⁻¹ ms ⁻¹	(B) 3 (D) 3	8×10^8 8×10^1	³ ms ⁻¹		
6.	Wood is an example of : (A) Translucent (B) Transparent (C) Polymer (D) Opaque	17.	Light travels in (A) straight line (B)				Curved line			
7.	Sending of light back in same medium by object is - (A) Reflection (B) Refraction (C) Both of these (D) None of these	1.	With	SUBJE	CTIVE lp of a	QUES	TIONS	w that	light	
8.	When light enters in a medium and changes its path, then this phenomenon is called (A) Reflection (B) Refraction (C) Both of these (D) None of these	2.	 State the characteristics of image formed by a pinhole camera. 							
9.	The colour of a shadow is (A) always black and white (B) only black (C) only white. (D) same as that of object	3. 4.	Why earth What forma	Shadov 's surfa : is pinh ation of	ws of v ace are nole car object	very fai not vis mera? [by poi	r objec ible? Discuss nt sou	the sharce of lig	adow ght.	
10.	Objects that do not allow any light to pass through them are called (A) transparent object (B) translucent object (C) opaque object			A	NSWE	ER KE	Y			
	(D) None of these	1.	С	2.	D	3.	А	4.	С	
11.	(A) transparent object (B) translucent object (C) opague object	5. 9. 13.	D B A	6. 10. 14.	D C D	7. 11. 15.	A A A	8. 12. 16.	B B B	
	(D) None of these	17.	А						-	

Exercise - II

OLYMPIAD PROBLEMS

- Which of the following materal allows light to pass through it?

 (A) Copper
 (B) Wood
 - (C) Rubber (D) Glass
- The sun in the early morning can cause a building to form a shadow. This shadow will be

 (A) Fat
 (B) Long
 - (C) thin (D) Short
- 3. We can see objects in a bright room because

(A) The objects give off light to the air(B) the Objects reflect the light falling on them.

(C) The objects send light away from our eyes.

- (D) Our eyes give off light to the objects
- 4. WHich of the following characteristics is not exhibited by the shadow of an object?(A) Right side up
 - (B) Same colour as objects
 - (C) Can be formed on a screen
 - (D) Can be bigger than the objects
- 5. The object that does not give out light on its own is the
 - (A) Star
 - (B) Lighted matchstick
 - (C) Light Bulb
 - (D) Shining mirror
- 6. Which of the following is not a characteristic of a virtual image formed in a plane mirror?
 (A) Cannot be formed on a screen
 - (B) its is inverted
 - (C) It is same size as the object(D) It is laterally inverted
- 7. Sunlight can pass through
 (A) Walls
 (B) Bushy trees
 (C) Rocks
 (D) Water
- 8. WHich of the following are translucent mate rials?
 - (i) Air(ii) Ground glass(iii) Clouds(iv) Aluminium sheet
 - (A) (i) and (ii) (B) (ii) and (iii)
 - (C) (i) and (iii) (D) (ii) and (iv)

- 9. Anushka put some tea into four cups made of paper, glass, metal and porcelain, respectively. Which one of these cups will allow her to see the level of the tea clealy?
 (A) Paper cup
 (B) Metal cup
 (C) Glass Cup
 (D) Porcelain Cup
- 10. Which of these things cannot give off its own light?(A) A torch(B) A lamp
 - (C) The Moon

13.

- oon (D) The sun
- 11. As the sun rise in the sky, the shadow of a building(A) Lengthens(B) Shortens
 - (C) Widens
 - s (D) Darkens
- 12. The Plane mirror forms a
 - (A) Virtua image (B) Real Image
 - (C) Inverted Image (D) Magnified image

Which of tghe followig will produce diffuse reflection of light?

- (i) Plane Mirror (ii) Piece of paper
- (iii) Still water in lake
- (iv) Leather bag (A) (i) and (ii) (B) (ii) and (iii)
- (C) (i) and (iii) (D) (ii) and (iv)

A device containing two plane mirrors which gives us a higher view than normal is
(A) Stethoscope
(B) Microscope
(C) Periscope
(D) Telescope

15. There is light on the earth even on a dark, cloudy day. This is becasue clouds are
(A) Opaque
(B) Transparet
(C) Manslucent
(D) Luminous

ANSWER KEY 2. В D В 3. В 4. D 6. В 7. D 8. В С С 12. 10. 11. В А

15.

С

13. D 14. C

1.

5.

9.

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Exercise - III

FOUNDATION LEVEL PROBLEMS

 A fish looking up through the water sees the outside world contained in a circular horizon. If the refractive index of water is 4/3 and the fish is 12 cm below the surface, the radius of the circle is

(A) 12 × 3 × $\sqrt{5}$ cm

(B) 12 \times 3 \times $\sqrt{7}$ cm

(C) 12 × $\sqrt{5/2}$ cm (D) 12 × $\frac{3}{\sqrt{7}}$ cm

2. When white light enters a transparent medium such as glass

(A) all wavelength components travel with same speed.

(B) the large wavelength component travels with maximum velocity.

(C) the short wavelength component travels with maximum velocity.

(D) there is no relation between wavelength and speed.

3. Total internal reflection takes place when light is incident

(A) on a concave mirror.

(B) from air on a plane glass surface at any angle.

(C) from air on a plane glass surface at a certain given angle.

(D) from inside a glass cube placed in water at a certain given angle.

- 4. When monochromatic light passes from vacuum to a material medium and vice versa; which of the following characteristics of light beam does not change?
 - (A) velocity (B) intensity

(C) wavelength (D) frequency

- 5. If there were no atmosphere on earth, the duration of day light will
 - (A) decrease (B) increase
 - (C) remain unchanged
 - (D) become infinite
- **6.** A piece of glass when immersed in a transparent solution of refractive index 3.1 becomes almost invisible. The refractive index of glass used is

(A) zero (B) 3.1 (C) 1.48 (D) infinite 7. A transparent rectangular block 5.0 cm thick is placed on a black dot. The dot when viewed from above is seen 2.0 cm from the bottom of the block. The refractive index of the material of the block is

(A)
$$\frac{2}{5}$$
 (B)
(C) $\frac{5}{2}$ (D)

8. When light transmitted through one medium is incident on the surface of another medium

I. No light is reflected at the boundary.

II. Some of the light is absorbed by the second medium.

5

5

III. The speed is reduced if the second medium is rarer relative to the first.

IV. The speed is reduced if the second medium is denser relative to the first.

- (A) I and II only are correct(B) II and III only are correct
- (C) II and IV only are correct (D) I and IV only are correct

At night a lamp is moved up and down above the surface of a pond containing water of refractive index 4/3. When the lamp is 2 m above its surface, its image by refraction appears to coincide with the bottom of the pond. The depth of the pond is

(A)	8/3	m	(B)	2	m
(C)	1.5	m	(D)	1	m

10. A light source is placed at the bottom of a water tank 1 metre deep. It is found that a circle of illuminated surface is formed at the top of the tank. The radius of this circle is

(A)	1.0 m	(B)	1.13	m
(C)	1.25 m	(D)	1.51	m

- 11. The minimum distance between an object and its real image formed by a convex lens of focal length f is :-
 - (A) f (B) 2f (C) 3f (D) 4f
- **12.** The double convex shaped air bubble in water will behave as a
 - (A) convex lens (B) concave lens
 - (C) cylindrical lens (D) plane mirror
- **13.** A lens of power +2D is put in contact with

a lens of power – D, the combination will serve as

- (A) a converging lens of focal length 50 cm.
- (B) a converging lens of focal length 100 cm.
- (C) a diverging lens of focal length 50 cm.
- (D) a diverging lens of focal length 100 cm.
- An object is placed at a distance equal to 2f from a concave lens, the image formed will be at
 - (A) 2f (B) $\frac{2f}{3}$
 - (C) f (D)
- 15. In an experiment to measure the focal length of a converging lens, object distance u and corresponding image distance v are measured. 1/u is plotted against 1/v to obtain the graph below. The focal length of the lens can be determined as



(A) the slope of the graph.

(A) circle

(C) hyperbola

- (B) the reciprocal of the slope.
- (C) the intercept on either axis.

(D) the reciprocal of the intercept on either axis.

- 16. The nature of the u-v graph for a converging lens is part of a
 - (B) parabola (D) straight line
- **17.** A convex lens of focal length 15 cm is placed in contact with a plane mirror and a candle is placed at the focal plane of the lens. The image produced will be
 - (A) real and 15 cm in front of the mirror.
 - (B) virtual and 15 cm in front of the mirror.
 - (C) real and 30 cm in front of the mirror.(D) virtual and 30 cm in front of the mirror.
- A convex lens has a focal length of 10 cm. When it is immersed in water it will behave as

- (A) a convex lens of 10 cm focal length.
- (B) a concave lens of 10 cm focal length.
- (C) a convex lens of focal length greater than 10 cm.
- (D) a convex lens of focal length less than 10 cm.
- 19. A convex lens forms a virtual image of an object placed at 15 cm from the lens. The focal length of the lens can be :
 - (A) 2 cm (C) 15 cm
- (B) 8 cm (D) 18 cm
- **20.** Two thin lenses are in contact and the focal length of the combination is 80 cm. If the focal length of one of the lenses be 20 cm, the power of the other lens is
 - (A) 1.66 dioptre (B) 4.00 dioptre (C) -1.00 dioptre (D) -3.75 dioptre
- 21. A locality is photographed from an aeroplane flying at a height 2000 m with a camera having an objective of focal length 50 cm. The size of the film in the camera is 18 cm x 18 cm. The area of ground that can be photographed at one time will be
 - (A) 0.52 km² (B) 1.0 km²
 - C) 1.52 km²
 - (D) 4.0 km²
- 22. Astigmatism is corrected with the help of
 - (A) concave spherical lens
 - (B) convex spherical lens
 - (C) bifocal lens
 - (D) cylindrical lens
- 23. A person is said to be short-sighted if

(A) the person cannot see things clearly when they are placed near the eye.

(B) the rays from a distant object are focussed before they reach the retina.

(C) the eye ball is too short.

- (D) the retina does not work efficiently.
- 24. In case of a compound microscope

(A) the image produced by the eyepiece is real.

(B) the image produced by the objective lies inside the focal length of the eyepiece.

(C) the eyepiece has a shorter focal length than the objective.

	LIGHT, SHADOWS AND REFLECTIONS		Page # 29						
	(D) the magnification which can be produced		(D) Black P on greenish-white background						
25.	is unlimited. Which of the following is NOT paired correctly?	31.	A red and a green pencil are taken in a room illuminated with green light. In the room.						
	(A) Solar furnace-concave mirror		(A) both pencils will appear dark.						
	(B) Rear-view mirror-convex mirror		(B) pencils will appear as red and gree						
	(D) None of these		(C) red pencil will appear dark and green						
26.	Which of the following statements about defects of vision is/are correct?	For a long-sighted person, close objects of blurred.	pencil green.						
	 For a long-sighted person, close objects appear blurred. 		dark.						
	II. For a short-sighted person, distant objects	52.	(A) there is more blue light in the sunlight.						
	III.Short-sight is corrected by converging lenses.	1	(B) of the scattering of sunlight by air molecules in the atmosphere.						
	(A) I only(B) II only(C) I and II only(D) II and III only		(C) of the scattering of sunlight by dust particles in the atmosphere.						
27.	In case of astronomical telescope		(D) other colours are absorbed by heavenly						
	I. the focal length of the object lens is greater.	33.	The sky is blue because						
	II. the focal of the object lens and the eye- piece coincide at the time of normal adjustment.		 (A) solar radiation is predominantly blue. (B) air absorbs all light except blue light. (C) air emits blue light 						
	III.the distance between the lenses cannot be adjusted.		(D) air scatters blue light.						
	(A) I and II only (B) I and III only (C) II and III only (D) I only	34.	The colour of light is determined by its						
28.	A short-sighted person cannot see distinctly		(C) velocity (D) amplitude						
	dioptre of spectacle lenses which will enable him to see distant objects clearly is	35.	Which of the following is not common in sound and light?						
	(A) $+50$ (B) -50 (C) $+2$ (D) -2		(A) diffraction(B) refraction(C) polarisation(D) interference						
29.	A simple telescope consisting of an objective of focal length 60 cm and a single eye lens of focal length 5 cm is focussed on a distant	36.	Through a soap film different colours are seen by white light because of the phenomenon of						
	object in such a way that the parallel rays emerge from the eye lens. If the object		(A) interference(B) dispersion(C) diffraction(D) reflection						
	angular width of the image is (A) 50° (B) 24°	37.	Two separate sources giving out light of same frequency do not produce interference because						
30.	(C) 10°(D) 1/6°A poster has a red letter P on a white		(A) the amplitudes of the waves from the sources are different.						
	background. When it is viewed through a blue transparent screen, an observer would see a		(B) the two sources are not close to each other.						
	(A) Magenta P on a blue background. (B) Magenta P on a blue-green background.		(C) the waves are not travelling in the same direction.						
	(C) Black P on a blue background.		(D) the phase difference between the waves						
		-							

L	ight, sha	ADOW	S AND	REFLE		S								Page	# 30	
38. 39.	produce continue When tw algebrai (A) amp (C) free Two wa	ed by pusly. wo wa c add plitude juency ves o	y two aves su lition e y f sam	sour uperpo takes (B) (D) e frec	rces i pse ea place intens wavel quency	s chai ch othe in ity ength y but h	nging er, the aving	44.	An illu plane other. (A) 7 (C) 4 The ir virtual object	minati mirrors The n nage f , erect must	ng obj s mutu umber formec t and r be	ect is ally pe of im (B) (D) by a magnif	placed prpendio ages f 3 6 conca ied. Th	betwe cular t formed ve min e posit	en the o each is rror is tion of	
40.	direction to the r will be (A) 4 : (C) 7 : Sunlight circular	aes 4 n. The minim 3 1 t filter patch	ratio um in ring th nes on	(B) (D) (C) (C) (C)	16 : 9 49 : 1 a tree ground	pose in num int arious 9 1 often r 1 becau	same ensity places makes use	46.	 (A) be (B) be (C) at (D) be An ob a conv a distance (A) 2f 	tween tween the c eyond ject is vex ler ance o	the r focus a centre the ce placed ns, the f	nirror and the of cur entre c l at a image (B)	and its centre vature of curva distance forme 2f/3	s focus of cur ature se of 2 ed will	s vature f from be at	
41.	 (A) the (B) of c (C) ligh (D) the is round A red ro appear (A) rod 	sun i liffrac t is t space d. ose is	is roui tion e ransm throu viewe	nd. iffects itted gh wh ed in	as a v ich ligl yellow	vave m nt pene light.	otion. trates It will	47. 48.	 (A) 21 (B) 21/3 (C) f (D) f/3 An object 5 cm high is held 25 cm away fro a convex lens of focal length 10 cm. The siz of image will be (A) 5/3 cm (B) 10/3 cm (C) 5 cm (D) 10 cm Two lenses of focal lengths +100 cm and + cm are used to prepare an astronomic 							
42. 43.	(C) oran A swimn Its actu (A) 2.60 (C) 2.34 Light tra	nge ming al de 6 m 4 m avels	pool a pth is with a	(D) (D) ppear (μ fo (B) (D) a spec	black s to b r wate 2 m 2.54 ed of 2	e 2 m er = 1. m 2 × 10	deep. 33) ⁸ ms⁻	49.	(A) 95 (C) 10 The ra is due (A) re (C) in	5 cm 5 cm 5 cm 5 cm 1000 1000 1000 1000 1000 1000 1000 10	observ n ence	(B) (D) ed duri (B) (D)	100 cr 500 cr ing the dispers diffrac	n m rainy s sion tion	season	
 ¹ in crown glass of refractive index 1.5. The speed of light in dense flint glass having a refractive index 1.8 is (A) 1.33 × 10⁸ ms⁻¹ (B) 1.67 × 10⁸ ms⁻¹ (C) 2.0 × 10⁸ ms⁻¹ (D) 3 × 10⁸ ms⁻¹ 									Ray c dimen (A) Of light (B) Mu (C) Of (D) Mu	ptics sions o the s uch sma the or uch larg	is val f the o ame o aller th der of ger tha	id, wh bstacle rder as an the one mi n the v	nen ch should the w wavele llimetre wavelen	aracte l be - vavelen ength c e ngth of	eristic gth of of light light	
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Que.	1 D	2 B	3 D	4 D	5	6 B	7 D	8 D	9 C	10 B	11 D	12 B	13 B	14 B	15 B	

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