



**Zonal Education Office**  
**First Term Unit Exam – IV**  
**Science                      Grade 11                      Time -1 hour**

**Part – 1**

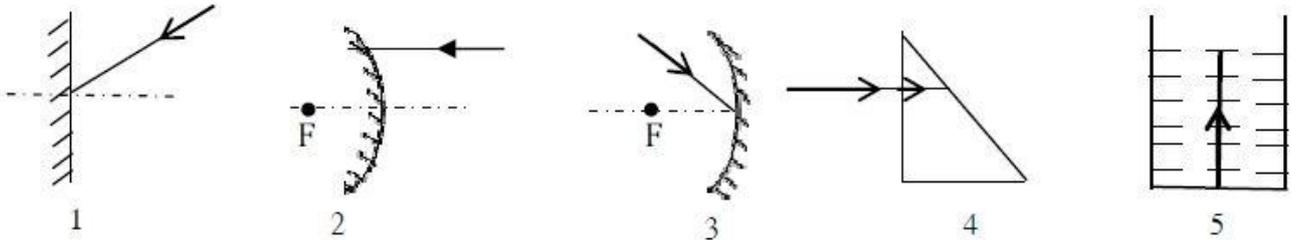
**Choose the most appropriate answer for all questions.**

1. Which ray is not present within the visible light range
  1. Yellow ray
  2. Green ray
  3. Blue ray
  4. UV ray
  
2. An instant where refraction take place
  1. When using the plane mirror for make up
  2. Using the convex mirror as vehicle mirrors
  3. Using the lenses in spectacles to rectify eye defects
  4. Using concave mirror in solar stove
  
3. Select the conditions needed for total internal reflection to happen
  - A. When light travel transfer from denser medium to rare medium
  - B. Angle of incident ray is  $90^{\circ}$
  - C. Angle of incident should be higher than critical angle
  1. A,B
  2. A,C
  3. B,C
  4. A,B,C
  
4. What is the connection between curvature and focus of the concave lens
  1.  $C/2 = f$
  2.  $C = f$
  3.  $C < f$
  4.  $C = f/2$
  
5. To magnify the object by using hand lens where you have to place the object
  1. Far from C
  2. At C
  3. Between  $f - C$
  4. Inside f
  
6. Which cannot be considered as the usage of light
  1. Observing the internal organs using endoscope
  2. Using the optical fiber to transfer the information
  3. Sonar is used to detect the depth of sea
  4. Mirrors are used in jewelry shops to improve the attraction
  
7. Characteristic of the image form by a plain mirror
  1. Diminish , virtual
  2. Identical , real
  3. Enlarge , real
  4. Identical, virtual
  
8. Law of refraction
  1. Incident angle = refracted angle
  2. Refractive index =  $\frac{\sin i}{\sin r}$
  3. Incident angle < refracted angle
  4. Refractive index =  $\frac{\sin r}{\sin i}$
  
9. How light transfer through optical fibers
  1. Total internal reflection
  2. Specular reflection
  3. Refraction of light
  4. Diffuse reflection

10. Choose the optical instrument which form divergent rays

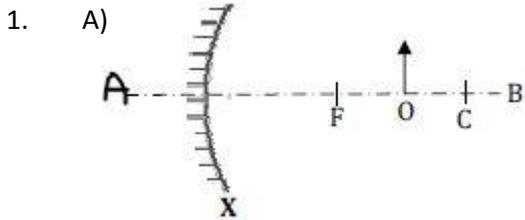
1. Convex lens      2. Concave lens      3. Concave lens      4. Plane mirror

Complete the path of the light rays



Part 2 – A      Structure Questions

Answer all Questions on this sheet



The diagram shows an object O placed at 20 cm, in front of an optical instrument X with focal length 15cm.

1. Name the optical instrument X  
.....
2. What is the term used for straight line AB  
.....

3. How to define the term when the rays from object O reached instrument X and changed its path  
.....

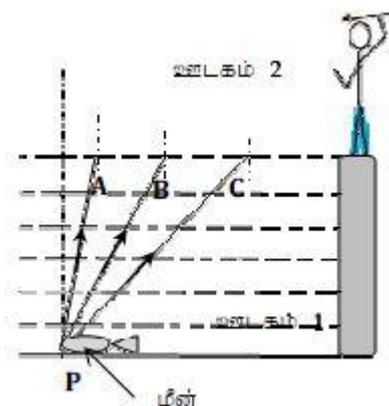
4. Complete the ray diagram and find the image by using two light rays from O

5. Underline the correct characteristic of the image formed above

- a. larger than object      b. virtual      c. upright

6. Explain the function of X in light microscope  
.....

B) The diagram shows a fish present at the position P inside the lake. One person outside the lake observing the fish. Diagram represent paths of three light rays from the fish.



1. Name the medium 1 & 2 through which light ray travel  
.....
2. Which is the rare medium among 1 & 2  
.....
3. When the person observe the fish from outside will it look like above or below the actual position (P)  
.....

4. Mention the reason for the above observation.  
.....

5. Complete the light rays and mark the image forming as I
6. According to the incident angle form at the interface of the medium arrange them in ascending order
- .....
7. Mark the refracted angle as r
8. If the refractive index of medium 2 relative to medium 1 is  $\frac{3}{4}$  write it in symbol.
- .....

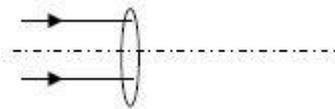
**Part 2 – B Essay Question**

2. A. Following statements are some process related to optics

- a) Images are shoot by the camera
- b) Using light microscope to magnify objects
- c) Observing a bird using binocular
- d) By using kaleidoscope set up a marble decoration
- e) Observing lunar eclipse using telescope

1. State in which processes diminished image will form
2. What is the function of binoculars
3. Name the phenomena of changing path of light rays take place in binoculars
4. Select a process in which two convex lenses are used
5. Explain how decorative patterns are made by kaleidoscope which made from three plain mirrors.

B.



The diagram indicate the parallel light rays travel from distance object hit the convex lens. Copy this diagram on your answer sheet and answer the questions below.

1. Complete the path of light rays given above.
2. Mark the focal length in your diagram.
3. What changes can be observed when moving the distance object towards the lens?
4. In which position of the object similar sized image will form.
5. In convex lens where you have to place the object to receive magnified real image.
6. State another characteristic of the image formed in the above situation.

C. You receive a small cubic block of glass and block of diamond.

1. Which block when receive light glow more brightly.
2. Explain the reason for the question 1 based on the refractive index and path of light rays.