



KENDRIYA VIDYALAYA AFS SULUR
AUTUMN BREAK HOLIDAYS HOMEWORK

CLASS:12

ENGLISH:

1. CBSE Sample question paper to be solved.
2. Write the main points of all the chapters and poems dealt with in the notebook.

CHEMISTRY:

Solving worksheets in Solutions, Electrochemistry, d and f block elements and coordination chemistry

COMPUTER SCIENCE:


- MySQL: To solve the questions at the end of the chapter as indicated in the class.
- Solving of Half yearly Question paper.

INFORMATICS PRACTICES:

- Solving of Half yearly Question paper.
- Record work

BIOLOGY

- I. Solve Half yearly question paper in CW note book and paste the question paper.
- II. Answer the following questions in HW note book.
 1. With a neat labelled diagram, describe the parts of a typical angiospermic ovule.
 2. Describe the hormonal control of the reproductive system in human male and female.
 3. Write the difference between spermatogenesis and oogenesis.
 4. Explain the events that occur during fertilization and implantation.
 5. Explain the different types of contraceptives.
 6. Describe Assisted Reproductive technologies.
 7. Explain the following XO type of sex determination, XY type of sex determination, ZW type of sex determination
 8. What is point mutation? Explain how is sickle cell anaemia caused by such mutation?
 9. What are the salient features of genetic code?
 10. Explain protein synthesis.
 11. Explain Lac operon concept with diagrams.

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12. Describe the experimental proof for chemical evolution of life with suitable diagram.
 13. Explain the process of replication of a retrovirus after it gains entry into the human body.
 14. Explain briefly Polymerase chain reaction with diagram.
 15. Describe the following

Bioreactors, Downstream processing, Gel electrophoresis.

ACCOUNTANCY:- Students should write MCQs, Objective type questions and very short answer type questions of the following chapters:

- 1.Accounting for Partnership Firms.
- 2.Reconstitution and Dissolution.
- 3.Company Accounts.

Business Studies:- Students should write MCQs, Objective type questions and very short answer type questions of first volume book.

ECONOMICS

(Select Any one Topic)

- 1.Goods and service tax and impact on G.D.P.
2. Exchange determination methods and technique.
3. Disinvestment policy of government
4. Role of R.B.I. in the control of credit .
5. Digital India .step towards the future.
6. Human capital formation
7. Demonetisation
8. National income and related aggregates.
9. Unemployment
10. Central bank and its functions
12. Rural development
13. Digital India
14. Current challenges faced b y Indian economy.
15. Organic farming

SUBJECT:MATHEMATICS

CONTINUITYANDDIFFERENTIABILITY

$$f(x) = \begin{cases} 2x+1; & x < 2 \\ k; & x = 2 \\ 3x-1; & x > 2 \end{cases}$$

$$\begin{cases} 3ax+b, & \text{if } x > 1 \end{cases}$$

2. If $f(x) = \begin{cases} 1 & \text{if } x = 1 \\ 5ax-2b, & \text{if } x < 1 \end{cases}$, continuous at $x=1$, find the values of a and b .

3. If $f(x)$, defined by the following is continuous at $x=0$, find the values of a, b, c

$$f(x) = \begin{cases} \frac{\sin(a+1)x + \sin x}{x}, & x < 0 \\ c, & x = 0 \\ \frac{\sqrt{x+bx^2} - \sqrt{x}}{bx^{3/2}}, & x > 0 \end{cases}$$

4. If $f(x) = a \left(\cos \theta + \log \tan \theta \right)$ and $y = a \sin \theta$ find $\frac{dy}{dx}$ at $\theta = \frac{\pi}{4}$.

5. If $y = \log x + \frac{x^2+1}{x^2-1}$, find $\frac{dy}{dx}$.

6. If $xy + y^2 = \tan x + y$, find $\frac{dy}{dx}$.

7. If $y = \sqrt{x^2+1} - \log \left(\frac{1}{x} + \sqrt{1 + \frac{1}{x^2}} \right)$, find $\frac{dy}{dx}$.

8. If $\sqrt{1-x^2} + \sqrt{1-y^2} = a(x-y)$, prove that $\frac{dy}{dx} = \frac{\sqrt{1-y^2}}{\sqrt{1-x^2}}$.

9. Find $\frac{dy}{dx}$ if $(\cos x)^y = (\cos y)^x$

10. If $x^p \cdot y^q = (x+y)^{p+q}$, prove that $\frac{dy}{dx} = \frac{y}{x}$.

APPLICATIONS OF DERIVATIVES

- 1) Find the point on the curve $y^2 = 8x$ for which the abscissa and ordinate change at the same rate?
- 2) A man 2 metre high walks at a uniform speed of 6km /h away from a lamp post 6metre high. Find the rate at which the length of his shadow increases. Also find the rate at which the tip of the shadow is moving away from the lamp post.
- 3) A ladder 5m long is leaning against a wall. Bottom of ladder is pulled along the ground away from wall at the rate of 2m/s. How fast is the height on the wall decreasing when the foot of ladder is 4m away from the wall?
- 4) A particle moves along the curve $6y = x^3 + 2$. Find the points on the curve at which y-coordinate is changing 8 times as fast as the x-coordinate.
- 5) Water is leaking from a conical funnel at the rate of $5\text{cm}^3/\text{sec}$. If the radius of the base of the funnel is 10 cm and altitude is 20 cm, Find the rate at which water level is dropping when it is 5cm from top.
- 6) Find the intervals in which the function $f(x) = \sin x - \cos x$, $0 < x < 2\pi$ is increasing or decreasing.
- 7) Show that the function $f(x) = \frac{\sin x}{x}$ is strictly decreasing on $(0, \pi/2)$
- 8) Find the intervals in which the function $f(x) = \frac{\log x}{x}$ is increasing or decreasing.
- 9) Find the interval in which the function $f(x) = 2x^3 + 9x^2 + 12x + 20$ is (i) increasing (ii) decreasing
- 10) Find the interval in which the function $f(x) = (x+1)^3(x-1)^3$
- 11) Show that the height of cylinder of maximum volume that can be inscribed in a sphere of radius R is $\frac{2R}{\sqrt{3}}$.
- 12) Show that the semi-vertical angle of a cone of maximum volume and of given slant height is $\tan^{-1}\sqrt{2}$.
- 13) Length of three sides of a trapezium other than base is equal to 10cm each, then find the area of the trapezium when it is maximum?
- 14) Find the point on the curve $y^2 = 2x$ which is at minimum distance from the point (1,4)
- 15) An open box with a square base is to be made out of a given quantity of cardboard of area c^2 square units. Show that the maximum volume of the box is $\frac{c^3}{6\sqrt{3}}$ cubic units.
- 16) A window is in the shape of a rectangle surmounted by an equilateral triangle. If the perimeter of the window is 12m, find the dimensions of the rectangle that will produce the largest area of the window.

DEFINITE INTEGRALS

$$1. \int_0^{\pi/2} \frac{\sqrt{\tan x}}{1 + \sqrt{\tan x}} dx$$

$$2. \int_1^3 \frac{\sqrt{4-x}}{\sqrt{x} \sqrt{1-x}} dx$$

$$3. \int_0^{\pi/2} \frac{\sin^4 x}{\sin^4 x + \cos^4 x} dx - x \tan x$$

$$4. \int_0^{\pi/2} \frac{x}{\sin x + \cos x} dx$$

$$5. \int_0^{\pi} \frac{x \sin x}{1 + \cos^2 x} dx$$

$$6. \int_0^{\pi} \frac{1}{\sec x \cdot \operatorname{cosec} x} dx$$

$$7. \int_{\pi/6}^{\pi/3} \frac{dx}{1 + \sqrt{\tan x}} \quad 8. \int_0^{\pi} \frac{x}{1 + \sin x} dx$$

$$9. \int_0^{\pi} \frac{1}{1 + \cos x} dx$$

$$10. \int_0^{\pi/4} \log(1 + \tan x) dx$$

$$11. \int_0^4 (x + |x-2| + x - 4) dx \quad | \quad (\text{CBSE-2013})$$

$$12. \int_2^5 (x - 2 + |x-3| + x - 4) dx \quad |$$

APPLICATIONS OF INTEGRATION

1. Find the area of the region included between the parabola $y^2=x$ and the line $x+y=2$.
2. Find the area of the region bounded by $x^2=4y$, $y=2$, $y=4$ and the y -axis in the first quadrant.
3. Using integration compute the area of the region bounded by the triangle whose vertices are $(2,1)$, $(3,4)$, and $(5,2)$.
4. Using integration compute the area of the region bounded by the triangle whose vertices are $(-1,1)$, $(0,5)$, and $(3,2)$.
5. Using integration compute the area of the region bounded by the lines $x+2y=2$, $y-x=1$, and $2x+y=7$.
6. Using the method of integration find the area of the region bounded by the lines: $2x+y=4$, $3x-2y=6$ and $x-3y+5=0$.

HINDI:

केंद्रीय विद्यालय वायुसेना स्थल सुलुर

शरद कालीन अवकाश गृहकार्य कक्षा-12वीं

प्रश्न1. डॉ. भीमराव अंबेडकर का जीवन परिचय तथा उनकी उपलब्धियों का वर्णन करते हुए भारतीय संविधान में उनके योगदान का उल्लेख कीजिए।

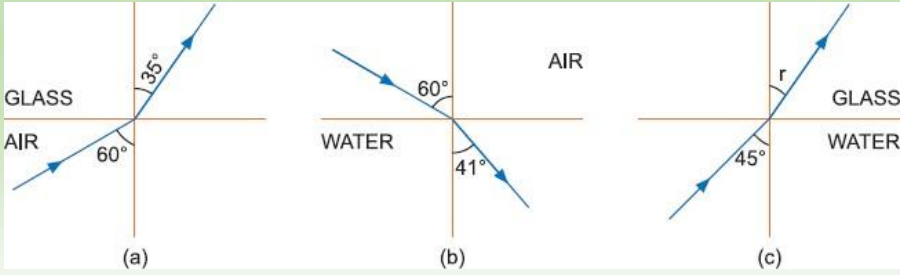
प्रश्न2. किसी एक विषय पर कम से कम 200 शब्दों का एक लेख लिखिए-

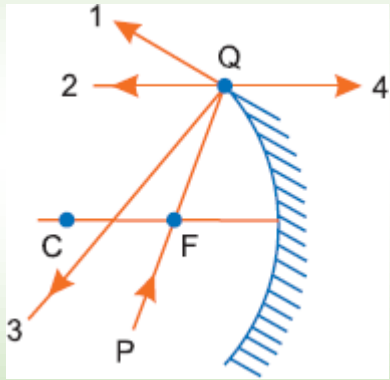
- (I) बदलता युग-बदलती मान्यताएँ
- (II) दूरदर्शन- कल और आज

प्रश्न3. विज्ञान के क्षेत्र में काम करने वाली किन्हीं पाँच संस्थाओं का उल्लेख कीजिए।

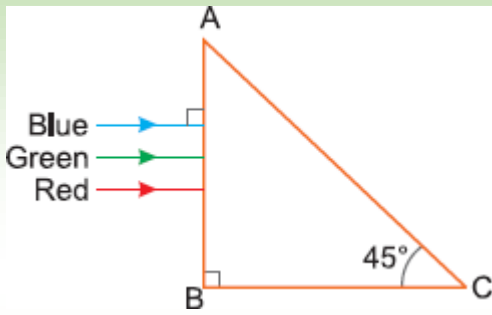
(सभी प्रश्नों को अपनी अभ्यास- पुस्तिका में लिखें)

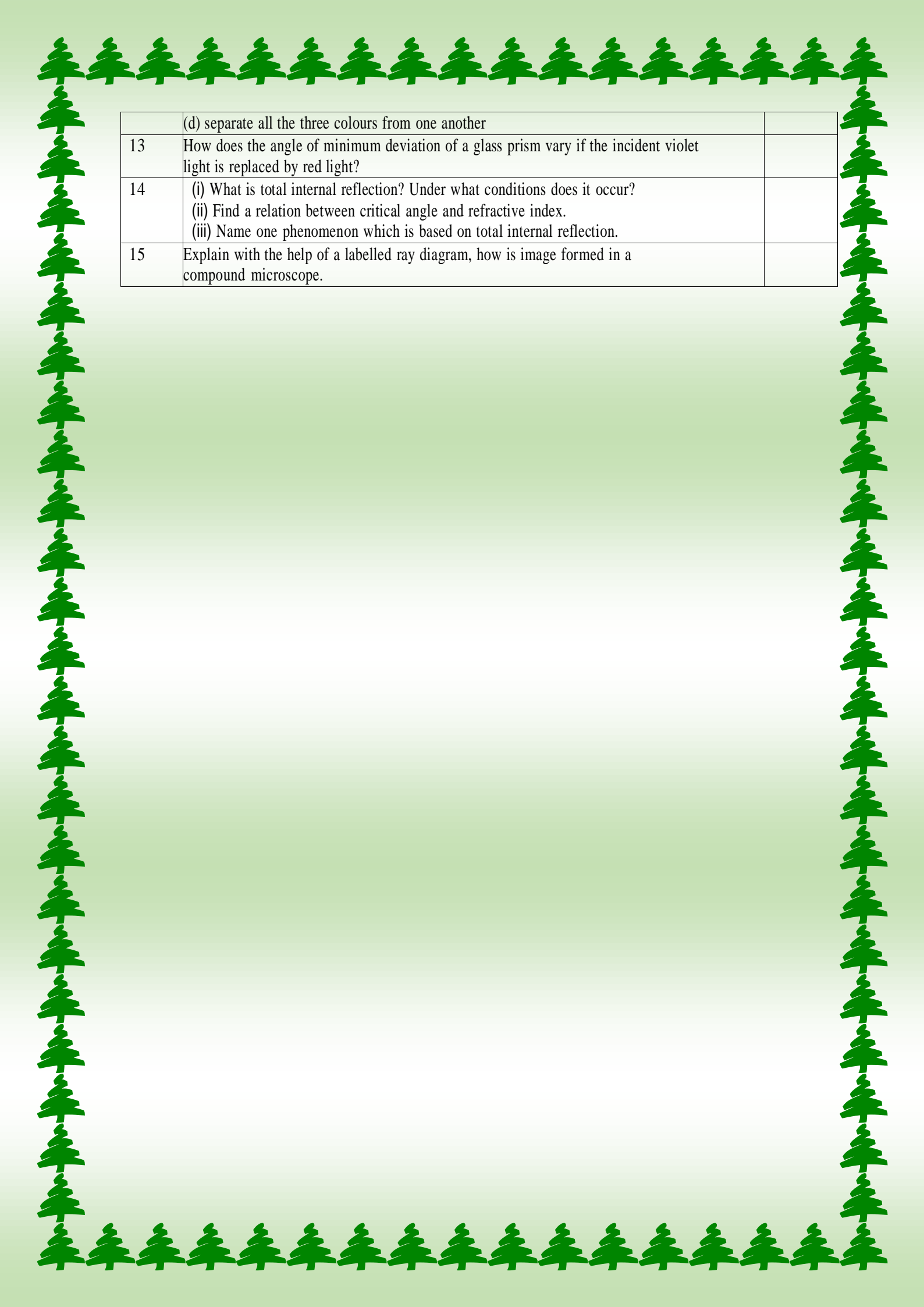
SUBJECT: PHYSICS (THEORY)

Q.NO	SECTION A	MARKS
1	A small candle 2.5 cm in size is placed 27 cm in front of a concave mirror of radius of curvature 36 cm. At what distance from the mirror should a screen be placed in order to receive a sharp image? Describe the nature and size of the image. If the candle is moved closer to the mirror, how should the screen be moved?	
2	A tank is filled with water to a height of 12.5 m. The apparent depth of the needle lying at the bottom of the tank as measured by a microscope is 9.4 cm. What is the refractive index of water? If water is replaced by a liquid of refractive index 1.63 upto the same height, by what distance would the microscope be moved to focus on the needle again?	
3	Fig. (a) and (b) show refraction of an incident ray in air at 60° with the normal to a glass-air and water-air interface, respectively. Predict the angle (r) of refraction of an incident ray in water at 45° with the normal to a water-glass interface [fig. (c)]. 	
4	A double convex lens is made of a glass of refractive index 1.55, with both faces of the same radius of curvature. Find the radius of curvature required, if the focal length is 20 cm.	
5	What is the focal length of a combination of a convex lens of focal length 30 cm and a concave lens of focal length 20 cm in contact? Is the system a converging or a diverging lens? Ignore thickness of lenses.	
6	A prism is made of glass of unknown refractive index. A parallel beam of light is incident on a face of the prism. By rotating the prism, the minimum angle of deviation is measured to be 40° . What is the refractive index of the prism? If the prism is placed in water (refractive index 1.33), predict the new minimum angle of deviation of a parallel beam of light. The refracting angle of prism is 60° (use: $\sin 50^\circ = 0.7660$ and $\sin 35^\circ = 0.576$).	
7	The direction of ray of light incident on a concave mirror is shown by PQ while directions in which the ray would travel after reflection is shown by four rays marked 1, 2, 3 and 4 (Fig. given alongside). Which of the four rays correctly shows the direction of reflected ray?	



- (a) 1 (b) 2 (c) 3 (d) 4

8	A concave mirror of focal length 15 cm forms an image having twice the linear dimensions of the object. The position of the object, when the image is virtual, will be (a) 22.5 cm (b) 7.5 cm (c) 30 cm (d) 45 cm	
9	Why is refractive index in a transparent medium greater than one? (a) Because the speed of light in vacuum is always less than speed in a transparent medium (b) Because the speed of light in vacuum is always greater than the speed in a transparent medium (c) Frequency of wave changes when it crosses medium (d) None of the above	
10	Transmission of light in optical fibre is due to (a) scattering (b) diffraction (c) refraction (d) multiple total internal reflection	
11	Which of the following is not due to total internal reflection ? (a) Working of optical fibre (b) Difference between apparent and real depth of a pond (c) Mirage on hot summer days (d) Brilliance of diamond	
12	A beam of light consisting of red, green and blue colours is incident on a right angled prism. The refractive index of the material of the prism for the above red, green and blue wavelengths are 1.39, 1.44 and 1.47 respectively.  The prism will (a) not separate the three colours at all (b) separate the red colour part from the green and blue colours (c) separate the blue colour part from the red and green colours	



	(d) separate all the three colours from one another	
13	How does the angle of minimum deviation of a glass prism vary if the incident violet light is replaced by red light?	
14	(i) What is total internal reflection? Under what conditions does it occur? (ii) Find a relation between critical angle and refractive index. (iii) Name one phenomenon which is based on total internal reflection.	
15	Explain with the help of a labelled ray diagram, how is image formed in a compound microscope.	