VELAMMAL BODHI CAMPUS

(A CBSE – IIT/NEET Integrated Sr. Sec. School)

GRADE: X **- Batch I** **PART TEST – 2** **SUB:** SCIENCE (086)

DATE: 30.10.2023 **MARKS:** 80 (3 HOURS)

General Instructions:

i. This question paper consists of 39 questions in 5 sections.

ii. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

iii. ***Section A*** *consists of 20 objective type questions carrying 1 mark each.*

iv. ***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.*

v. ***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*

vi. ***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.*

vii. ***Section E*** *consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.*

SECTION A

1. The heating element of an electric iron is made up of:
   (a) copper (b) nichrome (c) aluminium (d) iron
2. 100 J of heat is produced each second in a 4Ω resistor. The potential difference across the resistor will be:
   (a) 30 V (b) 10 V (c) 20 V (d) 25 V
3. What is the composition of Gunmetal?
   a) Lead and nickel b) Copper, Tin and zinc
   c) Copper, zinc and nickel d) Lead and zinc
4. Which among the following metals is the lightest?
   a) Aluminium b) Tin c) Lead d) Copper
5. Which of the following is an example of a saturated hydrocarbon?
   a) Ethane b) Ethene c) Ethyne d) Benzene
6. Which one of the following types of medicines is used for treating indigestion?
   (a) Antibiotic (b) Analgesic (c) Antacid (d) Antiseptic
7. Consider the following statements about an element X with number of protons 13.
   i. It forms amphoteric oxide ii. Its valency is three
   iii. The formula of its chloride is XCl_3.
   The correct statement(s) is/are
   a) I only b) II only c) I and III d) I, II and III
8. Ethane, with the molecular formula C_2H_6 has
   (a) 6 covalent bonds (b) 7 covalent bonds
   (c) 8 covalent bonds (d) 9 covalent bonds
9. Butanone is a four carbon compound with the functional group
   (a) carboxylic acid (b) aldehyde (c) ketone (d) alcohol

10. While cooking, if the bottom of the vessels is getting blackened on the outside, it means that
(a) the fuel is not cooked completely (b) the fuel is not burning completely
(c) the fuel is wet (d) the is burning completely

11. Which of the following is a totally impossible outcome of Mendel's Experiment (cross breeding pure bred tall and short pea plants)
(*a*) 3 tall 1 short plant (*b*) 24 tall and 8 short plants
(*c*) 8 tall and 0 short plants (*d*) 4 tall plants and 1 medium-height plant

12. What is the genotypic ratio of monohybrid cross
(a) 3:1 (b) 1:2:1 (c) 9:3:3:1 (d) 1:2:1:2:4:2:1:2:1

13. Bryophyllum can be propagated vegetatively by the
(a) stem (b) leaf (c) root (d) flower

14. In human males, the testes lie in the scrotum, because it helps in the
(a) process of mating (b) formation of sperms
(c) easy transfer of gametes (d) secretion of estrogen

15. What is the puberty age in human males?
(*a*) 8-10 (*b*) 10-12 (*c*) 12-14 (*d*) 14-16

16. Which is the portion on which grafting is done and it provides the roots?
(*a*) Stock (*b*) Scion (*c*) Both (a) and (b) (*d*) None of these

17. Learning a subject is related to which part of human brain?
a) Hypothalamus b) Thalamus c) Cerebellum d) Cerebrum

18. Which one is a possible progeny in F_2 generation of pure bred tall plant with round seed and short plant with wrinkled seeds?
(*a*) Tall plant with round seeds (*b*) Tall plant with wrinkled seeds
(*c*) Short plant with round seed (*d*) All of the above

Question no 19 & 20 is based on Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

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

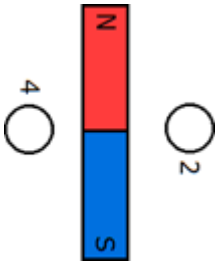
19. Assertion (A): Mutation is sudden change in the genetic material.
Reason (R): Variation is useful for the survival of species over time.

20. Assertion (A): A compass needle is placed near a current carrying wire. The deflection of the compass needle decreases when the compass needle is displaced away from the wire.
Reason (R): Strength of a magnetic field decreases as one moves away from a current carrying conductor.

SECTION B

21. State the rule used in force on a current carrying conductor in a magnetic field.

22. The diagram below shows a bar magnet surrounded by two compasses numbered 2 and 4. What directions will these compasses show?



23. Explain the formation of scum when hard water is treated with soap.

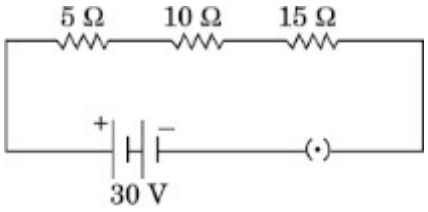
OR

Give a test that can be used to differentiate chemically between butter and cooking oil?

24. Mention the importance of DNA copying in reproduction.
25. How is brain protected from injury and shock?
26. Where is pituitary gland located and what is its function?

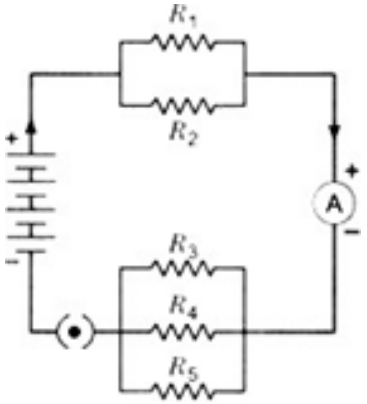
SECTION C

27. A 4 kW heater is connected to a 220V power source. Calculate
    i. Electric current passing through the heater
    ii. Resistance of the heater
    iii. Electric energy consumed in a 2hour use of the heater
28. a) How will you infer with the help of an experiment that the same current flows through every part of a circuit containing three resistors in series connected to a battery?
    b) Consider the given circuit and find the current flowing in the circuit and potential difference across the 15 Ω resistors when the circuit is closed.



OR

If in the figure R_1= 10Ω, R_2 = 40Ω, R_3 = 30Ω, R_4 = 20Ω, R_5 = 60Ω, and a 12 V battery is connected to the arrangement. Calculate



i. The total resistance in the circuit, and the total current flowing in the circuit.

29. (i) What are magnetic field lines?
    (ii) List any four properties of magnetic field lines.

30. Metal compound A reacts with dilute hydrochloric acid to produce effervescence. The gas evolved extinguishes a burning candle. Write a balanced chemical equation for the reaction if one of the compounds formed is calcium chloride?

31. How can ethanol and Ethanoic acid be differentiated on the basis of their physical and chemical properties?

32. What is regeneration? State a reason why a more complex organism cannot give rise to new individuals through this method.

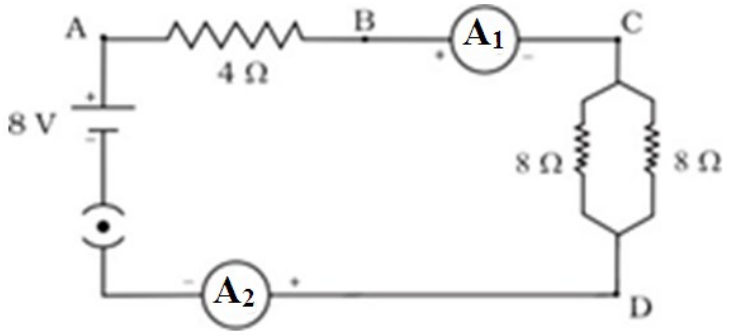
33. Define variation in relation to a species. Why is variation beneficial to the species?

Or

How is the equal genetic contribution of male and female parents ensured in the progeny?

SECTION D

34. Find out the following in the electric circuit given in Figure



i. The effective resistance of two 8 Ω resistors in the combination

ii. Current flowing through 4 Ω resistor

iii. What is the voltage at 4 Ω resister

iv. What is the difference in ammeter A_1 and A_2 reading?

v. Find the power dissipated in 4Ω resistor.

35. Draw the structure for the following compounds:

(i) Ethanoic acid (ii) Bromopentane (iii) Butane (iv) Hexanal

Or

Compounds such as alcohols and glucose also contain hydrogen but are not categorised as acids. Describe an Activity to prove it.

36. Explain the different methods of contraception?

SECTION E

37. Observe the table and answer the questions from (a) to (c).

Substance	Resistivity
A	1.6×10^{-8} Ω m
B	44×10^{-8} Ω m
C	2.63×10^{-8} Ω m
D	2300 Ω m
E	10^{17} Ω m

(a) Which of the above substances can be used as an insulator? [1]

(b) Which of the above substances can be used for the purpose of domestic wiring?

[1]

(c) Which of the above substances is used for making solar cells and transistors? Give Reason. [2]

OR

Which of the above substances is an alloy? Why

38. Metal oxides are basic in nature. But some metal oxides, such as aluminium oxide, zinc oxide, etc., show both acidic as well as basic behaviour. Such metal oxides which react with both acids as well as bases to produce salts and water are known as amphoteric oxides.

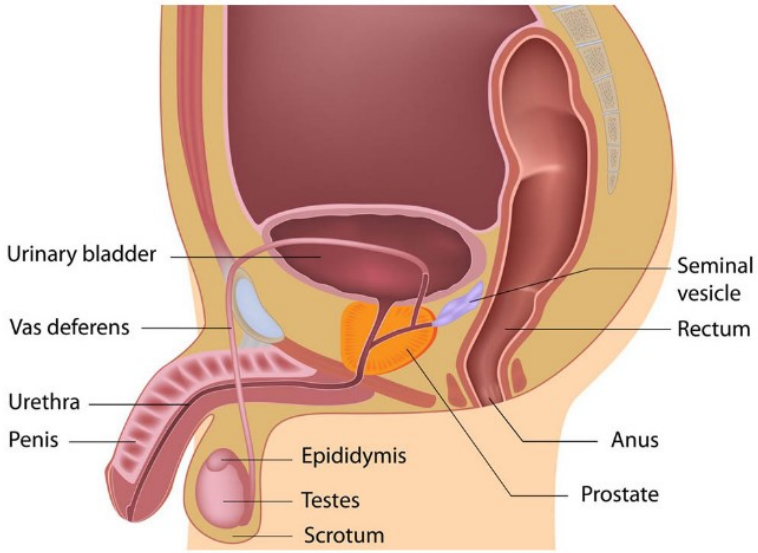
i) Write a chemical reaction of Aluminium when burnt in air

ii) Give a example of amphoteric oxide with reaction.

iii) Why potassium and sodium is kept under the kerosene oil?

iv) Name two oxide when are soluble in water and form alkalis?

39. The male reproductive system consist of portions which produce the germ-cells and other portions that deliver the germ-cells to the site of fertilisation. Testes are located outside the abdominal cavity helps in production of sperm. It also has a role of secretion of male sex hormone which brings changes in appearance seen in boys at the time of puberty. Vas deferens unites with a tube coming from urinary bladder. Urethra is a common passage for sperms and urine. Prostate gland and seminal vesicles add their secretions and help to nourish and transport sperms.



(i) Name the sex hormone associated with males.

(a) Testosterone (b) Progesterone (c) Oestrogen (d) None of these

(ii) Which of the following statements is incorrect?

(a) Sperms are present in a fluid (b) Fluid provides nutrition to sperms

(c) Fluid makes easier transportation of sperms

(d) Fluid helps to bind the sperms together

(iii) Testes are located outside the abdominal cavity in scrotum because

(a) sperms formation requires higher temperature than body temperature

(b) sperms formation requires lower temperature than body temperature

(c) it is easier to transport sperms from the scrotum (d) None of these

(iv) Which of the following statement is incorrect?
(a) Sperms and urine has a common passage from urethra.
(b) Sperms have long tail that helps them to move forward.
(c) Sperms contain genetic material.
(d) Sperms formation requires 1–3°C higher temperature than normal body temperature.

Or

(v) What is the nature of semen?
(a) slightly acidic (b) Neutral (c) Slightly basic (d) Strongly basic

****** ALL THE BEST ******