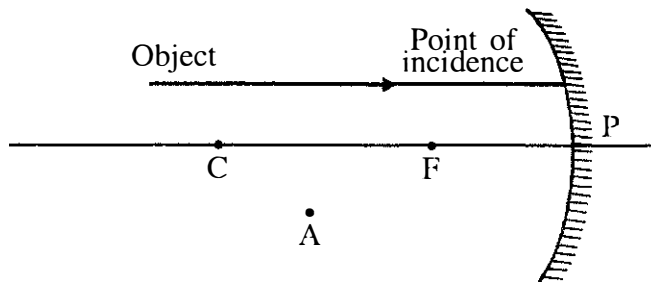


- Instructions :** (1) There are **50** objective type questions in this part and **all** are **compulsory**.
 (2) The questions are serially numbered from **1** to **50** and each carries **1** mark.
 (3) You are supplied with separate OMR sheet with the alternatives (A) ○, (B) ○, (C) ○, (D) ○ against each question number. For each question, select the correct alternative and darken the circle ○ as ● completely with the pen against the alphabet corresponding to that alternative in the given OMR sheet.

- From the following **1** to **50** questions, select the correct alternative from the given four answers and darken the circle with pen against the alphabet, against the number in OMR sheet.
- Each question carries **1** mark.

1. What is the maximum capacity of a normal human eye to see small objects ?
 (A) 10,000 micrometer (B) 10 micrometer
 (C) 100 micrometer (D) 1000 micrometer
2. What is the diameter of Hydrogen atom in nm ?
 (A) 1 (B) 10 (C) 0.1 (D) 0.01
3. Find the focal length of a Convex lens, if its power is +2.0 D.
 (A) 0.5m (B) -0.5m (C) 1 m (D) - 1 m
4. Which colour of light deviates the maximum in the dispersion of white light by Prism?
 (A) Violet (B) Blue (C) Green (D) Red
5. A point object emits rays in all directions.

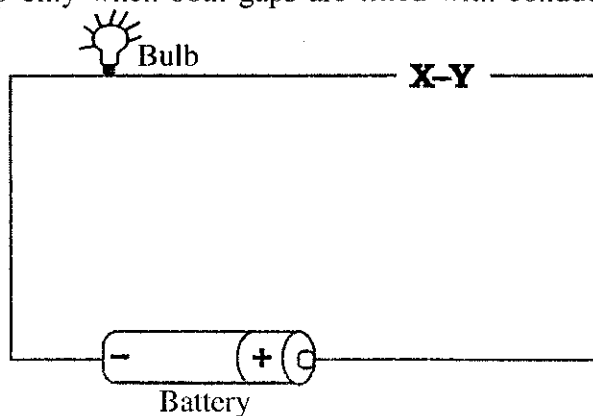
Consider one ray that the object emits which is parallel to the principal axis of a concave mirror as shown in the following figure. One of the points required to draw the reflected ray is the point of incidence itself which is labelled in the figure.



Select the point in the figure given here through which the reflected ray passes.

- (A) P (B) C (C) F (D) A
6. What is the time difference between actual Sunset and apparent Sunset
 (A) 2 seconds (B) 20 seconds (C) 2 minutes (D) 20 minutes
 7. Bi-focal lenses consist of both concave and convex lenses. Glasses using bi-focal lenses are needed by people who have _____
P. nearsightedness **Q.** farsightedness **R.** night blindness
 (A) only P (B) only Q (C) only R (D) both P and Q

8. What is the main principle involved in Voltaic cell ?
 (A) Conversion of chemical energy to heat energy.
 (B) Conversion of heat energy to electrical energy.
 (C) Conversion of ~~chemical~~ energy to electrical energy.
 (D) Conversion of electrical energy to chemical energy.
9. From the listed electrical devices, which of these release heat energy that is not appreciated ?
 (A) Water heater (B) Electric motor (C) Electric heater (D) Oven
10. Sonika is working with the circuit shown in the figure. The circuit has two gaps - X and Y She has wires of five different materials – I, II, III, IV and V She knows that the bulb will light up only when both gaps are filled with conducting materials.



She records her observations in a table. After completing the experiment, ink fell on the paper and she lost entries in row 3.

	Material in X	Material in Y	Bulb (On / Off)
1	I	II	Off
2	I	IV	On
3			Off
4	III	V	On

Based on the rest of the information in the table, what could be the materials in row 3 ?

- (A) I and III (B) II and III (C) III and IV (D) IV and V
11. Which of the following represents Ohm's Law ?
 (A) $I = Q \cdot t$ (B) $I = V \cdot R$ (C) $I = \frac{R}{V}$ (D) $I = \frac{V}{R}$
12. Which of the following detects the presence of Electrical energy ?
 (A) Fuse (B) Battery (C) Voltmeter (D) Galvanometer
13. Who gave the principle of Electromagnetic induction ?
 (A) Faraday (B) Oerstead (C) Ampere (D) Volta
14. Which instrument converts Mechanical energy to Electrical energy ?
 (A) Electric motor (B) Electric iron (C) Electric generator (D) Electric oven
15. Which artificial satellite is responsible for Weather forecast ?
 (A) METSAT (B) INSAT (C) CARTOSAT (D) EDUSAT
16. Raghu learnt something in school and he told his friends "An object can appear smaller or bigger in size depending on its distance from you. So, an elephant can look as small

as a cat if it is far away.”

Based on this, his friends said the following :

Kabir : “All stars are of the same size.”

Raina : “All other stars are definitely smaller than the Sun.”

Karen : “The Sun and the Moon are definitely of the same size.”

Shifa : “There could be a star which is bigger than the Moon.”

Who is correct ?

(A) only Shifa.

(B) only Raina.

(C) only Kabir and Karen.

(D) only Kabir and Raina.

17. Which of the following is a satellite of Neptune ?
(A) Titon (B) Phobos (C) Demos (D) Triton
18. Which of the following is not a member of Solar system ?
(A) Asteroids (B) Shooting star (C) Sun (D) Artificial satellite
19. Which of the following is a strong acid ?
(A) Sulphuric acid (B) Acetic acid (C) Tartaric acid (D) Lactic acid
20. Who was the scientist to propound proton transfer of acid-base theory ?
(A) Arrhenius (B) Bronsted Lowry (C) Robert Boyle (D) Rutherford
21. Which by-product gas is released when an acid reacts with metal ?
(A) Di-nitrogen (B) Di-oxygen (C) Di-hydrogen (D) Di-chlorine
22. What is added to the alkaline soil to make it neutral by farmers ?
(A) Lime (B) Gypsum (C) Salt (D) Blue Vitriol
23. Which alloy is used to prepare Scientific balance ?
(A) Duralumin (B) Steel (C) Bronze (D) Magnesium
24. Which of the following metals exist in nature in liquid state ?
(A) Iron (B) Copper (C) Aluminium (D) Gallium
25. Which of the following is the formula of the iron ore ‘Haematite’ ?
(A) Fe_2O_3 (B) Fe_3O_4 (C) FeCO_3 (D) FeS_2
26. What is used as a catalyst in manufacture of Sulphuric acid by Contact process ?
(A) Al_2O_3 (B) K_2O (C) V_2O_5 (D) Fe
27. Pavan sorts some materials into two different groups and notes down their properties. They are listed in the following table :

Group-I	Group-II
Cannot be beaten into thin sheets.	Can be beaten into thin sheets.
When one end is in contact with a hot object, the other end does not become hot quickly.	When one end is in contact with a hot object, the other end becomes hot quickly.
Cannot be turned into thin wires.	Can be turned into thin wires.

Which of the following statements could be INCORRECT ?

(A) Materials of group II can be used to make bells.

(B) Materials of group I are generally not shiny and hard.

(C) Materials of group I are generally less dense than materials of group II

(D) Materials of group II can be used to make materials which are non-conductor of electricity.

28. Which of the following is not a neutral Oxide ?
(A) CO (B) N₂O (C) H₂O (D) SO₂
29. Which of the following is not a fossil fuel ?
(A) Mineral coal (B) Wood (C) Petroleum (D) Natural gas
30. Whose formula is C₃H₈ ?
(A) Methane (B) Ethane (C) Propane (D) Butane
31. Which type of coal is used in Thermal P Power stations ?
(A) Peat (B) Lignite (C) Bitumen (D) Anthracite
32. What are the components of Water gas ?
(A) Carbon dioxide and Hydrogen. (B) Carbon and Hydrogen.
(C) Carbon monoxide and Hydrogen. (D) Ammonia and Hydrogen.
33. Which of the following functional group constitute the formation of detergent ?
(A) — SO₃Na (B) — COONa (C) — COOH (D) — OH
34. Which of the following is used in preparation of Vinegar ?
(A) Ethanol (B) Propanone (C) Methanal (D) Acetic acid
35. What is the monomer unit of natural rubber ?
(A) Isoprene (B) Ethene (C) Neoprene (D) Tetrafluro ethene
36. In which of the following, Bile is secreted in human digestive system ?
(A) Pancreas (B) Liver (C) Kidney (D) Stomach
37. In which part of the body, the blood is purified ?
(A) Heart (B) Atrium (C) Lungs (D) Ventricle
38. Which Valve constitutes its presence between Left Atrium and Left Ventricle of human heart ?
(A) Bicuspid Valve (B) Tricuspid Valve
(C) Semi-circular Valve (D) None of the given three.
39. During which process is blood filtered in Bowman's capsule ?
(A) Reabsorption (B) Secretion
(C) Ultra filtration (D) None of the given three.
40. Which of the following brings oxygenated blood into Left Atrium in heart ?
(A) Superior Venacava (B) Inferior Venacava
(C) Pulmonary Artery (D) Pulmonary Vein
41. The growth of a Pollen tube towards Ovule is caused by
(A) Phototropism (B) Hydrotropism (C) Gravitropism (D) Chemotropism
42. The deficiency of which hormone causes Diabetes ?
(A) Thyroxin (B) Insulin (C) Adrenaline (D) Estrogen
43. Which of the following constitutes male reproductive system ?
(A) Prostate gland (B) Ovary (C) Fallopian tube (D) Uterus
44. It is a commonly held misconception that the mother's egg is responsible for determining whether the baby will be a boy or a girl. But actually it is the father's

sperm, which decides this.

Which of the following makes the sperm the decisive factor ?

- (A) A long tail is found only in the sperm which is not present in the egg.
(B) There are more number of chromosomes in sperms compared to eggs.
(C) Hormones are secreted only in the males which are present in the sperms.
(D) A sperm can have either of the two sex chromosomes, while the egg has only one.
45. By the process of artificial selection evolution, which of the following is developed for sterile flowers ?
(A) Broccoli (B) Cauliflower (C) Kohlrabi (D) Kale
46. Who was the first scientist to perform series of experiments to study Acquired and inherited traits ?
(A) Wattson (B) Sutton (C) Mendel (D) Khurana
47. Which of the following is an example of biodegradable waste ?
(A) Glass (B) Metal (C) Plastic (D) Fruits
48. Which of the following is responsible for the 80% depreciation in the Ozone layer ?
(A) Chlorofluro Carbon (B) Chloride ion
(C) Sulphur ion (D) Magnesium ion
49. Chipko-Andolan (Hug the trees movement) is the well known example of conservation of which form of nature ?
(A) Jungle (B) Water (C) Coal (D) Petroleum
50. Which leaves are used in the manufacture of Bidis ?
(A) Khakro (B) Tendu (C) Eucalyptus (D) Banyan

PART-B

Time : 2 Hours]

[Maximum Marks : 50

- Instructions :** (i) There are total **four** sections in this part and total 18 questions.
(ii) **All** questions are compulsory.
(iii) Draw neat labelled diagrams wherever required.
(iv) There are internal options in some questions. Pay attention to them.
(v) Figures to the right indicate marks.

SECTION-A

❖ Answer the following in short in 30 words. (Each question of 2 marks.)

1. State the future challenges using Nanotechnology. 2

OR

1. Explain the benefits of Nanotechnology to the health sector of human beings.
2. By passing 240 volts in an Electric heater, 2A current passes through it. Find the current passed in the heater if 120 volts is passed; and also calculate the resistance of the coil of heater. 2
3. Write the industrial name of Ethyne with its uses. 2

OR

3. What is Isomerism ? Write the name and the formula of isomers of Butane.
4. Explain the flow of blood in heart. (Figure not required) 2

5. By which method is the domestic garbage be disposed ? 2

SECTION-B

- ❖ Answer the following short questions in the limit of 30 words.
(Each question of 2 marks.)

6. Describe briefly about planet Mars. 2
7. 4.9 gm of H_2SO_4 is mixed with Water to form 5 litres of aqueous solution.
Find its concentration. (Molecular weight of H_2SO_4 is 98 gm/mole) 2
8. Write the characteristics of hormonal secretions. 2
9. Explain the importance of homologous organs in process of Evolution. OR 2
9. Write a short note on Heredity.
10. What steps should be taken for conservation of energy resources ? 2

SECTION-C

- ❖ Answer the following short questions in limit of 50 words.
(Each question of 3 marks.)

11. State the defects of vision in human eyes and its remedies. Explain the defect of Myopia and remedies to control it. 3
12. Explain the construction and working of Electric bell with a diagram. 3

OR

12. What safety measures should be taken during the use of Electricity ?
13. Explain the industrial preparation of Ammonia by Haber's process.
Write two physical properties of Ammonia. 3
14. Define Functional group. Write any four organic functional groups with their formula. OR 3
14. Describe Fisher Tropsch process in the manufacture of Propanone with equations and two uses.
15. With the help of a diagram, explain Sexual reproduction in Flowering plants. 3

SECTION-D

- ❖ Answer the following questions in the limit of 100 words.
(Each question of 5 marks.) 5

16. What is Mirror formula ? Derive the relation $\frac{1}{u} = \frac{1}{v} = \frac{2}{R}$ for Concave mirror. 5
17. What is Refining of metals ? Explain with diagram the method of electrolysis by which Copper is purified. 5

OR

17. What is Concentration of Ores ? Explain the process with diagram by which metallic ore with sulphide as an impurity is purified.
18. What is Respiration? Explain the process of respiration in human beings.
(Figure not required) 5

OR

18. What is Nutrition ? Explain with diagram the process of nutrition in Amoeba.

□ □ □