CBSE Class 10 Science Qs Paper 2018

Series : TYM

Roll No.

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

- कृपया जाँच कर लें कि इस प्रश्न-पत्र में मुद्रित पृष्ठ 12 हैं।
- प्रश्न-पत्र में दाहिने हाथ की ओर दिए गए कोड नम्बर को छात्र उत्तर-पुस्तिका के मुख-पृष्ठ पर लिखें।
- कृपया जाँच कर लें कि इस प्रश्न-पत्र में 27 प्रश्न हैं।
- कृपया प्रश्न का उत्तर लिखना शुरू करने से पहले, प्रश्न का क्रमांक अवश्य लिखें।
- इस प्रश्न-पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है। प्रश्न-पत्र का वितरण पूर्वोत्तर में 10.15 बजे किया जाएगा। 10.15 बजे से 10.30 बजे तक छात्र केवल प्रश्न-पत्र को पढ़ेंगे और इस अवधि के दौरान वे उत्तर-पुस्तिका पर कोई उत्तर नहीं लिखेंगे।
- Please check that this question paper contains 12 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.
- 15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the students will read the question paper only and will not write any answer on the answer-book during this period.

विज्ञान

SCIENCE

निर्धारित समय : 3 घंटे

Time allowed : 3 hours

अधिकतम अंक : 80

Maximum Marks : 80

31/1

[P.T.O.]
सामान्य निदेशः

(i) इस प्रस्त-पत्र को दो भागों, भाग अ और भाग ब, में बांटा गया है | आपको दोनों भागों के प्रश्नों के उत्तर लिखने हैं |

(ii) सभी प्रश्न अनिवार्य हैं |

(iii) आपको भाग अ और भाग ब के सभी प्रश्नों के उत्तर पृथक्-पृथक् भाग के आधार पर लिखने हैं |

(iv) यहाँ भाग अ के तीन अंक के तीन प्रश्नों, पाँच अंक के दो प्रश्नों और भाग ब में दो अंक के एक प्रश्न में आंतरिक चयन दिया गया है |

(v) भाग अ के प्रस्तुत 1 और 2 एक-एक अंक के प्रश्न हैं | इनके उत्तर एक शब्द अथवा एक वाक्य में दीजिए |

(vi) भाग अ के प्रस्तुत 3 से 5 दो-दो अंकों के प्रश्न हैं | इनके उत्तर लगभग 30 शब्दों में देने हैं |

(vii) भाग अ के प्रस्तुत 6 से 15 तीन-तीन अंकों के प्रश्न हैं | इनके उत्तर लगभग 50 शब्दों में देने हैं |

(viii) भाग अ के प्रस्तुत 16 से 21 पाँच-पाँच अंकों के प्रश्न हैं | इनके उत्तर लगभग 70 शब्दों में देने हैं |

(ix) भाग ब के प्रस्तुत 22 से 27 प्रयोगात्मक कीशल पर आधारित दो-दो अंकों के प्रश्न हैं | इनके उत्तर संक्षिप्त में देने हैं |

General Instructions :

(i) The question paper comprises two Sections, A and B. You are to attempt both the sections.

(ii) All questions are compulsory.

(iii) All questions of Section A and Section B are to be attempted separately.

(iv) There is an internal choice in three questions of three marks each, two questions of five marks each in Section A and in one question of two marks in Section B.

(v) Question numbers 1 and 2 in Section A are one-mark questions. They are to be answered in one word or in one sentence.

(vi) Question numbers 3 to 5 in Section A are two-marks questions. These are to be answered in about 30 words each.

(vii) Question numbers 6 to 15 in Section A are three-marks questions. These are to be answered in about 50 words each.

(viii) Question numbers 16 to 21 in Section A are five-marks questions. These are to be answered in about 70 words each.

(ix) Question numbers 22 to 27 in Section B are based on practical skills. Each question is a two-marks question. These are to be answered in brief.
Section – A

1. A Mendelian experiment consisted of breeding pea plants bearing violet flowers with pea plants bearing white flowers. What will be the result in F<sub>1</sub> progeny?

2. Write the energy conversion that takes place in a hydropower plant.

3. A compound ‘X’ on heating with excess conc. sulphuric acid at 443 K gives an unsaturated compound ‘Y’. ‘X’ also reacts with sodium metal to evolve a colourless gas ‘Z’. Identify ‘X’, ‘Y’ and ‘Z’. Write the equation of the chemical reaction of formation of ‘Y’ and also write the role of sulphuric acid in the reaction.

4. (a) Name one gustatory receptor and one olfactory receptor present in human beings.

   (b) Write a and b in the given flow chart of neuron through which information travels as an electrical impulse.
5. If the image formed by a spherical mirror for all positions of the object placed in front of it is always erect and diminished, what type of mirror is it? Draw a labelled ray diagram to support your answer.

6. Decomposition reactions require energy either in the form of heat or light or electricity for breaking down the reactants. Write one equation each for decomposition reactions where energy is supplied in the form of heat, light and electricity.

7. 2 mL of sodium hydroxide solution is added to a few pieces of granulated zinc metal taken in a test tube. When the contents are warmed, a gas evolves which is bubbled through a soap solution before testing. Write the equation of the chemical reaction involved and the test to detect the gas. Name the gas which will be evolved when the same metal reacts with dilute solution of a strong acid.

OR

The pH of a salt used to make tasty and crispy pakoras is 14. Identify the salt and write a chemical equation for its formation. List its two uses.
8. (a) Why are most carbon compounds poor conductors of electricity?
(b) Write the name and structure of a saturated compound in which the carbon atoms are arranged in a ring. Give the number of single bonds present in this compound.

9. Name the hormones secreted by the following endocrine glands and specify one function of each:
(a) Thyroid (b) Pituitary (c) Pancreas

10. Write one main difference between asexual and sexual mode of reproduction. Which species is likely to have comparatively better chances of survival – the one reproducing asexually or the one reproducing sexually? Give reason to justify your answer.

11. किसी लेंस की क्षमता से क्या तात्पर्य है? इसका SI मात्रक लिखिए। कोई छात्र 40 cm फोकस दूरी का लेंस उपयोग कर रहा है तथा कोई अन्य छात्र –20 cm फोकस दूरी का लेंस उपयोग कर रहा है। इन दोनों लेंसों की प्रकृति और क्षमता लिखिए।
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

What is meant by power of a lens ? Write its SI unit. A student uses a lens of focal length 40 cm and another of –20 cm. Write the nature and power of each lens.

12. यह दर्शाईए कि तीन प्रतिरोधकों, जिनमें प्रत्येक का प्रतिरोध 9 Ω है, को आप किस प्रकार संयोजित करेंगे कि संयोजन का तुल्य प्रतिरोध (i) 13.5 Ω, (ii) 6 Ω प्राप्त हो?

अथवा

(a) जूल का तापमान नियम लिखिए।
(b) दो विद्युत लैंप जिनमें से एक का अनुमानांक 100 W; 220 V तथा दूसरे का 60 W; 220 V है, किसी विद्युत में के साथ पारावर्तक में संयोजित हैं। यदि विद्युत आपूर्ति की बोल्टग्रेड 220 V है, तो दोनों बल्बों द्वारा विद्युत में से कितनी धारा ली जाती है?

Show how would you join three resistors, each of resistance 9 Ω so that the equivalent resistance of the combination is (i) 13.5 Ω, (ii) 6 Ω?

OR

(a) Write Joule’s law of heating.
(b) Two lamps, one rated 100 W; 220 V, and the other 60 W; 220 V, are connected in parallel to electric mains supply. Find the current drawn by two bulbs from the line, if the supply voltage is 220 V.

13. (a) किसी चालक, जिसकी आकृति तार जैसी है, का प्रतिरोध जिन कारकों पर निर्भर करता है, उनकी सूची बनाइए।
(b) धातुएँ विद्युत की अच्छी चालक तथा कौनँ विद्युत का कुचलक क्यों होता है? कारण दीजिए।
(c) विद्युत ताप युक्तियों में सामान्यतः मिश्रणरूप उपयोग क्यों किया जाता है? कारण दीजिए।

(a) List the factors on which the resistance of a conductor in the shape of a wire depends.
(b) Why are metals good conductors of electricity whereas glass is a bad conductor of electricity? Give reason.
(c) Why are alloys commonly used in electrical heating devices? Give reason.
Students in a school listened to the news read in the morning assembly that the mountain of garbage in Delhi, suddenly exploded and various vehicles got buried under it. Several people were also injured and there was traffic jam all around. In the brainstorming session the teacher also discussed this issue and asked the students to find out a solution to the problem of garbage. Finally they arrived at two main points – one is self management of the garbage we produce and the second is to generate less garbage at individual level.

(a) Suggest two measures to manage the garbage we produce.

(b) As an individual, what can we do to generate the least garbage? Give two points.

(c) List two values the teacher instilled in his students in this episode.

What is a dam? Why do we seek to build large dams? While building large dams, which three main problems should particularly be addressed to maintain peace among local people? Mention them.
16. (a) Write the steps involved in the extraction of pure metals in the middle of the activity series from their carbonate ores.

(b) How is copper extracted from its sulphide ore? Explain the various steps supported by chemical equations. Draw labelled diagram for the electrolytic refining of copper.

17. (a) The modern periodic table has been evolved through the early attempts of Dobereiner, Newland and Mendeleev. List one advantage and one limitation of all the three attempts.

(b) Name the scientist who first of all showed that atomic number of an element is a more fundamental property than its atomic mass.

(c) State Modern periodic law.

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(c) State Modern periodic law.
(a) Mention any two components of blood.

(b) Trace the movement of oxygenated blood in the body.

(c) Write the function of valves present in between atria and ventricles.

(d) Write one structural difference between the composition of artery and veins.

OR

(a) Define excretion.

(b) Name the basic filtration unit present in the kidney.

(c) Draw excretory system in human beings and label the following organs of excretory system which perform following functions:
   (i) form urine.
   (ii) is a long tube which collects urine from kidney.
   (iii) store urine until it is passed out.

19. (a) मानव मादा जनन तंत्र के नीचे दिए गए प्रत्येक भाग का कार्य लिखिए:
   (i) अण्डाशय, (ii) अंडवाहिनी, (iii) गर्भाशय

(b) प्लासेंटा की संरचना और कार्य का संक्षेप में वर्णन कीजिए।

(a) Write the function of following parts in human female reproductive system:
   (i) Ovary (ii) Oviduct (iii) Uterus

(b) Describe in brief the structure and function of placenta.
20. (a) A student is unable to see clearly the words written on the black board placed at a distance of approximately 3 m from him. Name the defect of vision the boy is suffering from. State the possible causes of this defect and explain the method of correcting it.

(b) Why do stars twinkle? Explain.

OR

(a) Write the function of each of the following parts of human eye:
(i) Cornea (ii) Iris (iii) Crystalline lens (iv) Ciliary muscles

(b) Why does the sun appear reddish early in the morning? Will this phenomenon be observed by an astronaut on the Moon? Give reason to justify your answer.

21. (a) Fleming’s left hand rule.

(b) Write the principle of working of an electric motor.

(c) Explain the function of the following parts of an electric motor.
(i) Armature (ii) Brushes (iii) Split ring
Section – B

22. A student added few pieces of aluminium metal to two test tubes A and B containing aqueous solutions of iron sulphate and copper sulphate. In the second part of her experiment, she added iron metal to another test tubes C and D containing aqueous solutions of aluminium sulphate and copper sulphate. In which test tube or test tubes will she observe colour change? On the basis of this experiment, state which one is the most reactive metal and why.

23. What is observed when a solution of sodium sulphate is added to a solution of barium chloride taken in a test tube? Write equation for the chemical reaction involved and name the type of reaction in this case.

24. List the steps of preparation of temporary mount of a leaf peel to observe stomata.

25. अथवा कोई छात्र वीस्ट में मुक्तन द्वारा अलैंगिक जनन के विभिन्न चरणों की स्थायी स्लाइड का सुधारणा द्वारा प्रेक्षण कर रहा है। वह स्लाइड में जो कुछ प्रेक्षण करता है उसे ओरेक्स खींचकर (क्रमवार) दर्शाई।
Name the process by which an amoeba reproduces. Draw the various stages of its reproduction in a proper sequence.

OR

A student is viewing under a microscope a permanent slide showing various stages of asexual reproduction by budding in yeast. Draw diagrams of what he observes. (in proper sequence)

26. 4.0 cm ऊँचाई का कोई बिंदू 20 cm फोकस दूरी के किसी उत्तर लेंस के प्रकाशिक केन्द्र ‘O’ से 30 cm दूरी पर स्थित है। बनने वाले प्रतिबिंब की स्थिति और साइज़ ज्ञात करने के किरण आंशिक खींचिए। इस आंकिक में प्रकाशिक केन्द्र ‘O’ तथा मुख्य फोकस ‘F’ अंकित कीजिए। प्रतिबिंब की ऊँचाई और बिंदु की ऊँचाई का लगभग अनुपात भी ज्ञात कीजिए।

An object of height 4.0 cm is placed at a distance of 30 cm from the optical centre ‘O’ of a convex lens of focal length 20 cm. Draw a ray diagram to find the position and size of the image formed. Mark optical centre ‘O’ and principal focus ‘F’ on the diagram. Also find the approximate ratio of size of the image to the size of the object.

27. किसी प्रतिरोधक, जिसका प्रतिरोध (R) है, से प्रवाहित विद्युत धारा (I) और उसके सिरों के बीच तदनुस्ंरी विभाजन (V) के मान नीचे दिए गए, अनुसार हैं:

<table>
<thead>
<tr>
<th>V (volts)</th>
<th>0.5</th>
<th>1.0</th>
<th>1.5</th>
<th>2.0</th>
<th>2.5</th>
<th>3.0</th>
<th>4.0</th>
<th>5.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (amperes)</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
<td>0.8</td>
<td>1.0</td>
</tr>
</tbody>
</table>

धारा (I) और विभाजन (V) के बीच ग्राफ़ खींचिए और प्रतिरोधक का प्रतिरोध (R) ज्ञात कीजिए।

The values of current (I) flowing through a given resistor of resistance (R), for the corresponding values of potential difference (V) across the resistor are as given below:

<table>
<thead>
<tr>
<th>V (volts)</th>
<th>0.5</th>
<th>1.0</th>
<th>1.5</th>
<th>2.0</th>
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<td>0.5</td>
<td>0.6</td>
<td>0.8</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Plot a graph between current (I) and potential difference (V) and determine the resistance (R) of the resistor.