Central Board of Secondary Education

(CBSE)

Board Examination - (March)

Series : RTM

Set A

Code No. - SCI -086

Roll No. | | | | | | | |

Candidates must write the code on the title page of the answer-book.

- Please check that this question paper contains 4 printed pages.
- Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains 27 questions.
- Please write down the Serial Number of the question before attempting it.

FINAL EXAMINATION

SCIENCE

Time allowed : 3 hours **Maximum Marks : 80**

General Instructions :

1) The question paper comprises three sections – A, B and C. Attempt all the sections.
2) All questions are compulsory.
3) Internal choice is given in each section.
4) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
5) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50 - 60 words each.
6) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80 – 90 words each.
7) This question paper consists of a total of 30 questions.

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Section - A

1) How much carbon is present on earth and CO_2 in atmosphere ? (1)

2) Name any three metalloids. (1)

3) **Answer question numbers 3(a) — 3(d) on the basis of your understanding of the following paragraph and the related studied concepts.**

Study the table and write the characteristics of the progeny in the following crosses :

	Cross	Progeny	
(a)	RR YY x RR YY	_____	(1)
	Round, yellow and Round, yellow	_____	
(b)	Rr Yy x Rr Yy	_____	(1)
	Round, yellow and Round, yellow	_____	
(c)	rr yy x rr yy	_____	(1)
	Wrinkled, green and wrinkled, green	_____	
(b)	RR YY x rr yy	_____	(1)
	Round, yellow and wrinkled green	_____	

4) **Answer question numbers 4(a) — 4(d) on the basis of your understanding of the following paragraph and the related studied concepts.**

Fossil fuels are non-renewable sources of energy. If the demand for energy continues to increase even at the present rate, these might not last for long. To prevent energy crisis in near future, efforts are being made to find more and more sources of energy, preferably the renewable sources of energy. Sun emits visible, infrared and small amount of ultraviolet radiations. Visible radiation gives light energy and the infrared radiation gives heat energy. The combination of light and heat energies of the sunlight have been used for its utilisation. Under clear sky conditions, 4 — 7 kW solar energy falls on one km^2 area in a day. Our country has 250 — 300 sunny days in a year. Thus, India can harness energy of about 2 MW/km^2 per year through the use of solar technology.

(a) What term will you give to the combination of light and heat energy as mentioned in passage :
(i) Solar energy (ii) Geothermal energy (1)
(iii) Nuclear energy (iv) None of these

(b) Name any two devices, through which India make use of solar energy.
OR (1)
Which rays emitted by sun can cause harmful effects to the living organisms on earth ?

(c) Identify any one way by which the radiations from sun has caused harm to us ? (1)

(d) Which one of the following cannot be employed in utilising solar energy ?
(i) Water heater (ii) Rainwater harvesting
(iii) Solar cooker (iv) Photovoltaic cell (1)

5) What is the power of a lamp, if it is connected to a 12V battery and draws a current of 0.5 A ?
(a) 6 W (b) 0.5 W (c) 12 W (d) 24 W
OR (1)
How much energy does a 100 W bulb transfers in 1 min ?
(a) 100 J (b) 600 J (c) 3600 J (d) 6000 J

6) When a conducting wire is stretched to double of its initial length, then which property of conducting wire increases ?
(a) Resistivity (b) Resistance (c) Volume (d) Density (1)

7) The most important safety method used for protecting home appliance from short circuiting or overloading is
(a) Earthing (b) Use of fuse (c) Use of stabilizers (d) Use of electric meter (1)

8) During tissue culture, a mass of unorganised cells is called _____ (1)
(a) Tissue (b) Callus (c) Cell mass (d) Organised cells and mass

9) Arabari forests of Bengal is dominated by
(a) Mangroove (b) Bamboo (c) Teak (d) Sal (1)

OR (1)

It is important to make small check dams across the flooded gullies because they

(a) hold water for irrigation (b) hold water and prevent soil erosion

(c) hold water permanently (d) contaminate drinking water by animal excreta.

10) pH of H_2O is (1)

(a) 7 (b) 8 (c) 9 (d) 10

11) Which of the following are not ionic compounds ? (1)

(i) KCl (ii) HCl (iii) CCl_4 (iv) NaCl

(a) (i) and (ii) (b) (ii) and (iii) (c) (iii) and (iv) (d) (i) and (iii)

12) Where would you locate the element with electronic configuration (2, 8) in the Modern Periodic Table ?

(a) Group 8 (b) Group 2 (c) Group 18 (d) Group 10

OR (1)

Chlorine (17) belongs to which group and period ____

(a) 7,3 (b) 17,3 (c) 1,3 (d) 16,3

For question numbers 13 and 14, two statements are given- one labelled *Assertion* (A) and the other labelled *Reason* (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :

(a) Both A and R are true and R is correct explanation of the assertion.

(b) Both A and R are true but R is not the correct explanation of the assertion.

(c) A is true but R is false.

(d) A is false but R is true.

13) **Assertion :** Methane is simplest saturated hydrocarbon which is a major component of natural gas.
Reason : Methane belongs to alkene. (1)

14) **Assertion :** In myopia, a person can see distant objects clearly but cannot see nearby objects clearly.
Reason : Myopia can be corrected by using concave lens. (1)

Section - B

15) A solution of potassium chloride when mixed with silver nitrate solution, an insoluble white substance is formed. Write the chemical reaction involved and also mention the type of the chemical reaction. (2)

16) Complete the following equations :

(a) $CH_4 + 2O_2 \rightarrow$

(b) $C_2H_5OH \xrightarrow{\text{Hot.Conc.}H_2SO_4}$

(c) $CH_3COOH + NaOH \rightarrow$

OR (3)

In the following table, are given eight elements A, B, C, D, E, F, G and H (here letters are not the usual symbols of the elements) of the Modern Periodic Table with the atomic numbers of the elements in parenthesis.

Period	Group 1	Group 2
2	A(3)	E(4)
3	B(11)	F(12)
4	C(19)	G(20)
5	D(37)	H(38)

(a) What is the electronic configuration of F ?

(b) What is the number of valence electrons in the atom of F ?

(c) What is the number of shells in the atom of F ?

(d) Write the size of the atoms of E, F, G and H in decreasing order.

(e) State whether F is a metal or a non-metal.

(f) Out of the three elements B, E and F, which one has the biggest atomic size ?

17) (a) What is Universal indicator ?
(b) Write the chemical equation involved in the preparation of Sodium hydroxide. Name the process.
(c) State reason for the following statements :
(i) Tap water conducts electricity whereas distilled water does not.
(ii) Dry hydrogen chloride gas does not turn blue litmus red whereas dilute hydrochloric acid does. (3)

18) (a) How does transpiration help in the functioning of the plants ?
(b) During an experiment, a plant leaf was coated with vaseline. What would happen to that leaf and why? (2+1)

OR

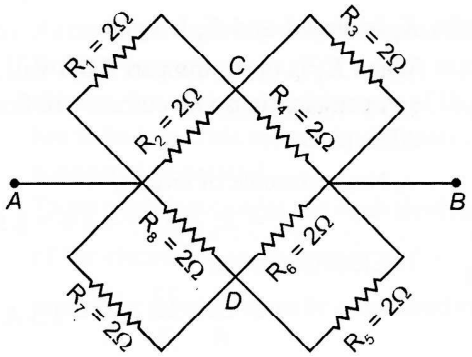
(a) Anaerobic respiration occurs in both yeast cells and human muscles. Mention the differences in this process in both cases.
(b) Mention the effect of anaerobic respiration in our muscles. (2+1)

19) (a) Distinguish between nervous system and endocrine system.
(b) Which is the largest part of the brain ? What are its functions ? (2+1)

20) What is meant by food chain? "The number of trophic levels in a food chain is limited." Give reason to justify this statement. (3)

21) (a) What is the main function of placenta ?
(b) Name the sterilisation methods (surgical methods of contraception) for both males and females.
(c) Name three STDs. (3)

22) Find the equivalent resistance across the two ends A and B of this circuit. (3)



23) What is overloading ? State the causes of overloading. (3)

24) A convergent lens of power 5D is combined with a divergent lens of power - 4D. Then, find the focal length and power of combination of both lenses.

OR (3)

A concave mirror forms a real image of an object at a distance of 30 cm from the mirror, when it is kept at a distance of 50 cm from the mirror. Find the focal length of mirror & hence the magnification of mirror.

Section - C

25) On adding a drop of barium chloride solution to an aqueous solution of sodium sulphite, white precipitate is obtained.
(a) Write balanced chemical equation of the reaction involved.
(b) What other name can be given to this precipitation reaction ?
(c) On adding dil. HCl to the reaction mixture, white precipitate disappears. Why ? Give equation also.
(d) Name compound from first equation which causes milkiness. (1+1+2+1)

OR

Samples of five metals, 'A', 'B', 'C', 'D' and 'E' were taken and added to the following solution one by one. The results obtained have been tabulated as follows :

Metal	$FeSO_4$	$CuSO_4$	$ZnSO_4$	$AgNO_3$	$Al_2(SO_4)_3$	$MgSO_4$
A	No reaction	Displacement	No reaction	Displacement	No reaction	No reaction
B	Displacement	Displacement	No reaction	Displacement	No reaction	No reaction
C	No reaction	No reaction	No reaction	Displacement	No reaction	No reaction
D	No reaction	No reaction	No reaction	No reaction	No reaction	No reaction
E	Displacement	Displacement	Displacement	Displacement	No reaction	No reaction

Use the above table to answer the following questions about the given metals. (2+1+2)

(a) What would you observe if 'B' is added to $CuSO_4$?

(b) Container of which metal can store zinc sulphate and silver nitrate solution ?

(c) Which of the above solution(s) can be stored in a container made of any of these metals and why ?

26) (a) Write chemical equation of reactions of ethanoic acid with :
(i) Sodium (ii) Sodium Carbonate (iii) Ethanol in presence of conc. H_2SO_4.

(b) State the role of concentrated H_2SO_4 in the esterification reaction.

(c) State one use of ethanoic acid. (3+1+1)

27) (a) What is lymph ? How is composition of lymph different from blood plasma ? What is the direction of its flow ?

(b) List two functions of lymphatic system.

(c) State differences between the blood vessels artery, vein and capillary. (2+1+2)

28) How do Mendel's experiments show that the

(a) Traits may be dominant or recessive. (b) Traits are inherited independently ?

Explain by performing dihybrid cross. (5)

OR

(a) With an example, explain how genes control the characteristics.

(b) Which of the following traits can be passed on to the progeny and which cannot ?
(i) Hair type and colour.
(ii) The cut tail of a mouse.
(iii) Preferance for certain types of food.
(iv) Red colour of beetles.

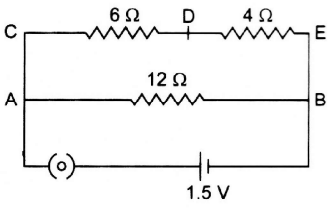
(c) Define species. Give two examples of plant species and two of animals. (2+1+2)

29) In the circuit diagram shown, calculate :

(a) Current flowing through arms AB, AC and CDE.

(b) Potential differences across AB, CD and DE.

(c) Effective resistance of the circuit. (5)



30) (a) What do you mean by short-circuiting ?

(b) Name the safety device which is commonly used in the electric circuits and appliances.

(c) State the law which is used for determining the direction of the magnetic lines of force due to a straight conductor carrying current. (2+1+2)

~0~0~0~ Best of Luck ~0~0~0~