

Series QQBRR/3



SET-3

प्रश्न-पत्र कोड
Q.P. Code

31/3/3

रोल नं.
Roll No.

--	--	--	--	--	--	--	--

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 15 हैं ।
- प्रश्न-पत्र में दाहिने हाथ की ओर दिए गए प्रश्न-पत्र कोड को परीक्षार्थी 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 15 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 students 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

31/3/3



General Instructions :

Read the following instructions very carefully and strictly follow them :

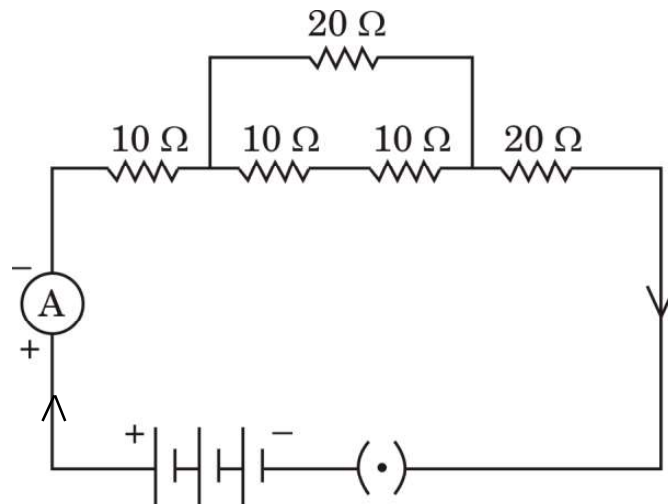
- (i) This question paper comprises **15** questions. **All** questions are compulsory.
- (ii) This question paper is divided into **three** sections – **A, B** and **C**.
- (iii) **Section A** – Questions No. **1** to **7** are short answer type questions. Each question carries **2** marks.
- (iv) **Section B** – Questions No. **8** to **13** are also short answer type questions. Each question carries **3** marks.
- (v) **Section C** – Questions No. **14** and **15** are case-based questions. Each question carries **4** marks.
- (vi) Internal choices have been provided in some questions. Only one of the alternatives has to be attempted.

SECTION A

1. (a) An electric heater rated 1100 W operates at 220 V. Calculate
(i) its resistance, and (ii) the current drawn by it. 2

OR

- (b) Calculate the equivalent resistance of the following electric circuit : 2



2. In the modern periodic table, compare the tendency of the elements to lose electrons while moving (i) down a group, and (ii) from left to right in a period. 2



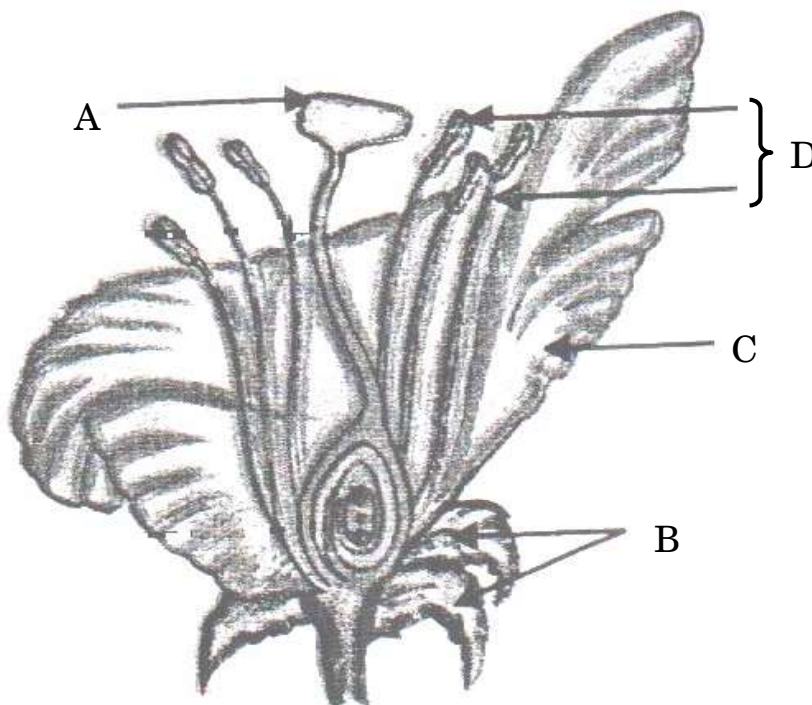
3. Draw two structural isomers of butane. 2

4. (a) Kulhads (disposable cups made of clay) and disposable paper cups both are used as an alternative for disposable plastic cups. Which one of these two can be considered as a better alternative to plastic cups and why ? 2

OR

(b) Human beings are most adversely affected by the Biological Magnification. State the reason. Why can ordinary washing of the edibles (fruits and vegetables) not reduce the effect of biological magnification ? 2

5. (a) In the given diagram, name the parts where (i) pollen grains are produced, and (ii) pollen grains are transferred.



(b) What happens to ovule and ovary after fertilisation ? 2



6. Suggest any two contraceptive methods to control the size of human population and explain them. 2

7. (a) Mendel crossed two pea plants with visible contrasting characteristics and found that there were no half-way characteristics in the plants of F_1 progeny. Explain the reason for this observation of Mendel. 2

OR

(b) Justify the statement “Sex of the children will be determined by what they inherit from their father”. 2

SECTION B

8. In the following table, some elements have been arranged in a certain pattern :

sa (do)	re (re)	ga (mi)	ma (fa)	pa (so)	da (la)	ni (ti)
H	Li	Be	B	C	N	O
F	Na	Mg	Al	Si	P	S
Cl	K	Ca	Cr	Ti	Mn	Fe
Co and Ni	Cu	Zn	Y	In	As	Se
Br	Rb	Sr	Ce and La	Zr	—	—

Identify the periodic law with which the given table is associated. List two important features and two anomalies of the above periodic law. 3

9. How do Mendel's experiments show that the traits are inherited independently ? Explain. 3

10. (a) What are decomposers ? State the role of decomposers in the natural replenishment of the soil.

(b) Why are decomposers not helpful in decomposing the plastic waste ? 3



11. (a) State the reason why
- (i) carbon compounds have low melting and boiling points.
 - (ii) carbon compounds do not conduct electricity.
 - (iii) carbon can form only covalent compounds.

3

OR

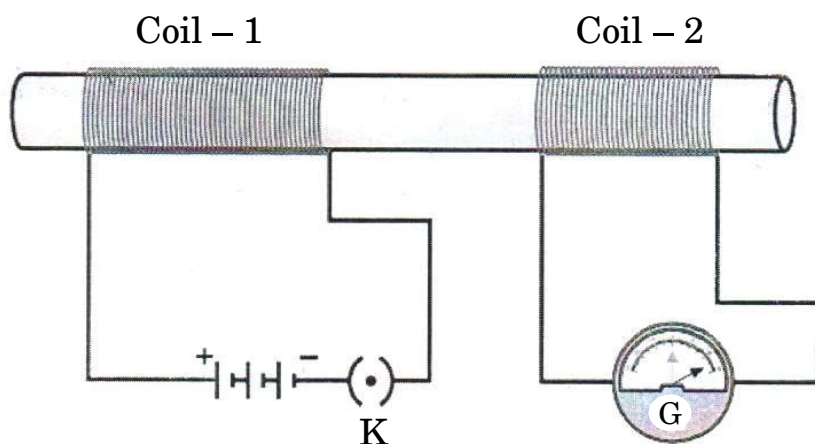
- (b) What is a homologous series ? Find the difference in molecular mass between the two consecutive members of a homologous series. State how in a homologous series of carbon compounds the following properties vary with increase in molecular mass :
- (i) Melting and boiling points
 - (ii) Chemical properties

3

12. (a) Draw the pattern of magnetic field lines produced by a current carrying circular loop showing the direction of current in the loop and the direction of the magnetic field lines.
- (b) State the rule which can be applied to know the direction of magnetic field lines in the above case.

3

13. (a) In the diagram given below, Coil – 1 is connected in series with a battery and a plug key while Coil – 2 is connected with a galvanometer.



- (i) Why does the galvanometer show deflection only when the key (K) is plugged in and not when a steady current starts flowing in the circuit ?

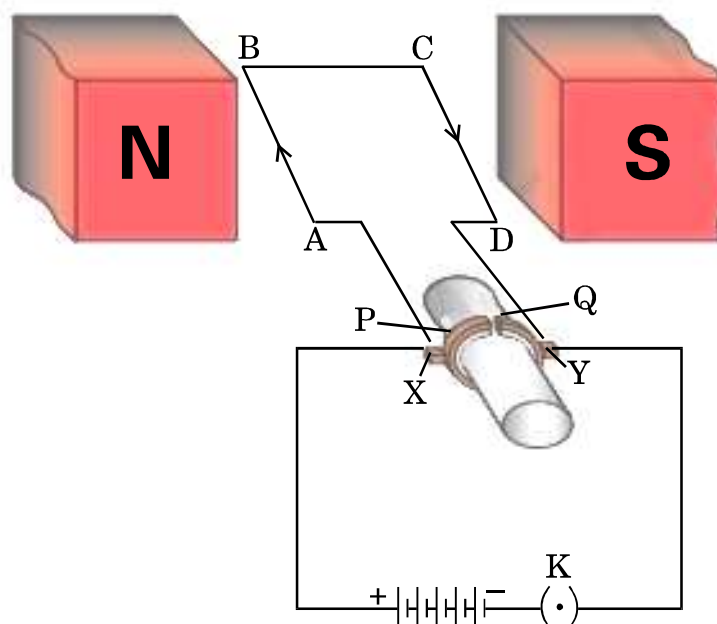


-
- (ii) What is observed in the galvanometer, when the key is plugged out ?
- (iii) State the conclusion based on the observation of this activity.

3

OR

- (b) In the figure given below, a simple electric motor is shown :



As shown in the figure, the current in the coil ABCD flows from A to B in the arm AB and C to D in the arm CD.

- (i) State the directions in which the arms AB and CD will experience a force.
- (ii) Identify the part of the electric motor that reverses the flow of current in the coil ABCD and write its name.
- (iii) After the reversal of flow of current in the coil ABCD, state the directions in which the arms AB and CD will experience a force.
- (iv) Name the rule which is applied to determine the direction of force on a current carrying conductor placed in a magnetic field.

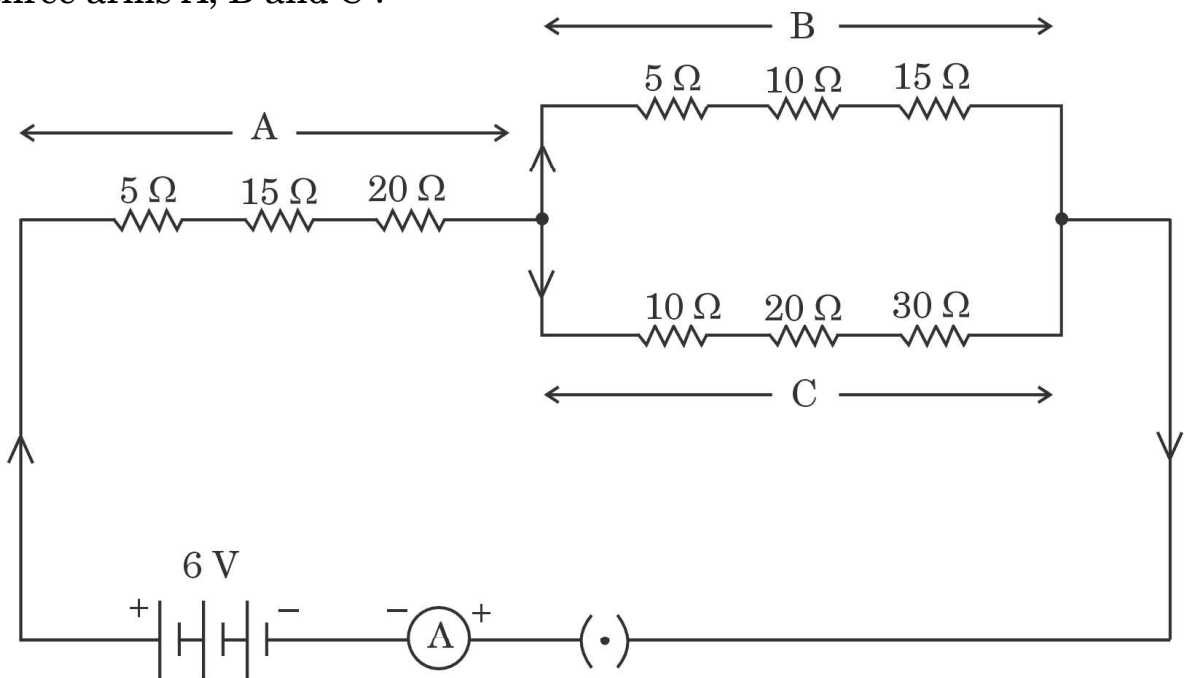
3



SECTION C

*This section has 2 case-based questions (14 and 15). Each case is followed by 3 sub-questions (a), (b) and (c). Parts (a) and (b) are **compulsory**. However, an internal choice has been provided in Part (c).*

14. Study the following electric circuit in which the resistors are arranged in three arms A, B and C :



- | | | |
|-----|--|---|
| (a) | Find the equivalent resistance of arm C. | 1 |
| (b) | Calculate the equivalent resistance of the parallel combination of the arms B and C. | 1 |
| (c) | (i) Determine the current that flows through the ammeter. | 2 |

OR

- | | | |
|------|---|---|
| (ii) | Determine the current that flows in the ammeter when the arm B is withdrawn from the circuit. | 2 |
|------|---|---|



15. The modes by which various organisms reproduce depend on the body design of the organisms. In asexual reproduction, a single individual parent produces offsprings without the involvement of gametes. This method is a common means of increasing the offsprings rapidly under favourable conditions. Asexual reproduction occurs mostly in unicellular organisms, some plants and certain simple multicellular animals.

- (a) State the name of the organism in which binary fission takes place in a definite orientation. Also name the disease caused by this organism. 1
- (b) Leaves of 'Bryophyllum' when they fall on the soil develop into new plants whereas a banana leaf will not be able to do so. Why ? 1
- (c) (i) Explain the process of budding in Hydra. 2

OR

- (ii) What happens when
- (I) a spirogyra filament matures and attains a considerable length, and
- (II) a sporangia in Rhizopus bursts on maturation ? 2

