

Series : QQCRR/2



SET-3

प्रश्न-पत्र कोड 31/2/3
Q.P. Code

रोल नं.

Roll No.

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परीक्षार्थी प्रश्न-पत्र कोड को उत्तर-पुस्तिका के मुख-पृष्ठ पर अवश्य लिखें।

Candidates must write the Q.P. 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 प्रश्न-पत्र कोड को छात्र उत्तर-पुस्तिका के मुख-पृष्ठ पर लिखें।
- कृपया जाँच कर लें कि इस प्रश्न-पत्र में 15 प्रश्न हैं।
- कृपया प्रश्न का उत्तर लिखना शुरू करने से पहले, उत्तर-पुस्तिका में प्रश्न का क्रमांक अवश्य लिखें।
- इस प्रश्न-पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है। प्रश्न-पत्र का वितरण पूर्वाह्न 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.
- Q.P. Code 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 15 questions.
- **Please write down the Serial Number of the question in the answer-book 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 candidates will read the question paper only and will not write any answer on the answer-book during this period.



विज्ञान SCIENCE

निर्धारित समय : 2 घण्टे

Time allowed : 2 hours

अधिकतम अंक : 40

Maximum Marks : 40

31/2/3

135 C

1

P.T.O.

General Instructions :

Read the following instructions carefully and strictly follow them :

- (i) This question paper contains **15** questions. **All** questions are compulsory.
- (ii) This question paper is divided into **three** Sections viz. Section **A**, **B** and **C**.
- (iii) Section **A** – Question numbers **1** to **7** are short answer type questions. Each question carries **two** marks.
- (iv) Section **B** – Question numbers **8** to **13** are also short answer type questions. Each question carries **three** marks.
- (v) Section **C** – Question numbers **14** and **15** are case based questions. Each question carries **four** marks.
- (vi) Internal choices have been provided in some questions. Only one of the alternatives has to be attempted.

SECTION – A

- 1. (i) Write the electronic configuration of element X, given by its symbol as under :
 ${}_{20}^{40}\text{X}$.
 - (ii) Determine its position in the modern periodic table.
 - (iii) What is the nature of its oxide ?
 - (iv) Name one other element of its group. $\frac{1}{2} \times 4$

- 2. (i) Write the name and draw the structure of a saturated hydrocarbon with four carbon atoms.
 - (ii) Write the number of single covalent bonds present in this compound. **2**

- 3. (a) Name the reproductive and non-reproductive parts of bread mould (Rhizopus).
 - (b) List any two advantages of vegetative propagation. **2**



4. (a) State one drawback of each of the following : $\frac{1}{2} \times 4 = 2$
- Oral contraceptive pills
 - Copper-T
- (b) Under which category of contraceptive methods, is the use of condom kept ? In what way, its use is better as compared to other methods of contraception ?

5. (a) Name the poles P, Q, R and S of the magnets in the following figures 'a' and 'b' : $\frac{1}{2} + \frac{1}{2} + 1 = 2$

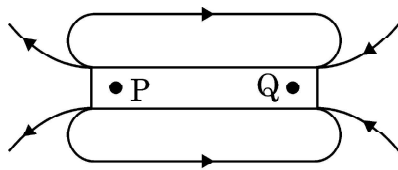


Figure 'a'

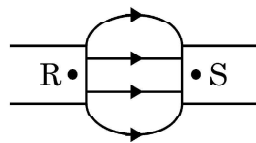


Figure 'b'

- (b) State the inference drawn about the direction of the magnetic field lines on the basis of these diagrams.

OR

When is the force experienced by a current – carrying straight conductor placed in a uniform magnetic field.

$1 + 1 = 2$

- Maximum ;
 - Minimum ?
6. In the following food chain, only 2J of energy was available to the peacocks. How much energy would have been present in Grass ? Justify your answer. 2

GRASS → GRASS HOPPER → FROG → SNAKE → PEACOCK

OR

- What is meant by garbage ? List two classes into which garbage is classified.
- What do we actually mean when we say that the “enzymes are specific in their action” ?



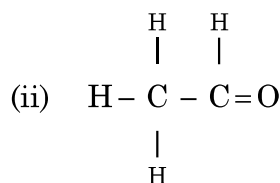
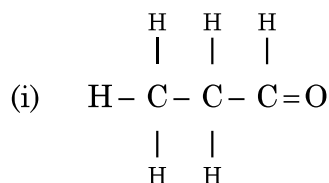
7. Name the reproductive parts of an angiosperm. Where are these parts located ? Explain the structure of its male reproductive part. 2

OR

What is puberty ? Mention any two changes that are common to both boys and girls in early teenage years.

SECTION - B

8. Consider the following organic compounds : 3



- (a) Name the functional group present in their compounds.
(b) Write the general formula for the compounds of this functional group.
(c) State the relationship between these compounds and draw the structure of any other compound having similar functional group.

OR

- (a) Draw the electron dot structure for ethyne. 1+2 = 3
(b) List two differences between the properties exhibited by covalent compounds and ionic compounds.

9. (a) State Newland Law of Octaves. 1+1+½+½ = 3
(b) With an example, explain Dobereiner's Triads.
(c) List one limitation each of both the attempts mentioned in 'a' & 'b'.

10. (a) What is the heating effect of electric current ? 3
(b) Write an expression for the amount of heat produced in a resistor when an electric current is passed through it stating the meanings of the symbols used.
(c) Name two appliances based on heating effect of electric current.

11. What are Chromosomes ? Explain how stability of the DNA of the species is ensured in sexually reproducing organisms. 3



12. (a) We do not clean ponds or lakes, but an aquarium needs to be cleaned regularly. Why ? 1+2
 (b) Why is ozone layer getting depleted at the higher levels of the atmosphere ? Mention one harmful effect caused by its depletion.
13. (a) List the factors on which the resistance of a uniform cylindrical conductor of a given material depends. 2+1
 (b) The resistance of a wire of 0.01 cm radius is $10\ \Omega$. If the resistivity of the wire is $50 \times 10^{-8}\ \Omega\text{ m}$, find the length of this wire.

OR

- (a) What is the meaning of electric power of an electrical device ? Write its SI unit. 1½
 (b) An electric kettle of 2kW is used for 2h. Calculate the energy consumed in
 (i) kilowatt hour and
 (ii) joules. 1½

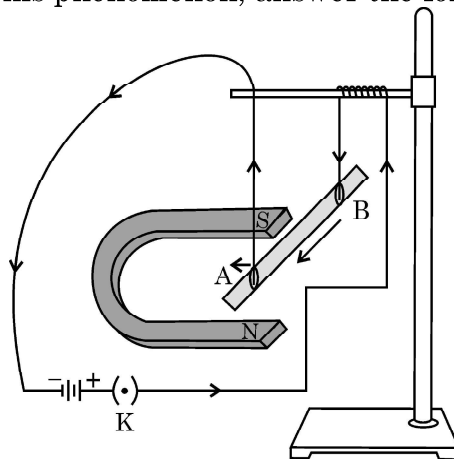
SECTION – C

This section has 02 case based questions (14 and 15).

Each case is followed by 03 sub questions (a, b and c).

Part (a) and (b) are compulsory. However an internal choice has been provided in Part (c).

14. A student was asked to perform an experiment to study the force on a current carrying conductor in a magnetic field. He took a small aluminum rod AB, a strong horse shoe magnet, some connecting wires, a battery and a switch and connected them as shown. He observed that on passing current, the rod gets displaced. On reversing the direction of current, the direction of displacement also gets reversed. On the basis of your understanding of this phenomenon, answer the following questions : 4



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- (a) State the condition under which the displacement of the rod is largest for the same magnitude of current flowing through it.
- (b) State the rule that determines the direction of the force on the conductor AB.
- (c) (i) If the U shaped magnet is held vertically and the aluminum rod is suspended horizontally with its end B towards due north, then on passing current through the rod from B to A as shown, in which direction will the rod be displaced ?
- (ii) Name any two devices that use current carrying conductors and magnetic field.

OR

Draw the pattern of magnetic field lines produced around a current carrying straight conductor held vertically on a horizontal cardboard. Indicate the direction of the field lines as well as the direction of current flowing through the conductor.

15. Mendel blended his knowledge of Science and mathematics to keep the count of the individuals exhibiting a particular trait in each generation. He observed a number of contrasting visible characters controlled in pea plants in a field. He conducted many experiments to arrive at the laws of inheritance.

- (a) What do the F1 progeny of tall plants with round seeds and short plants with wrinkled seeds look like ?
- (b) What are recessive traits ?
- (c) Mention the type of the new combinations of plants obtained in F2 progeny along with their ratio, if F1 progeny was allowed to self pollinate.

1+1+2 = 4

OR

If 1600 plants were obtained in F2 progeny, write the number of plants having traits :

- (i) Tall with round seeds
- (ii) Short with wrinkled seeds

Write the conclusion of the above experiment.



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