THE PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
TOPICAL EXAMINATION SERIES No. 07
FORM THREE PHYSICS

TIME 3 :00 HOURS **Year 2024**

SUB -TOPIC: DISPERSION OF WHITE LIGHT

INSTRUCTION

1. This paper consists of section A, B and C with a total of Eleven (11) questions
2. Answer ALL question in section A and B and Two (2) from section C
3. Section A carries sixteen (16) marks, Section B fifty-four (54) marks and section C Thirty (30) marks
4. Non-programmable calculators may be used
5. Cellular phones and any unauthorized materials are NOT allowed in the examination room
6. Write your Examination name on every page of your answer sheet provided

SECTION A (16 Marks)

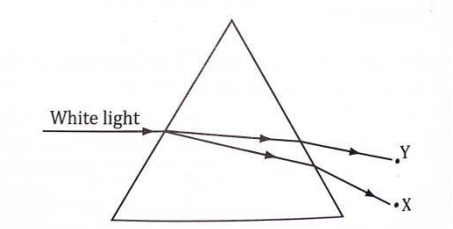
Answer **ALL** questions in this sections

1. For each items (i) – (x) choose the correct answer among the given alternatives and write its letter beside the item number in the answer booklet provided.

I. A blue dress with red spots when viewed in red light will appear

A. Completely red
B. Completely magenta
C. Blue with a red spots
D. Magenta with red spots
E. Black with red spots

II. In a diagram below a beam of white light entering a triangular glass prism is refracted and dispersion of colours occurs



A thermometer placed at Y records a rise in temperature from the radiation produced the correct name for this radiation is

A. Ultra-violet
B. X-ray
C. Gamma rays
D. Infra-red
E. Beta particles

III. When illuminated by a certain lamp, the shadow of a table-tennis ball on a white screen is uniformly dark. This is because the lamp used is

A. Very bright
B. Fluorescent
C. Very small
D. Very weak
E. Very large

IV. A green with red flowers when viewed in a red light will appear

A. It will appear black with a red flower
B. Completely yellow
C. Completely green
D. Yellow with red flowers
E. Green with red flowers

V. Colours are produced when white light passes through a glass prism because
A. Light waves interfere
B. Glass prism colours the light
C. In glass different colours travel at different speeds
D. Different colours are filtered
E. Diffraction of light

VI. A phenomena in which white light splits into its seven colours components upon passing through a prism
A. Rainbow
B. Colours of light
C. Dispersion of white light
D. Spectrum of white light
E. Triangular glass prism

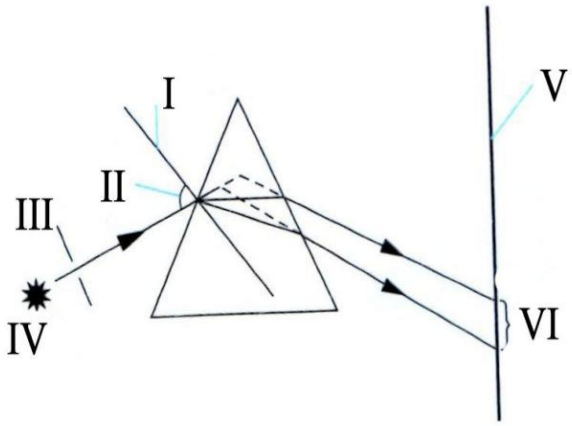
VII. The process of creating a new colour by adding one set of colour by adding one set of colours to another set of colours.
A. Subtractive colour mixing
B. Addictive colour mixing
C. Subtraction of light colours
D. Complementary colours of light
E. Addition of light colours

VIII. _____ is an arc formed out of a spectral band of colours with blue on the inside and red on the outside
A. Rainbow
B. Filter
C. Colour
C. Prism
D. Mirage

IX. A point that lies directly opposite the sun from the observer, that is on the line from the sun through the observer
A. Rainbow
B. Cyan
E. Additive
C. Antisolar
D. Focal length

X. _____ are materials made of glass or celluloid that let through light of certain colours only
A. Light filter
B. Dispersion
E. Colour filters
C. Spectrum
D. Screen

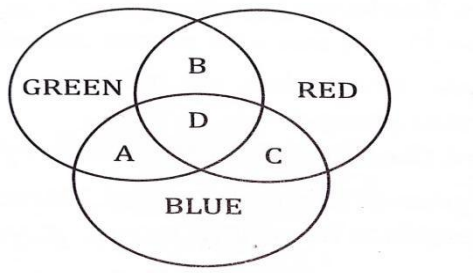
2. Match the cases in **List A** with corresponding terms in **list B** in your answer sheet provided.

LIST A	LIST B
	A. Band of colours B. White screen C. Normal D. Angle of incidence E. Source of light F. Slit G. Angle of refraction H. Window I. Wall paper

SECTION B (54 Marks)

Answer **ALL** questions in this section

3. Study the figure below which represents three primary colours combined together and answer the questions that follows



(i) Identify the colours represented by the letters A, B, C and D
(ii) What general name I given to the colours obtained by mixing two primary colours
(iii) Name the colour produced as a result of mixing three primary colours

4 (a) How can you help someone to distinguish between light spectrum and dispersion of light
(b) Briefly describe how a light ray passes through an equilateral grass prism

5. (a) You read a newspaper because of the light that it reflects, why do you see even a faint image of yourself in the newspaper?
(b) Name the factors on which the angle of deviation produced by prisms depends

6. Angela has a flag with blue-green (cyan) points which she wants to make a pure green. As a form four student help Angela which should be added to the paint to make pure green? Hence explain the reasons of your answer.

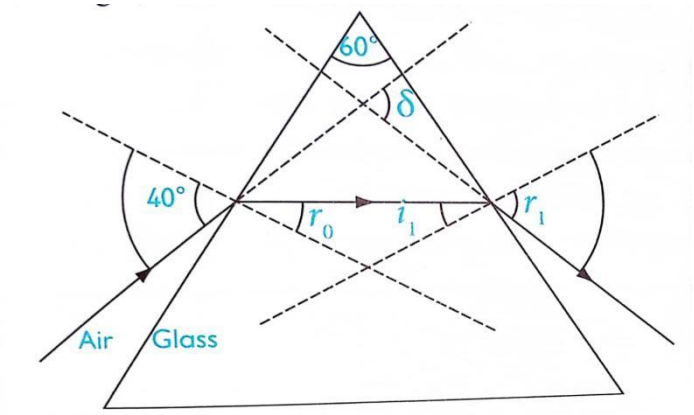
7. (a) Draw a diagram to show an angle of deviation when a ray of light passes through an equilateral glass prism.
(b)(i) How does the additive theory of light differ from the substractive?
(ii) What are the primary colours and complementary colours in the substractive of light.

8. (a) Briefly describe how a light ray passes through an equilateral glass prism
(b) Explain the terms"primary" colour and "complementary colour" as applied to colours of light.

SECTION.C (30 MARKS)

Answer only two questions from this section

9. A ray of light is incident on an equilateral glass prism at 40° to the normal as shown in the figure below



Given that the refractive index of the glass is 1.52 and that of air is 1, determine
(a) The first angle of refraction (r_o)
(b) The angle of incidence at the second refracting surface of the prism (i_1)
(c) The second angle of refraction (r_1)
(d) The angle of deviation (δ)

10. What colour is produced when the following beams of light are shown onto a white screen while completely overlapping?
(a) Yellow and magenta
(b) Cyan and red

11. (a) What would be the effect if mixing a green pigment?
(b)A book which looks red in white light is viewed in magenta light. In what colour does it appear?
(c) White light is viewed through a combination of a yellow filter and red filter held in contact. What colour is seen?