

SCIENCE AND TECHNOLOGY (PAPER I)

MARCH-2012

Time : 2 Hours

Max. Marks : 40

- Note :-** (i) The question paper comprises of two Sections A and B. You have to attempt both Sections.
- (ii) Answers of *all* questions of Section A and *all* questions of Section B should be written in separate answer-books.
- (iii) *All* questions are compulsory.
- (iv) There is no overall choice, however internal choice has been provided in question numbers 3 and 4 of each Section.

SECTION A

1. (A) Fill in the blanks with suitable words and rewrite the completed statements : 2
- (1) Elements showing properties of both metals and non-metals are known as.....
- (2) The chemical reactions in which heat is liberated are called----- Reactions.

(B) Complete the analogy 2

(1) Glass : Insulator :: Copper :

(2) CuI_2 : Brown :: AgCl :

(C) Find the odd one out 1

Loudspeaker, Microphone, Electric motor, Bar magnet.

(D) Name a white crystalline solid salt used to make hard water soft and potable. 1

(E) What is the value of frequency of A.C. in India ? 1

Answer the following :

(1) Write any *two* points of distinction between normal elements and transition elements.

(2) An electric bulb is connected to 250 Volts. The current passing through it is 0.27 A. What is the power of the bulb ?

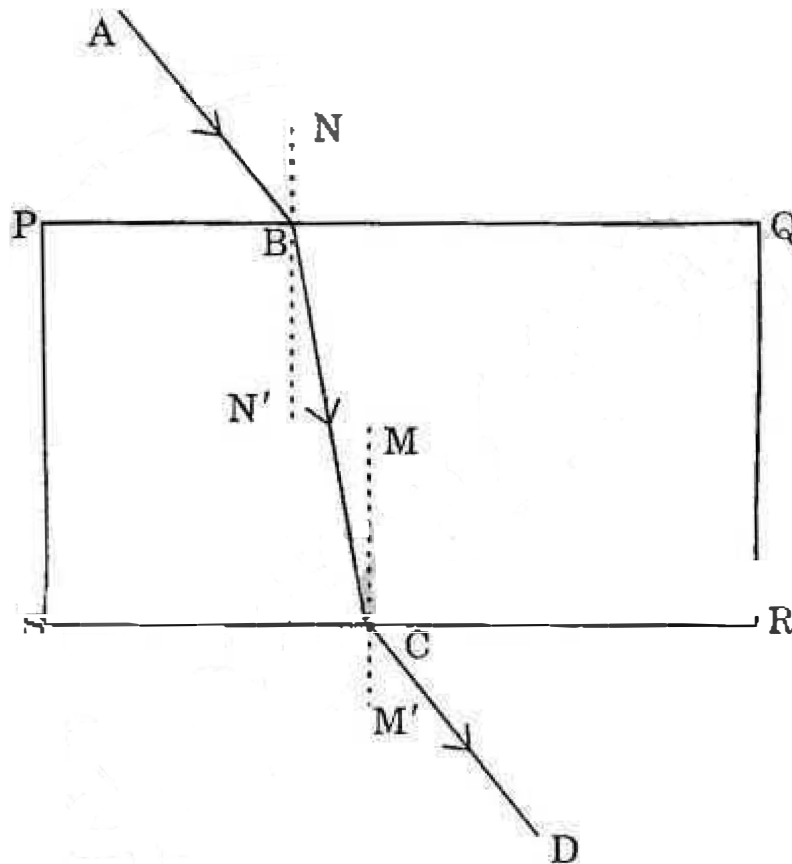
3) Give scientific reason :

The sky appears dark instead of blue to an astronaut.

3. Solve any *four* of the following :

12

(1) Observe the given figure and name the following rays



(i) ray AB

(ii) ray BC

(iii) ray CD.

(2) Write the rules used for drawing ray diagrams for the formation of an image by a concave mirror.

(3) Answer the following subquestions

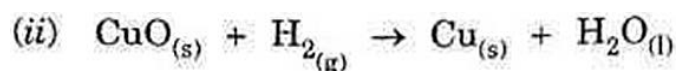
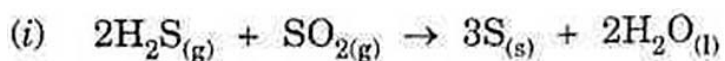
(i) Why does a current carrying conductor kept in a magnetic field experience force ?

(ii) On what factors does the direction of magnetic force depend ?

(iii) When is the displacement of the conductor maximum ?

(4) What are indicators ? Name any *two* natural and *two* synthetic indicators.

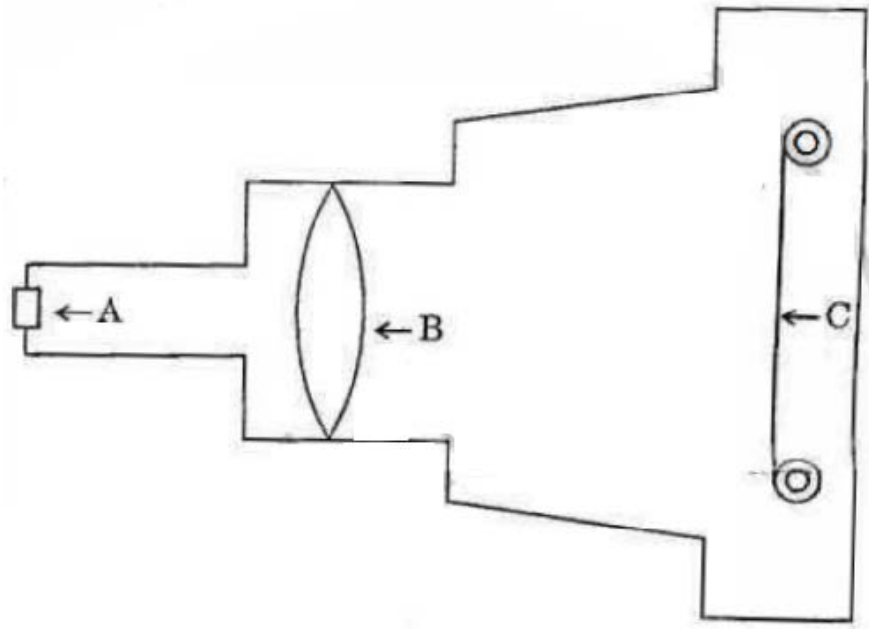
(5) What are Redox reactions ? Identify the substances that are oxidised and the substances that are reduced in the following reactions



4. Answer any one of the following :

5

- (1) The human eye is very similar to a photographic camera. The figure given shows the main parts of a photographic camera. Now answer the following questions



A → Aperture

B → Lens

C → Photographic film.

- (i) Name the parts of the human eye similar to the following parts of the photographic camera

(a) Photographic film

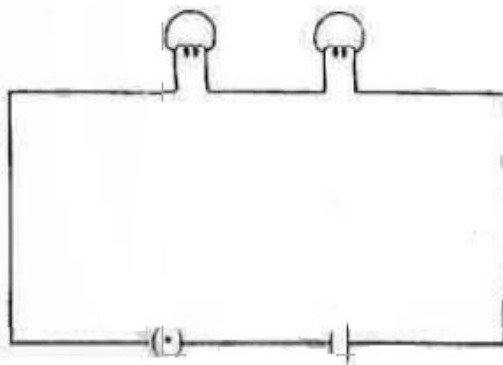
(b) Aperture.

(ii) State *one* difference between human eye lens and camera lens.

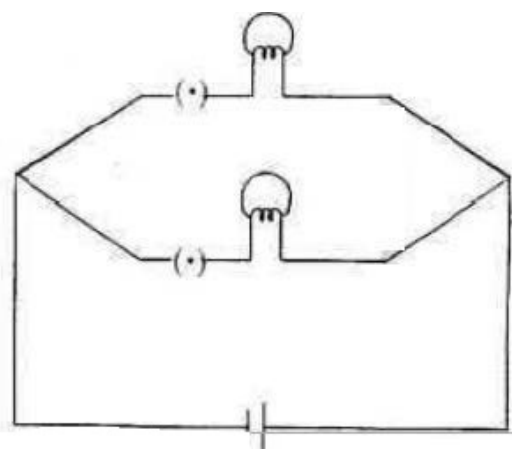
(iii) Name the muscle which adjusts the size of the eye lens.

(iv) Which phenomenon of light is responsible for the working of the eye ?

(2) A student connected two bulbs in two different combinations as shown in the figures A and B. Observe the figure and answer the following questions :



A



B

(i) Name the type of combination of the bulbs in figure A.

(ii) Name the type of combination of the bulbs in figure B.

(iii) In which combination will the bulbs be brighter ?

(iv) State the combination in which the resistance will be decreased.

(v) Name the law applied for the two combinations.

SECTION B

1. (A) Fill in the blanks and rewrite the completed statements 2
- (i) Yeast reproduces by.....
- (ii) The process in which carbonate ores are changed into oxides by heating strongly in limited air is known as.....
- (B) Considering the relationship in the first pair, complete the second pair : 2
- (i) Carbohydrates : Energy giving nutrients :: Proteins :
- (ii) Auxin : Growth of plants :: : Inhibits growth of plants
- (C) Find the odd one out : 2
- (i) Ear muscles, Wisdom teeth, Coccyx, Developed brain.
- (ii) Blood Vessels, Dendrites, Cyton. Axon.
- (D) Write the structural formula of 1, 2-dibromoethane. 1
2. Answer the following questions 6
- (1) Give scientific reason :
- Breathing rate increases during vigorous exercising.

- (2) Distinguish between Diamond and Graphite.
- (3) Explain the following reaction with the help of a balanced chemical equation

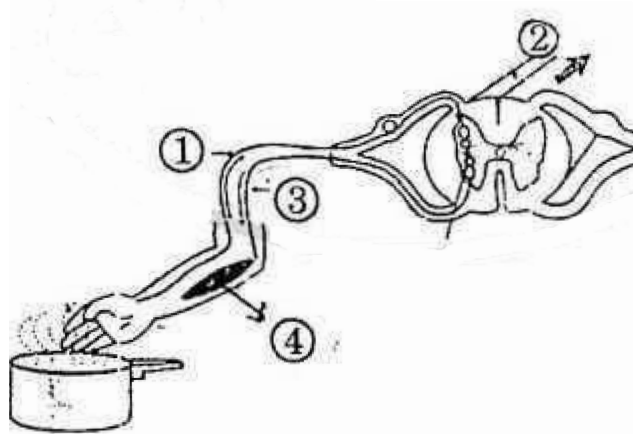
Calcium reacts with water.

3. Answer the following questions (any four) : 12

- (1) Write any three physical properties of non-metals
- (2) Define Functional group and complete the following table :

Functional Group	Name of the Compound	Formula
(i)	Ethyl alcohol
(ii)	Acetaldehyde

- (3) What is reflex action ? Write the names of the indicated parts (1 to 4) in the following diagram



Reflex action

- (4) How is sex determined in the human beings ?
- (5) Write a short note on Darwin's theory of Natural Selection

4. Attempt any one of the following

5

- (1) Answer the following questions with reference to the excretory system in human beings :
- (i) State any *two* organs of the system.
 - (ii) Name the main organ of the system located at the back of the abdomen, one on either side of the vertebral column.
 - (iii) Which is the basic filtration unit in the human excretory system ?
 - (iv) Write the functions of Bowman's capsule.
 - (v) If there is a fault in the function of the Bowman's capsule, what will happen ?
- (2) Draw a well labelled diagram of L.S. of a flower. Write the description of the parts responsible for sexual reproduction.