

Central Board of Secondary Education

(CBSE)

Board Examination - (March)

Series : EPB20

Set

B

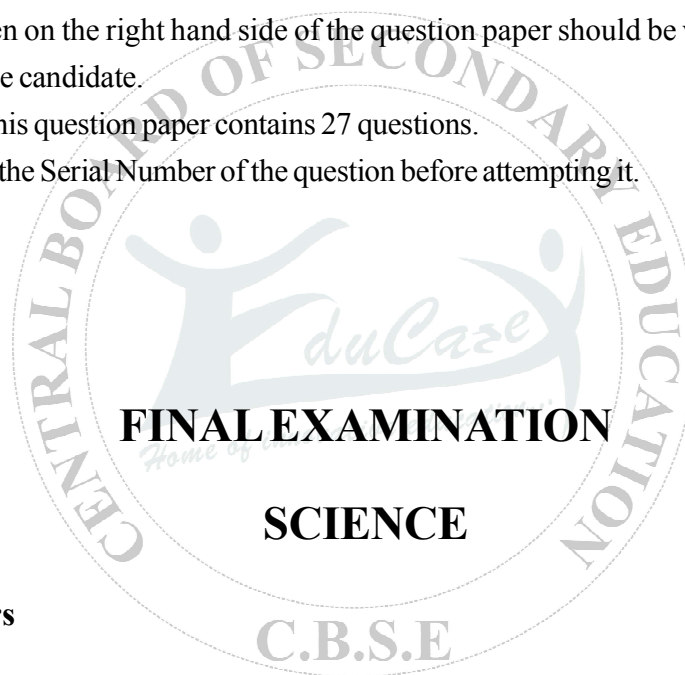
Code No. - SCI-086

Roll No.

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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.



Time allowed : 3 hours

Maximum Marks : 80

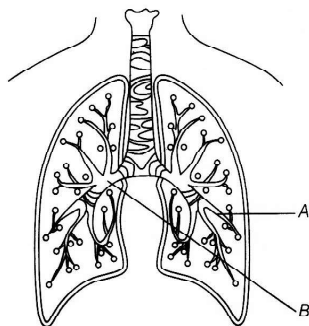
General Instructions :

- 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 of 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.

Section - A

1)	Define feedback mechanism of hormones.	(1)
2)	Write down three elements that show Dobereiner’s triad.	(1)
3)	<p>Q.Nos. 3 (a) to 3 (d) are on the basis of your understanding of the following paragraph and the related studied concepts.</p> <p>The river Ganga is not only held sacred, it also supplies water to more than 50 million people. It flows for 2500 km from Gangotri in the Himalayas to Ganga Sagar in the Bay of Bengal. Ganga along with its tributaries is the largest river basin of the country. On the way, it passes through over 100 towns and cities of Uttarakhand, Uttar Pradesh, Bihar and West Bengal. It is being turned into a dirty water drain.</p> <p>The coliform itself is harmless, but its presence in river water indicates that other harmful, intestinal bacteria might also be present. The increased pollution load and the resultant toxicity in fishes in many parts of river.</p>	(1)
	<p>(a) Which environmental pollution does the given graph of total coliform count levels indicate ?</p> <p>(b) ‘Ganga is being turned into a dirty drain’. Why is this happening? Write any two factors.</p> <p>(c) Name the significant step taken by the Government in concern with the problem stated in the passage.</p> <p>(d) Which of the following steps/methods cannot be considered helpful in reducing the problem stated in passage ?</p> <p>(i) diversion of sewers away from the river. (ii) Wallowing of cattle (iii) Construction of community toilets (iv) Setting up of effluent treatment plants by the industry.</p>	(1) (1) (1) (1)
4)	<p>Q.Nos. 4(a) - 4(d) on the basis of your understanding of the following paragraph and the related studied concepts :</p> <p>There are different types of chemical reactions occurring around us or being carried out for the benefit of mankind, e.g. combination reactions, decomposition reactions, displacement reactions, precipitation reactions, reduction - oxidation (redox) reactions, photochemical reactions etc. Now, answer the following questions:</p>	(1)
	<p>(a) Combustion of coke is a combination reaction. CO₂ is not a pollutant. Then why is combustion of coke harmful ?</p> <p>(b) Which reaction followed by two combination reactions is involved in white wash of walls?(1)</p> <p>(c) Give one use of tin plating in daily life.</p> <p>(d) How photochemical reactions have played an important role in photography?</p>	(1) (1) (1) (1)
5)	Which of the following adjusts the size of the pupil of the eye ?	(1)
	<p>(a) Iris (b) Cornea (c) Retina (d) Ciliary muscles</p> <p style="text-align: center;">OR</p> <p>The image of our face in a plane mirror is</p> <p>(a) virtual (b) real (c) enlarged (d) diminished</p>	
6)	Two wires of same metal have the same length but their cross-sectional area are in the ratio 3 : 1. The resistance of the thicker wire is 10Ω . The resistance of the other will be	(1)
	<p>(a) 30Ω (b) $\frac{40}{3}$Ω (c) $\frac{5}{2}$Ω (d) 100Ω</p>	
7)	How will the image formed by a convex lens be affected, if the lower half of the lens is covered with black paper ?	(1)
	<p>(a) The lower half of the image will be absent (b) The size of image is reduced to one-half (c) The brightness of the image is reduced (d) There will be no effect</p>	

8)	In response to nervous electrical impulses, the special proteins found in muscle cells change their (a) Shape (b) Size (c) Arrangement in the cell (d) Both (a) and (c)	(1)
9)	What is the average value for the amount of organic matter that is present at each level of trophic chain and reaches the next level of consumers ? (a) 11% (b) 10% (c) 100% (d) 50%	(1)
10)	Arrange the following in increasing order of non-metallic character : <i>Mg, Al, Si, Na</i> . (a) $Al < Si < Na < Mg$ (b) $Na < Al < Mg < Si$ (c) $Mg < Al < Na < Si$ (d) $Na < Mg < Al < Si$	(1)
11)	Why is bio-gas considered as an excellent fuel ? (a) It burns without smoke (b) It leaves no residues (c) Its heating capacity is high (d) All of the above	(1)
12)	Which of the following group of plant hormones help in the growth of the stem ? (a) Auxins and cytokinins (b) Gibberellins and abscisic acid (c) Auxins and gibberellins (d) None of the above	(1)
	<p>For question numbers 13 and 14, two statements are given- one labelled <i>Assertion (A)</i> and the other labelled <i>Reason (R)</i>. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :</p> <p>(a) Both Assertion and Reason are true and Reason is correct explanation of the assertion. (b) Both Assertion and Reason are true but Reason is not the correct explanation of the assertion. (c) Assertion is true but Reason is false. (d) If both Assertion and Reason are false.</p>	
13)	<p>Assertion : Lungs always contain a residual volume of air. Reason : It is so to ensure enough time for the release of CO_2 and for the absorption of O_2.</p>	(1)
14)	<p>Assertion : When a charged particle enters in the direction of a uniform magnetic field, then it moves on a straight path without deviation. Reason : Magnetic force on a charged particle is zero, when it moves in the direction of magnetic field.</p>	(1)
	<u>Section - B</u>	
15)	What is observed when a solution of potassium iodide is added to lead nitrate solution ? (a) What type of reaction is this ? (b) Write a balanced chemical equation for this reaction.	(3)
16)	Explain the action of dilute hydrochloric acid on the following with chemical equation : (a) Magnesium ribbon (b) Sodium hydroxide (c) Crushed egg shells OR	(3)
	Give reasons :	
	(a) Sodium metal is kept in kerosene oil. (b) Platinum, gold and silver are used to make jewellery. (c) Tarnished copper vessels are cleaned regularly.	
17)	Write IUPAC names of (a) $HC \equiv CH$ (b) $CH_3CH_2CH_2OH$ (c) CH_3CHO .	(3)
18)	Explain the structure of carpel with the help of a labelled diagram.	(3)
19)	(a) The diagram given below shows parts of the human respiratory system. Identify and name the parts labelled as A - B in the figure.	



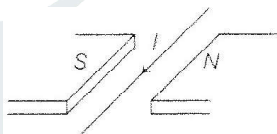
(b) Explain the working of lungs as organs of excretion. (1+2)

20) (a) How do we know that two different individuals belong to the same species ?
 (b) Explain why fertilisation is possible only if copulation takes place during the middle of menstrual cycle. Also, give the name of the process which gets temporarily stopped, when a woman gets pregnant. (1+2)

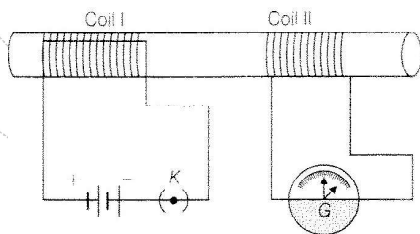
21) (a) State one limitation of using solar energy available from solar cells.
 (b) What is the minimum wind velocity required to obtain useful energy from windmill ?
 (c) Define the term nuclear fission. (3)

22) (a) Why is tungsten used almost exclusively for filament of electric lamps ?
 (b) 100 J of heat is produced each second in a 4Ω resistance, find the potential difference across the resistor ? (1½ x 2 = 3)

23) (i) Write in which direction does the wire in a diagram given below tend to move.



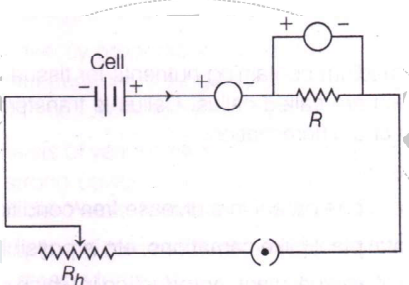
(ii) In an experiment, there are two coils wound on a non-conducting cylindrical rod. Initially key is not inserted. Discuss the case when key is inserted and when it is removed. (1 + 2 = 3)



24) State the laws of refraction of light. Explain the term absolute refractive index of a medium and write an expression to relate it with the speed of light in vacuum.
OR
 A 6 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 25 cm. The distance of the object from the lens is 40 cm.
 Then, determine
 (i) the position and (ii) the size of the image formed (3)

Section - C

25) (a) What would happen if soap is dissolved in a hydrocarbon ?
 (b) What do you mean by hard and soft water ?
 (c) Explain the cleansing mechanism of soap. (1 + 1 + 3 = 5)
OR

	<p>(a) State the Modern periodic law.</p> <p>(b) Explain the gradation in the following periodic properties across a period and a group in the Modern Periodic table.</p> <p>(i) Valency (ii) Atomic size (iii) Metallic character (d) Non - metallic character</p>
26)	<p>(a) Name the method used to extract metals of high reactivity.</p> <p>(b) Name the main ore of mercury. How is mercury obtained from its ore ? Give balanced chemical equations.</p> <p>(c) Explain what is thermite reaction with the help of balanced equation. How is it used to join railway tracks or cracked machine parts ? (1+2+2)</p>
27)	<p>(a) 'Variations that confer advantage to an individual organism only will survive in population.' Justify.</p> <p>(b) What does help scientists to reconstruct the pattern and trends that existed in the history of life on the Earth ? Explain. (2+3)</p>
28)	<p>(a) Plants have lower energy needs as compared to animals. Justify.</p> <p>(b) Discuss why leaves are considered to be the most suitable site for photosynthesis.</p> <p>(c) The stomatal apparatus on the leaves possesses guard cells. Comment. (2+2+1)</p>
29)	<p>A circuit diagram is given below, answer the following questions based on the diagram :</p>  <p>(i) Name the device which is connected in series in the circuit and the component which controls the amount of current in the circuit.</p> <p>(ii) State and explain Ohm's law.</p> <p>(iii) Name a device that helps to measure the potential difference across a conductor.</p> <p>(iv) Why does the connecting cord of an electric heater not glow while the heating element does ? (1+1+1+2)</p>
30)	<p>(i) What is the far point and near point of the human eye with normal vision ?</p> <p>(ii) How is the sense of vision carried from the eye to the brain ?</p> <p>(iii) Explain the cause and remedy of defect in eye with suitable diagram in which a person can see nearby objects clearly but cannot see distant objects clearly ?</p> <p style="text-align: center;">OR</p> <p>(i) State two positions in which a concave mirror produces a magnified image of a given object. List two differences between the nature of these two images.</p> <p>(ii) Differentiate between reflection and refraction of light.</p> <p>(iii) A ray of light is incident on an imaginary surface separating diamond and water. Given that, the refractive index for diamond and water w.r.t. air are 2.42 and 1.33, respectively. Draw the diagram by showing refracted ray and mark angles of incidence and refraction. (5)</p>

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