



SCIENCE

Grade 9

National Level Examination
NLE 2024

Subject Code:

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Total Questions: 50

Time: 1 hour

DO NOT OPEN THIS BOOKLET UNTIL INSTRUCTED TO DO SO

- All questions are compulsory.
- Read the instructions on the **ANSWER SHEET** and fill in your **NAME, CLASS** and **OTHER INFORMATION**.
- To mark your choice of answer by darkening the circles in the **ANSWER SHEET**, use a **BLUE/BLACK BALL PEN** only.
- You **MUST** record your answers on the **ANSWER SHEET** only.
- There are **50 MULTIPLE CHOICE QUESTIONS**.
Use the information provided to choose the **BEST** answer among the four possible options. On your **ANSWER SHEET** fill in the circle that matches your answer.
- Marks are **NOT** deducted for incorrect answers.
- Return the **ANSWER SHEET** to the invigilator at the end of the examination.
- You are **NOT** allowed to use a calculator.
You may use a ruler and spare paper for rough work.



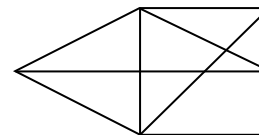
This question paper contains a total of 50 questions divided into three sections—A, B and C.

Read the instructions carefully before attempting these questions.

Section–A (Logical Reasoning)

1. Identify the number of triangles in the following figure.

(A) 10 (B) 25
(C) 5 (D) 15



2. How many pairs of letters are there in the given word each of which has as many letters between them in the word as in the English alphabet?

S I G N A T U R E

(A) 3 (B) 4
(C) 5 (D) 6

3. In a certain language, 'RAMESH' is coded as 'ZQUTVP' and 'MEMBER' is coded as 'UTUWTZ'. Which word would be coded as 'WTUTVP'?

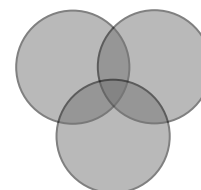
(A) BEEMSH (B) BMEESH
(C) BEMESH (D) MEBESH

4. Ankur's mother is the mother-in-law of Priya's mother. If Ankur has no brother, how is Priya related to Ankur?

(A) Daughter (B) Sister
(C) Daughter-in-law (D) Data inadequate

5. Which of the items given are represented by the following Venn diagram?

(A) Singers, Boys, Girls
(B) Singers, Dancers, Couples
(C) Major, Air commodore, Naval chief
(D) Hands, Fingers, Wrists



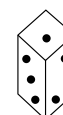
6. (A) 35 (B) 37
(C) 45 (D) 46

7. Five boys Rohit, Sohan, Rohan, Pinku and Rihan are sitting in a row. Rohit is adjacent to Rihan. Rihan is in the middle of the row. Rohit is not adjacent to Sohan or Rohan. Then Pinku is adjacent to whom?

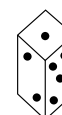
(A) Rohan (B) Rohit
(C) Sohan (D) Pinku

8. Three different positions of a dice as shown. Find the number of dots on the face opposite the face with one dot.

(A) 2 (B) 6
(C) 4 (D) 5



(i)



(ii)



(iii)

9. How many degrees does the minute hand cover in the same time, in which the hour hand covers 20° ?

(A) 150° (B) 200°
(C) 180° (D) 240°

10. Choose the set of numbers which is similar to the given set.

81, 77, 69

(A) 64, 61, 53

(C) 92, 88, 79

(B) 56, 52, 44

(D) 75, 71, 60

Section–B (Subject Specific)

11. An object moves 5 km in a straight line in one direction. What will be the value of its displacement?

(A) Zero km

(C) 10 km

(B) 5 km

(D) 25 km

12. Select the correct example of uniform motion.

(A) Zig-zag motion of housefly

(C) Motion of soldiers in a parade

(B) Motion of vehicle in market

(D) Motion of a running horse

13. Match column I with column II and select the correct answer using the codes given below:

Column I (Discovery)	Column II (Scientist)
P. Neutron	1. Ernest Rutherford
Q. Electron	2. Sir J Chadwick
R. Proton	3. J J Thomson
S. Atomic theory	4. John Dalton

(A) P – (2), Q – (4), R – (3), S – (1)

(C) P – (2), Q – (4), R – (1), S – (3)

(B) P – (3), Q – (4), R – (2), S – (1)

(D) P – (2), Q – (3), R – (1), S – (4)

14. Few metals which are least reactive are available in free state. Select from the following a set of three such metals.

(A) Copper, gold, iron

(C) Aluminium, copper, silver

(B) Silver, gold, platinum

(D) Gold, iron, silver

15. Select the type of energy conversion that takes place in a torch.

(A) Chemical → Electrical → Light

(C) Light → Chemical → Electrical

(B) Electrical → Chemical → Light

(D) Electrical → Light → Chemical

16. Read the given statements.

(i) Cultivation practices and crop yield are related to weather, soil quality and availability of water.

(ii) Deficiency of nutrients affects physiological processes in plants.

(iii) Sometimes fertilizers get washed away due to excessive irrigation and are not fully absorbed by the plants.

(iv) Organic farming is a farming system with maximum use of chemicals as fertilizers.

(v) The check-dams stop the rainwater from flowing away and enhance soil erosion.

Which of the following statements is/are INCORRECT?

(A) (i), (ii) and (iii) only

(C) (iv) and (v) only

(B) (v) only

(D) All of these

17. Archana was making tea in a kettle. Suddenly, she felt intense heat from the puff of steam gushing out of the spout of the kettle. She wondered whether the temperature of the steam was higher than that of the water boiling in the kettle. This was due to _____.

(A) Latent heat of fusion

(C) Melting point

(B) Latent heat of vaporisation

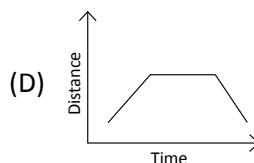
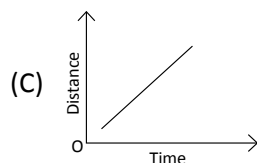
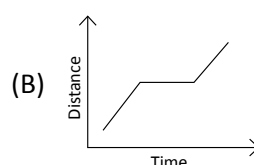
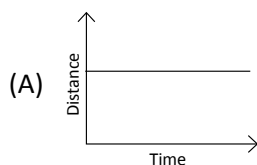
(D) Boiling point



18. Match the Column I with Column II and select the correct answer.

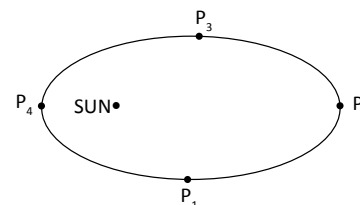
Column I	Column II
(i) Mitochondria	(p) Suicidal bags
(ii) Golgi apparatus	(q) Powerhouse of cell
(iii) Lysosomes	(r) Protein factories
(iv) Ribosomes	(s) Packaging of materials

- (A) (i) – (r), (ii) – (p), (iii) – (q), (iv) – (s) (B) (i) – (r), (ii) – (q), (iii) – (s), (iv) – (p)
 (C) (i) – (s), (ii) – (r), (iii) – (p), (iv) – (q) (D) (i) – (q), (ii) – (s), (iii) – (p), (iv) – (r)
19. Simple distillation can be used to separate _____.
 (A) a mixture of benzene (b.p 80°C) and toluene (b.p 110°C)
 (B) a mixture of ether (b.p 35°C) and toluene (b.p 110°C)
 (C) a mixture of ethanol (b.p 78°C) and propanone (b.p 50°C)
 (D) All of these
20. What is the charge and mass of the proton present in the nucleus of helium atom, respectively?
 (A) +2, 4 u (B) +1, 1 u
 (C) +2, 1 u (D) +2, 2 u
21. There are three cells A, B and C. Cell A is smallest cell which is about 0.1 micron in diameter. Cell B is the longest cell which may measure about a metre in length. Cell C is the largest cell, which is about 17-135 mm. Identify all these three cells.
 (A) A–White blood cell, B–Sperm of an elephant, C–Egg cell of an elephant
 (B) A–Red blood cell, B–Sperm of a hippopotamus, C–Egg cell of a hippopotamus
 (C) A– Sperm of an elephant, B–Egg cell, C–Nerve cell
 (D) A–Mycoplasma cell, B–Nerve cell, C–Egg cell of ostrich
22. The following options represent the distance-time graph of a particle. Which of them is INCORRECT?

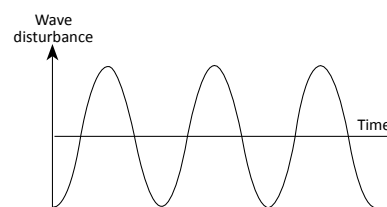
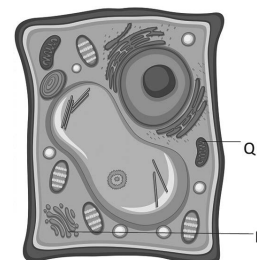


23. All planets revolve around Sun in elliptical orbit. The kinetic energy of the planet will be maximum when planet is at _____.

- (A) P₁ position (B) P₂ position
 (C) P₃ position (D) P₄ position



24. An object of mass 1 kg is thrown upward. It reaches a maximum height of 2 m. What is the work done by the force of gravity acting on vertical motion?
- (A) -9.8 J (B) 9.8 J
(C) 19.6 J (D) -19.6 J
25. Study the given diagram carefully and read the given statements.
- P is the organelle that is involved in the formation of lysosomes.
 - Q is also known as strange organelle as it has its own DNA.
 - P and Q are found only in plant cells.
 - The main function of Q is to detoxify poisons and drugs.
- Out of these statements, select the correct ones.
- (A) (iii) and (iv) only (B) (iii) only
(C) (i) and (ii) only (D) All of these
26. Read the given statements and select the correct one.
- (A) Apical meristem is present at the growing tips of stems only.
(B) Collenchyma allows easy bending in various parts of a plant without breaking.
(C) Husk of a coconut is made of sclerenchymatous tissue.
(D) Both (B) and (C)
27. A science teacher gave different mixtures to four groups (M, N, O and P) of students to separate their components. Which of the following group was NOT following the correct method?
- (A) Group M was separating a mixture of ethyl alcohol and water by moving separating funnel.
(B) Group N was separating a mixture of ammonium chloride and sodium chloride using sublimation.
(C) Group O was separating a mixture of iron pins and sand by using a magnet.
(D) Group P was separating fine mud particles suspended in water using sedimentation and decantation.
28. How many electrons are present in M shell of an element with atomic number 20?
- (A) 5 (B) 8
(C) 12 (D) 18
29. Which of the following statement is true about the nucleus of a cell?
- (A) It is bounded by two membranes. (B) It controls all activities in the cell.
(C) It contains genetic information. (D) All of these
30. Which of the following helps in repair of tissue and fills up the space inside the organ?
- (A) Tendon (B) Adipose tissue
(C) Areolar tissue (D) Cartilage
31. Which of the following tissues is responsible for receiving, interpreting and producing response to stimulus?
- (A) Muscle tissue (B) Connective tissue
(C) Nervous tissue (D) Epithelial tissue
32. Which of the following cells are produced in the long bones of humans?
- (A) Red blood cells (B) Striated cells
(C) Adipocytes (D) Sarcoplasm
33. Select the correct example for the type of sound shown by the given graph.
- (A) Plane taking off 100m away
(B) Factory machine noise
(C) Explosion
(D) All of these





34. Which of the following organisms cause/s diseases in poultry?
 (A) Bacteria (B) Fungi
 (C) Virus (D) All of these

35. Look at the given figure.
 What does this experiment show?

- (A) Reflection (B) Tyndall Effect
 (C) Cooling Effect (D) None of these



Instruction: Q. 36 to 40 are two-key based questions having four options A, B, C and D out of which TWO are correct.

36. Which of the following are covered with simple squamous epithelial tissues?
 (A) Esophagus (B) Kidney tubules
 (C) Lining of mouth (D) Salivary glands
37. Select the correct statement regarding atomic number.
 (A) It is the number of protons of an atom.
 (B) It is denoted by 'Z'.
 (C) It is denoted by 'A'.
 (D) It is sum of the total number of protons and neutrons.
38. Which of the following elements have equal number of protons and neutrons inside them?
 (A) Magnesium (B) Boron
 (C) Silicon (D) Lithium
39. Which of the following are INCORRECT options?
 (A) The plasma membrane is flexible and is made up of organic molecules called lipids and proteins.
 (B) Amoeba acquires its food through the process known as endocytosis.
 (C) In plants, the cell wall lies inside the plasma membrane.
 (D) The cytoplasm is the fluid content found only outside the plasma membrane.
40. Weeds are the unwanted plants in the cultivated field which compete for food, space and light with cultivated crops. Which of the following weeds are correctly paired with their common names?
 (A) *Cyperus rotundus* – Latjeera (B) *Parthenium* – Gajar ghas
 (C) *Achyranthes aspera* – Motha (D) *Xanthium* – Gokhroo

Section–C (Competency Based/PISA Based)

41. A wooden block of mass 40 kg accelerates at the rate of 3 m/s^2 . What will be the force applied on the block?
 (A) 120 N (B) 40 N
 (C) 90 N (D) 80 N
42. Rahul placed a piece of cork into the water. The cork starts floating on the surface of water due to the upward buoyant force from water. If he pushed the cork more inside the water by applying the force than the buoyant force:
 (A) will decrease as the cork is immersed into the water
 (B) will increase as the cork is immersed into the water
 (C) will first increase and then decrease as the cork is immersed more into the water
 (D) will remain the same as long as the cork is inside the water.
43. 'X' and 'Y' are two species having the same number of neutrons and protons, but different numbers of electrons. Which of the following statement is correct regarding this?
 (A) 'X' and 'Y' are isotopes of same element. (B) They are atoms and ions of same element.
 (C) They are atoms and ions of different elements. (D) They are oppositely charged ions of different elements.

44. Read the following statements and select the correct option:

Statement 1: The electrons in the outermost shell of an atom are called its valence electrons.

Statement 2: The valence electrons take part in chemical reactions.

- (A) Both statements 1 and 2 are correct. (B) Both statements 1 and 2 are incorrect.
(C) Statement 1 is correct but 2 is incorrect. (D) Statement 1 is incorrect but 2 is correct.

45. If the tip of sugarcane plant is removed from the field even then it keeps growing in length. It is due to the presence of _____.

- (A) cambium (B) apical meristem
(C) lateral meristem (D) intercalary meristem

46. Read the following statements and select the correct option.

Statement 1: All bodies fall towards the earth with the same acceleration.

Statement 2: The acceleration due to gravity of the earth does not depend upon the mass of the falling body.

- (A) Both statements 1 and 2 are correct. (B) Both statements 1 and 2 are incorrect.
(C) Statement 1 is correct but 2 is incorrect. (D) Statement 1 is incorrect but 2 is correct.

47. Rohan's mother is a teacher. She asked him to wear seat belts while she was driving the car. She explained that the seat belts are provided in the cars so that if the car stops suddenly due to an emergency braking, the persons sitting on the front seats are not thrown forward violently and saved from getting injured. She also asked Rohan to find out the law that works here due to which a person falls in forward direction on the sudden stopping of the car.

From the given options select the answer that must be given by Rohan.

- (A) Newton's first law of motion (B) Newton's second law of motion
(C) Newton's third law of motion (D) Law of conservation of momentum

48. Pick out the membranous cellular organelles.

- (A) Endoplasmic reticulum, ribosomes and nucleus (B) Lysosome, Golgi apparatus and mitochondria
(C) Nuclei, ribosomes and mitochondria (D) Chromosomes, ribosomes and endoplasmic reticulum

Read the given information and answer the following PISA based questions:

A copying machine for living beings?

Without any doubt, if there had been elections for the animal of the year 1997, Dolly would have been the winner! Dolly is a Scottish sheep that you see in the photo. But Dolly is not just a simple sheep. She is a clone of another sheep. A clone means: a copy. Cloning means copying 'from a single master copy'. Scientists succeeded in creating a sheep (Dolly) that is identical to a sheep that functioned as a 'master copy'. It was the Scottish scientist Ian Wilmut who designed the 'copying machine' for sheep. He took a very small piece from the udder of an adult sheep (sheep 1). From that small piece he removed the nucleus, then he transferred the nucleus into the egg-cell of another (female) sheep (sheep 2). But first he removed from that egg-cell all the material that would have determined sheep 2 characteristics in a lamb produced from that egg-cell. Ian Wilmut implanted the manipulated egg-cell of sheep 2 into yet another (female) sheep (sheep 3). Sheep 3 became pregnant and had a lamb: Dolly. Some scientists think that within a few years it will be possible to clone people as well. But many governments have already decided to forbid cloning of people by law.



49. Which sheep is Dolly identical to?

- (A) Sheep 1 (B) Sheep 2
(C) Sheep 3 (D) Dolly's father

50. The part of the udder that was used is described as "a very small piece".

From the article text you can work out what is meant by "a very small piece". That "very small piece" is _____.

- (A) A gene (B) A cell
(C) A cell nucleus (D) A chromosome

