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Time : 3 Hours**SCIENCE (E)****Subject Code**

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Total No. of Questions : 67 (Printed Pages : 15)**Maximum Marks : 70**

INSTRUCTIONS : Read the following instructions carefully and strictly follow them :

- (i) There are **67** questions in the question paper. *All* questions are compulsory.
- (ii) Question Nos. **1** to **14** are multiple choice questions carrying *one* mark each.
- (iii) Question Nos. **15** to **18** are very short answer type questions, carrying **1** mark each.
- (iv) Question Nos. **19** to **44** are short answer type I question carrying **2** marks each.
- (v) Question Nos. **45** to **56** are short answer type II questions, carrying **3** marks each.
- (vi) Question Nos. **57** to **67** are long answer type questions, carrying **4** marks each.
- (vii) There is no overall choice in the question paper. However, an internal choice has been provided for 3 questions of **2** marks, 2 questions of **3** marks and one question of **4** marks. Only one of the choices in such questions has to be attempted.
- (viii) In addition to this, separate instructions are given for each question wherever necessary.

Select the correct alternative given below each statement and complete the statement :

1. The brown fumes formed on heating lead nitrate are of 1

- Oxygen
- Nitrogen dioxide
- Carbon dioxide
- Nitrogen

2. The water harvesting system practiced in Himachal Pradesh is 1

- Kattas
- Surangams
- Kulhs
- Bundhis

3. The acid present in lemon is 1

- Acetic acid
- Lactic acid
- Oxalic acid
- Citric acid

4. The slurry formed in the biogas plant is an excellent manure as it contains nutrients 1
- Nitrogen and carbon
 - Phosphorus and magnesium
 - Nitrogen and phosphorus
 - Potassium and magnesium
5. The valence electrons of element having atomic number 12 is 1
- Two
 - Seven
 - Four
 - One
6. The S.I. unit of power of lens is 1
- Meter
 - Newton
 - Diopter
 - Pascal
7. The location of pituitary gland in human body is in 1
- Neck
 - Kidney
 - Abdomen
 - Brain

8. The electric motor is a rotating device that converts 1
- Electrical energy into mechanical energy
 - Mechanical energy into heat energy
 - Electrical energy into heat energy
 - Mechanical energy into electrical energy
9. Brass is an alloy of 1
- Copper and Tin
 - Copper and Zinc
 - Lead and Tin
 - Tin and Zinc
10. Magnetic field produced around the current carrying conductor is inversely proportional to 1
- Deflection of needle
 - Distance of needle from the conductor
 - Thickness of conductor
 - Current flowing through conductor

11. The printed matter appears to be raised when viewed through a glass slab.

This phenomenon is 1

- Reflection of light
- Refraction of light
- Dispersion of light
- Scattering of light

12. The products formed when chemical X undergoes decomposition on heating are quick lime and carbon dioxide gas. The chemical X is 1

- Calcium nitrate
- Calcium bicarbonate
- Lead nitrate
- Calcium carbonate

13. The plant hormone which inhibits the growth of plants is 1

- Auxin
- Cytokinin
- Gibberellins
- Absciscic acid

14. The stakeholder of forest who wants to conserve nature in its pristine form is 1

- Industrialist
- Forest department
- Wildlife and nature enthusiasts
- People living in forest

Name the following :

15. The alkane having 13 covalent bonds. 1

16. The layer which protects the earth from harmful ultraviolet radiations of sun. 1

Observe the correlation in the first pair and complete the second pair :

17. Electric current : Ammeter :: Potential difference : 1

18. Alcohol : OH :: Carboxylic acid : 1

Answer the following : 2

19. Write the function of pupil in human eye.

20. The rainbow appears on a sunny day in the sky after a rain shower.
Why ?

Do as directed :

2

21. Translate the following statement into chemical equation :

Iron reacts with water and forms iron oxide and hydrogen gas.

22. Balance the above chemical equation.

Life processes perform the maintenance job of our body : 2

23. State a point of difference between conversion of pyruvate in yeast cell and in our muscle cell.

24. State the digestive enzyme secreted in the mouth and write its function.

Answer the following : 2

25. What happens when :

Copper reacts with moist carbon dioxide in air.

26. Give *one* point of difference between calcination and roasting.

The brain is a very delicate organ of our body : 2

27. State the role of the fluid filled in the skull.

28. What does the peripheral nervous system consist of ?

Observe the following food chain and answer the questions given below : 2

Green plant → Rabbit → Fox → Tiger

29. Name the organism that receives minimum energy and the organism that receives maximum energy ?
30. The flow of energy in a food chain is always unidirectional. Give reason.

Attempt the following :

31. Mention any *two* ways of finding the age of fossils. 2
32. The experiences of an individual during its life time cannot be passed on to its progeny. Give reason.

Answer the following : 2

33. Name any *two* vegetables generated from wild cabbage by artificial selection.
34. Give *one* point of difference between wings of bat and wings of bird.

Common salt is an important raw material for various materials of daily use : 2

35. How is bleaching powder prepared ?
36. Write any *two* uses of sodium hydrogen carbonate.
37. Draw a neat scientific diagram of longitudinal section of Hibiscus flower and Label — Anther and Style. 2

Solar energy is an ultimate source of energy : 2

38. Solar cell panels are set up in remote and sparsely inhabited areas. Why ?

39. What is the function of mirror in a solar cooker ?

The hardest substance in our body is tooth enamel : 2

40. Name the chemical compound present in the tooth enamel.

41. Give *two* examples of synthetic indicators to test acids and bases.

Or

Milk of Magnesia is used to treat indigestion : 2

40. Name the chemical compound present in milk of Magnesia.

41. Give *two* examples of olfactory indicators to test acids and bases.

A concave lens has a focal length of 15 cm. The image is formed at a distance of 10 cm in front of the lens then : 2

42. Find the object distance.

43. Find the magnification produced by the lens.

Or

An object of height 9 cm is placed at 54 cm in front of a concave mirror of focal length 18 cm : 2

42. Find the image distance.

43. Find the height of the image.

44. Draw a ray diagram to show the formation of an image by a convex lens when the object is placed at $2F_1$. 2

Or

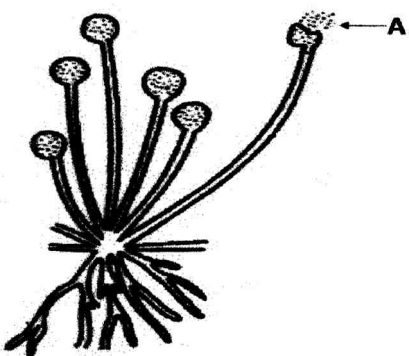
44. Draw a ray diagram to show the formation of an image by a concave mirror beyond C. 2

Overhead electric poles or underground cables supply electric power through mains in our homes : 3

45. Write any *two* causes of overloading.
46. It is necessary to earth metallic appliances. Give reason.
47. State the advantage of alternating current (AC) over direct current (DC).

Do as directed : 3

48. Observe the following figure and answer the question given below.



Why do the part labelled “A” is covered with thick wall ?

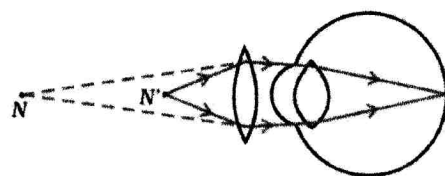
49. Testis are located outside the abdominal cavity in males. Why ?

50. **Placenta is a disc which is embedded in the female uterine wall :**

State the role of placenta during pregnancy. (*one point*)

Observe the below figure which shows the correction in the defect of human eye and answer the questions (51 and 52) given below :

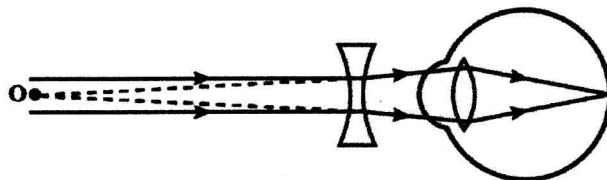
3



51. Name the defect corrected in the above figure.
52. What type of lens is used to correct the defect and why ?
53. Name the angle between the direction of incident ray and the emergent ray in a glass prism.

Or

Observe the below figure which shows the correction in the defect of human eye and answer the questions (51 and 52) given below :



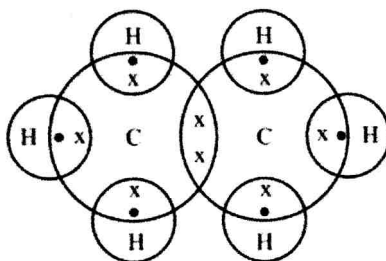
51. Name the defect corrected in the above figure.
52. What type of lens is used to correct the defect and why ?
53. Name the band of coloured component for white light beam through a glass prism.

The hydrocarbon A has one carbon atom, three hydrogen atoms and a carboxylic acid group reacts with hydrocarbon B having two carbon atoms, five hydrogen atoms and alcohol group in the presence of an acid as a catalyst :

3

54. Name the hydrocarbons A and B.
55. Name the product formed in the above reaction and state its one use.

Observe the electron dot structure and answer the question given below :



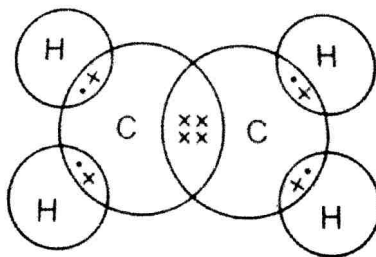
56. Name the above hydrocarbon and state its molecular formula.

Or

A carbon compound X on heating with alkaline potassium permanganate or acidified potassium dichromate gives the product Y which has one carbon atom three hydrogen atoms and carboxylic acid group : 3

54. Name the carbon compounds X and Y.
55. What is the role of alkaline potassium permanganate or acidified potassium dichromate in the above reaction ?

Observe the electron dot structure and answer the questions given below :



56. Name the above hydrocarbon and state its molecular formula.

Observe the table which shows the elements (represented by alphabets) of the third period and answer the questions given below : 4

Group →	13	14	15	16	17	18
	A	B	C	D	E	F

57. Which alphabet represents the noble gas element and why ?
58. Name the alphabets having valency three.
59. Atomic radius of alphabet D is less than alphabet C. Justify.
60. State the nature of oxides formed by alphabets A and E.

Answer the following :

4

61. Write a point of difference between Trypsin and Lipase based on its function.
62. What will happen if there is leakage of blood vessels in our body ?
63. State *two* advantages of the process of transpiration to the plants.
64. How is food particle digested in the food vacuole of amoeba ?

Do as directed :

4

65. Draw a circuit diagram consisting of three resistors R_1 , R_2 , R_3 connected in parallel with a battery and ammeter and a plug key. Insert a voltmeter across the resistor and show the direction of flow of current.

An electric iron consumes energy at a rate of 960 W and the voltage is 220 V. Find :

66. The current drawn by the electric iron.
67. The resistance.

Or

Do as directed :

4

65. Draw a circuit diagram consisting of three resistors R_1 , R_2 , R_3 connected in series with a battery and ammeter and a plug key. Insert a voltmeter across the resistor and show the direction of flow of current.

The potential difference between the terminals of an electric heater is 90 V when it draws a current of 5A from the source :

66. Find the resistance.
67. What current will the heater draw if the potential difference is increased to 130 V ?