SHREE RADHEY COACHING CENTER

SPECIAL SAMPLE PAPER 1

Class 10 - Science

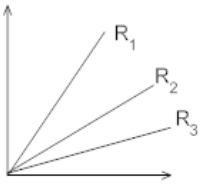
Time Allowed: 3 hours **Maximum Marks: 80**

General Instructions:

1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective type questions carrying 1 mark each.
4. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts

Section A

1. A student carries out an experiment and plots the V-I graph of three samples of nichrome wire with resistances R_1, R_2 and R_3 respectively figure. Which of the following is true? **[1]**



a) $R_3 > R_2 > R_1$ b) $R_1 > R_2 > R_3$

c) $\left(R \propto \frac{1}{\text{slope of V}-\text{I graph}}\right)$ d) $R_3 = R_2 = R_1$

2. In human males, all the chromosomes are paired perfectly except one. This/these unpaired chromosome is/are **[1]**

i. large chromosome
ii. small chromosome
iii. Y-chromosome
iv. X-chromosome

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

c) (ii) and (iv) d) (iii) only

3. Which of the following statement (s) is (are) true about the heart? **[1]**

i. The left atrium receives oxygenated blood from different parts of the body while the right atrium receives deoxygenated blood from lungs

ii. The left ventricle pumps oxygenated blood to different body parts while right ventricle pumps deoxygenated blood to lungs

iii. Left atrium transfers oxygenated blood to the right ventricle which sends it to different body parts

iv. Right atrium receives deoxygenated blood from different parts of the body while left ventricle pumps oxygenated blood to different parts of the body

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

4. Which of the following describes the common domestic power supplied in India? **[1]**

a) 110 v, 100 Hz
b) 220 v, 100 Hz
c) 110 v, 50 Hz
d) 220 v, 50 Hz

5. Sodium metal is stored in: **[1]**

a) Alcohol
b) Water
c) Ether
d) Kerosene

6. While cooking if the bottom of the vessel is getting blackened on the outside, it means that**:** **[1]**

a) The fuel is burning completely.
b) The food is not cooked completely.
c) The fuel is not burning completely.
d) The fuel is wet.

7. pH (power of Hydrogen) value of black coffee is: **[1]**

a) 5
b) 3
c) 7
d) 8

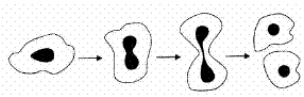
8. **Statement A:** Fertilization is possible if ovulation has taken place during the middle of the menstrual cycle. **[1]**
Statement B: Fertilization is not possible if ovulation has taken place during the middle of the menstrual cycle.

a) Statement A is true, B is false
b) Both the statement A and B are true
c) Statement B is true, A is false
d) Neither statement A nor statement B is true

9. Two solution A and B were found to have pH values of 6 and 8 respectively. The inference which can be drawn is **[1]**

a) the strength of solution B is higher that of A
b) both are acid solutions
c) both are basic solutions
d) A is an acid while B is a base

10. The process represented in the diagram below is the **[1]**



a) Formation of bud taking place in Amoeba
b) formation of spores in Amoeba
c) identical gametes being formed in Amoeba
d) formation of daughter cells in Amoeba

11. Which of the following is not a character selected by Mendel? **[1]**

A. Flower shape
B. Pod colour

C. Pod position

D. Branch length

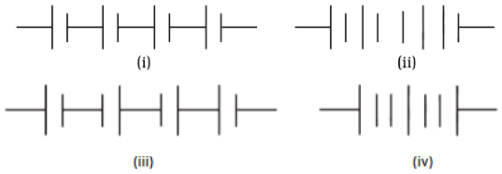
a) A and C

b) A, B and D

c) A and D

d) B and C

12. The proper representation of the series combination of cells (Figure) obtaining maximum potential is **[1]**



a) (i)

b) (iv)

c) (ii)

d) (iii)

13. A student has to do the experiment on finding the focal length of a given convex lens by using a distant object. **[1]**
She can do her experiment if she is also made available with

a) a lamp and a screen

b) a scale and a screen

c) a lamp and a scale

d) None of these

14. Match the following with the correct response: **[1]**

Column A	Column B
(i) Shiny non- metal	(a) Mercury
(ii) The metal which melts at room temperature	(b) Gallium
(iii) Soft metal	(c) Iodine
(iv) Liquid metal	(d) Sodium

a) (i) - (d), (ii) - (a), (iii) - (c), (iv) - (b)

b) (i) - (c), (ii) - (b), (iii) - (d), (iv) - (a)

c) (i) - (a), (ii) - (c), (iii) - (b), (iv) - (d)

d) (i) - (b), (ii) - (d), (iii) - (a), (iv) - (c)

15. Which of the following precautions are to be taken for a successful run of the experiment to show that carbon dioxide is given out during respiration? **[1]**

A. Cork should be airtight.

B. Seeds in the flask should be totally dry.

C. A small tube with a freshly prepared KOH solution should be placed in the flask.

D. The end of the delivery tube should be above water level.

The correct answer is

a) A, B and C

b) A and C

c) A and B

d) A, B and D

16. Factors responsible for the rapid spread of bread mould on slices of bread are **[1]**

i. a large number of spores

ii. availability of moisture and nutrients in bread

iii. presence of tubular branched hyphae

iv. formation of round shaped sporangia

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

17. **Assertion (A):** The strength of the magnetic field produced at the centre of a current-carrying circular coil increases on increasing the number of turns of the circular coil. **[1]**

Reason (R): Magnetic field strength is directly proportional to the number of turns of the circular coil.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

18. **Assertion (A):** The chemical formula of bleaching powder is $CaOCl_2$. **[1]**

Reason (R): Calcium oxide react with chlorine to form bleaching powder.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

19. **Assertion (A):** Insulin regulates blood sugar level. **[1]**

Reason (R): Insufficient secretion of insulin will cause diabetes.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

20. **Assertion (A):** Man is an omnivore. **[1]**

Reason (R): Man eats food products obtained from both plants and animals.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

Section B

21. Give a chemical test to distinguish between ethanol and ethanoic acid. **[2]**

OR

What is a covalent bond? What type of bond exists in (i) CCl_4 (ii) $CaCl_2$?

22. What will happen if intake of iodine in our diet is low? **[2]**

23. Write the food chain operating in a freshwater pond. Mention the food habit of each trophic level in this food chain. **[2]**

24. What are phytoplanktons? Give one example. **[2]**

25. Find the power of a concave lens of focal length 2 m. **[2]**

OR

Write the lens formula explaining the meaning of the symbols used.

26. Name the oxidising agent used for the conversion of ethanol to ethanoic acid. Distinguish between ethanol and ethanoic acid on the basis of **[2]**

i. litmus test,
ii. reaction with sodium carbonate.

Section C

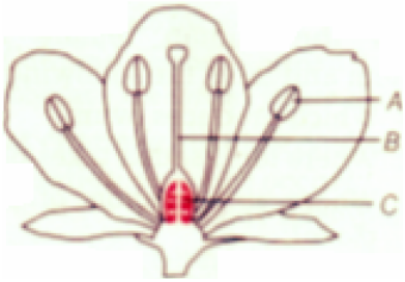
27. Identify the type of reactions taking place in each of the following cases and write the balanced chemical equation for the reactions. **[3]**

a. Zinc reacts with silver nitrate to produce zinc nitrate and silver.

b. Potassium iodide reacts with lead nitrate to produce potassium nitrate and lead iodide.

28. How are the power and focal length of a lens related? You are provided with two lenses of focal length 20 cm and 40 cm respectively. Which lens will you use to obtain more convergent light? **[3]**

29. Name the parts A, B and C shown in the following diagram and state one function of each. **[3]**



OR

The embryo gets its nutrition from the mother's blood with the help of special tissue.

i. What is this special tissue called?

ii. Give any other function of this tissue apart from one mentioned above.

iii. Explain the structure of this special tissue.

30. When one enters a less lighted room from a place of intense light, he is not able to see anything for sometime, but after sometime the things become somewhat visible. Explain how this happens? **[3]**

31. Give reason and name the type of chemical reaction taking place in each case: **[3]**

i. Dissolution of ammonium chloride in water leads to cooling of the glass apparatus used for dissolutions.

ii. Silver chloride powder which is white in colour, turns grey when kept in sunlight.

iii. Blue colour of copper sulphate solution fades when an iron nail is dipped inside the solution.

32. In pea plant, round seed is dominant over the wrinkled. If a cross is carried out between these two plants, give answer to the following questions. **[3]**

i. Mention the genes for the traits of parents.

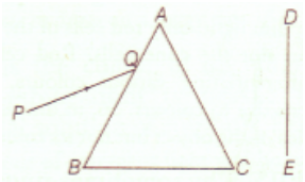
ii. State the trait of F_1 hybrids.

iii. Write the ratio of F_2 progeny obtained from this cross. What is the name of the cross?

OR

A study found that children with light-coloured eyes are likely to have parents with light coloured eyes. On this basis, can we say anything about whether the light eye colour trait is dominant or recessive? Why or why not?

33. A narrow beam PQ of white light is passing through a glass prism ABC as shown in the diagram. **[3]**



Trace it on your answer sheet and show the path of the emergent beam as observed on the screen DE.

i. Write the name and cause of the phenomenon observed.

ii. Where else in nature is this phenomenon observed?

iii. Based on this observation, state the conclusion which can be draw about the constituents of white light.

Section D

34. What are the various methods used for concentration of ore/Ore dressing? **[5]**

OR

Describe two methods for the concentration of ores.

35. What do you understand by parasitic nutrition? **[5]**

OR

Explain the nutrition process in an Amoeba with the help of a diagram.

36. Draw an appropriate schematic diagram showing common domestic circuits and discuss the importance of fuse. **[5]**
Why is it that a burnt out fuse should be replaced by another fuse of identical rating?

Section E

37. **Read the text carefully and answer the questions:** **[4]**

We know that a battery or a cell is a source of electrical energy. The chemical reaction within the cell generates the potential difference between its two terminals that sets the electrons in motion to flow the current through a resistor or a system of resistors connected to the battery. To maintain the current, the source has to keep expanding its energy. Where does this energy go? A part of the source energy in maintaining the current may be consumed for useful work (like in rotating the blades of an electric fan). The rest of the source energy may be expended in heat to raise the temperature of the gadget. We often observe this in our everyday life. For example, an electric fan becomes warm if used continuously for a long time, etc. On the other hand, if the electric circuit is purely resistive, that is, a configuration of resistors only connected to a battery; the source energy continually gets dissipated entirely in the form of heat. This is known as the heating effect of electric current. This effect is utilized in devices such as an electric heater, electric iron, etc.

(i) Explain Joule's heating law.

(ii) In practical situations, when an electric appliance is connected to a known voltage source, then how does the heating effect of electric current can be calculated?

OR

Write the relation between heat energy produced in a conductor when a potential difference V is applied across its terminals and a current I flows through for **t**.

38. **Read the text carefully and answer the questions:** **[4]**

You must have noticed many dramatic changes in your appearance as well as that of your friends as you approached 10-12 years of age. These changes associated with puberty are because of the secretion of testosterone in males and oestrogen in females. Do you know anyone in your family or friends who has been advised by the doctor to take less sugar in their diet because they are suffering from diabetes? As a treatment, they might be taking injections of insulin. This is a hormone that is produced by the pancreas.

(i) Why is pancreas a dual gland?

(ii) Name the hormone which is secreted by males and females during adolescence.

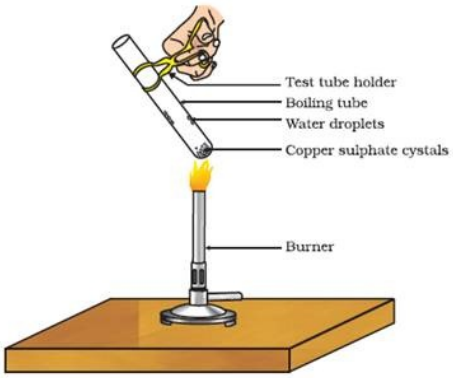
(iii) What happens if Insulin is not secreted in the proper amount?

OR

From which cells of pancreatic islets insulin and glucagon hormone are secreted?

39. **Read the text carefully and answer the questions:** **[4]**

Copper sulphate crystal contains water of crystallisation when the crystal is heated the water is removed and salt turns white. The crystal can be moistened again with water. The water of crystallisation is the fixed number of water molecules present in 1 formula unit of copper sulphate. On heating gypsum at 373K, it loses water molecules and became calcium sulphate hemihydrate.



(i) If the crystal is moistened with water, then which colour of the crystal reappears?

(ii) What is the commercial name of calcium sulphate hemihydrate?

(iii) How many water molecules are present in one formula unit of copper sulphate?

OR

What is obtained when gypsum is heated at 373K?