ANNUAL EXAMINATION

Question Paper 2023

NCERT BASED SYLLABUS

FOR CBSE AND STATE BOARD
FOLLOWING NCERT

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ANNUAL EXAMINATION (2022-23)

Class - IX | **Subject – Science**
Time – 3 Hours | **Maximum Marks - 80**

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 body A can move with a speed of 8 m/s against the frictional force of 10 N, and the body B can move with a speed of 4 m/s against the frictional force of 25 N. The ratio of power delivered by A with respect to B is:- [1]
   (a) 4 : 5
   (b) 2 : 5
   (c) 3 : 5
   (d) 6 : 5

2. According to the third law of motion, action and reaction. [1]
   (a) always act on the same body
   (b) always act on different bodies in opposite directions
   (c) have same magnitude and directions
   (d) act on either body at normal to each other

3. The linear momentum of a body of mass 2 kg is 16 kgm/s. What is its K. E? [1]
   (a) 64 J
   (b) 70 J
   (c) 60 J
   (d) none of these

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4. The echo-receiver of a sonar attached to a ship, receives the echo from the bottom of sea 4 seconds after the ultrasonic waves were sent into the sea. [1]
If the speed of sound in water is 1500 m/s, then what is the depth of the sea? [1]
(a) 6000 m
(b) 3000 m
(c) 15000 m
(d) 3500 m

Directions: In the given question, a statement of Assertion is given and a corresponding statement of Reason is given just below it. Of the statements, given below, mark the correct answer as:
(a) Both assertion and reason are true and reason is the correct explanation of assertion.
(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both Assertion and Reason are false.

5. **Assertion :** A wave is a disturbance that moves through a medium when the particles of the medium set neighboring particles into motion.
Reason: A particle of the medium in contact with the vibrating object is first displaced from its equilibrium position and produces a wave. [1]

SECTION:- B

6. Between two objects of masses 16 kg and 4 kg placed 5m apart, where should a third object of mass 1 kg be placed so that net gravitational force on it be zero. [2]

OR

The gravitational force between two objects is F. If the masses of both objects are halved and the distance between them also becomes half, then find the new gravitational force acting between them. Does the gravitational force between them depend on medium between them?

SECTION :- C

7. (a) Write statement of Newton's second lows of motion. Explain Mathematical derivation of Newton's second law of motion.
(b) A bullet of mass 20 gm is horizontally fired with a velocity150 m/s from a pistol of mass 2kg. What is the recoil velocity of the pistol? [2+1=3]

8. (a) A person has a hearing range from 20 Hz to 20 kHz. What are the typical wavelengths of sound waves in air corresponding to these two frequencies? Take the speed of sound in air as 344 ms^{-1}.
(b) Explain how flaws in a metal block can be detected using ultrasound. [2+1=3]

OR

An observer standing between two cliffs fires a gun. He hears one echo after 1.5 s and another after 2.4 s. If the speed of sound is 340 m/s, find (a) the distance of the observer from the first cliff and (b) distance between the cliffs.

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9. (a) Define buoyancy. Name the factor on which buoyant force acting on a body depends.
(b) A cubical body of volume 64 cm^3 is immersed fully into water. Find the buoyant force acting on the body. [2+1=3]

SECTION :- D

10. (a) Define kinetic energy. Derive kinetic energy of a body of mass m.
(b) An engine can pump 3000 kg of water to a vertical height of 45 metre in 1 minute. Calculate the work done by the engine and power delivered by it. [g = 9.8 m/s^2; Density of water = 10^3 kg/m^3]. [3+2= 5]

SECTION:- E (Case Study types question)

11. When an object is in motion, its position changes with time. So, the quantity that describes how fast is the position changing w.r.t. time and in what direction is given by average velocity. It is defined as the change in position or displacement (Δx) divided by the time interval (Δt) in which that displacement occurs. However, the quantity used to describe the rate of motion over the actual path, is average speed. It defined as the total distance travelled by the object divided by the total time taken. [1+1+2=4]

(a) A 250 m long train is moving with a uniform velocity of 45 km/h. Find the time taken by the train to cross a bridge of length 750 m.
(b) A cyclist is moving on a circular track of radius 40 m completes half a revolution in 40 s. what is the average velocity in half revolution (in m/s) ?
(c) Average speed of a car between points A and B is 20 m/s, between B and C is 15 m/s and between C and D is 10 m/s. What is the average speed between A and D, if the time taken in the mentioned sections is 20s, 10s and 5s, respectively?

OR

(c) A particle moves in a straight line with a constant acceleration. It changes its velocity from 10 m/s to 20 m/s, while passing through a distance 135 m in t second. Calculate the value of **t**.

CHEMISTRY

SECTION:- A (1×8=8)

1. As the solid melts to form liquid,
(a) compressibility increases
(b) interparticle force of attraction decreases
(c) interparticle space increases
(d) all of these [1]

2. Which of the following is heterogeneous?
(a) brass
(b) smoke
(c) air
(d) salt solution [1]

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3. The atomicity of Sodium Carbonate is
(a) 5
(b) 4
(c) 6
(d) 2 [1]

4. The Latin name of Potassium is
(a) Potash
(b) Pome
(c) Katrium
(d) Kalium [1]

5. Which of the following correctly represents the electronic configuration of Ca atom?
(a) 2,8,10
(b) 2,8,2,8
(c) 2,8,8,2
(d) none of the above [1]

6. Alpha particles are composed of positively charged
(a) hydrogen nuclei
(b) sodium nuclei
(c) aluminum nuclei
(d) helium nuclei [1]

7. An atom with 6 protons and 8 neutrons will have a valency of
(a) 2
(b) 6
(c) 4
(d) 0 [1]

8.**Two statements are given below-one labelled as assertion (A) and the other labelled as reason (R).Select the correct answer to this question from the following codes a, b, c and d**. [1]
(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion
(b) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion
(c) Assertion is true and Reason is false
(d) Assertion is false and Reason is false

Assertion: Atom is electrically neutral.
Reason : The atom always contains neutrons in its nucleus.

SECTION:- B [2x1]

9. (a) Explain why does it take more time for wet clothes to dry up on cloudy days?
(b) Covert 10 K to ^{0} C and 35 ^{0}C to K

OR

(a) Why is ice at 273 K more effective in cooling than water at same temperature?
(b) Mention the two conditions necessary for liquefaction of a gas.

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SECTION:- C [3x2]

10. (a) State 2 reasons to prove that water is a compound and not a mixture of hydrogen and oxygen .
    (b) Specify the dispersed phase and dispersion medium of milk of magnesia.
    (c) Calculate the concentration of a solution which contains 150 g of salt in 250 g of water.

11. (a) Give the chemical formula of Ammonium sulphate and Calcium chloride.
    (b) What will be the mass of CO_2 formed when 6g of carbon is burnt in excess of O_2 ?
    (c) Define atomic mass unit.

SECTION:- D

12. From the table below answer the following:- [1x5]

Element	A	B	C	D	E	F
Electron	10	18	17	10	17	20
Proton	12	18	17	9	17	20
Neutron	12	22	20	10	18	20

Identify a cation, anion, noble gas , isobar and isotope and also give valid reason for your choice.

OR

(a) State 2 important postulates of Bohr's model of an atom.
(b) Write the electronic configuration of X_{13} and classify it as a metal / non metal.
(c) Why do isotopes have same chemical property but different physical property?
(d) Name an element which has two valencies.
(e) Which out of Cl and Cl^- is more stable and why?

SECTION:- E [1x4]

Read the below paragraph carefully and answer the following questions :-

13. Our planet 'Earth' is a self sustained unit where biotic and abiotic components together make a perfect place for the survival of life. In recent times, a sudden increase in natural disasters has been observed due to the exploitation of natural resources. This has led to imbalance in our ecosystem caused by phenomena like green house effect, global warming, ozone hole and alarming rise in pollution of air ,water and soil.
    (a) What are the two steps that can be taken to reduce pollution of air ?
    (b) Specify two important roles of soil in our life.
    (c) Name any two important uses of water to living beings .
    (d) Write one essential function performed by the ozone layer

OR

What do you mean by green house effect?

BIOLOGY

SECTION:- A

1. Which one of the following nutrients is not available in fertilizers? [1]
    (a) Nitrogen
    (b) Phosphorus
    (c) Iron
    (d) Potassium

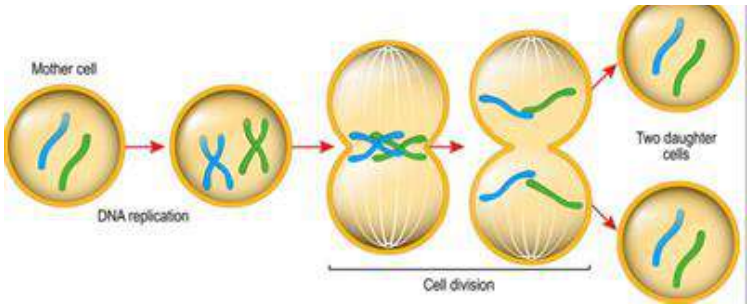
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2. Which of the following are Indian cattle? [1]

(i) Bos indicus
(ii) Bos domestica
(iii) Bos bubalis
(iv) Bos vulgaris

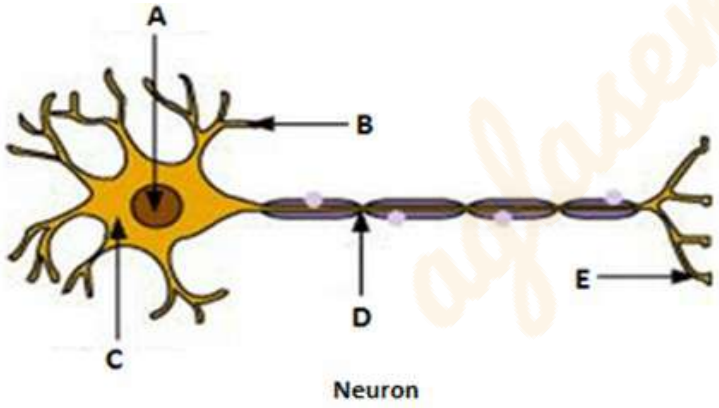
(a) (i) and (iii) (b) (i) and (ii) (c) (ii) and (iii) (d) (iii) and (iv)

3. Identify the process



(a) Process of mitosis
(b) Process of amitosis
(c) Process of meiosis I
(d) Process of meiosis II [1]

4. Given below is a diagram showing the structure of a neuron tissue.



Choose the correct labeling for the parts A, B, C, D and E.

(a) A – Nucleus; B – Cell body; C – Dendrite; D – Axon; E – Nerve ending.
(b) A – Nucleus; B – Dendrite; C – Cell body; D – Nerve ending; E – Axon.
(c) A – Nucleus; B – Axon; C – Cell body; D – Dendrite; E –Nerve ending.
(d) A – Nucleus; B – Dendrite; C – Cell body; D – Axon; E – Nerve ending [1]

5. If the tip of the sugarcane plant is removed from the field, even then it keeps on growing in length. It is due to the presence of:

(a) Cambium
(b) Apical meristem
(c) Lateral meristem
(d) Intercalary meristem [1]

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(b) Both assertion and reason are true but reason is not the correct explanation of assertion.
(c) Assertion is true but reason is false.
(d) Both Assertion and Reason are false.

6. **Assertion:** Inter cropping prevents pests.
Reason: Plant pests can be controlled biologically by their natural parasites and pathogens. [1]

7. **Assertion :** The inner lining of intestine has pillar like epithelial cells. [1]
Reason : Columnar epithelium facilitates absorption and secretion.

SECTION:- B

8. (a) Why is endocytosis found in animals only and not in plants ?
(b)What is the importance of pores present on the nuclear membrane? [2]

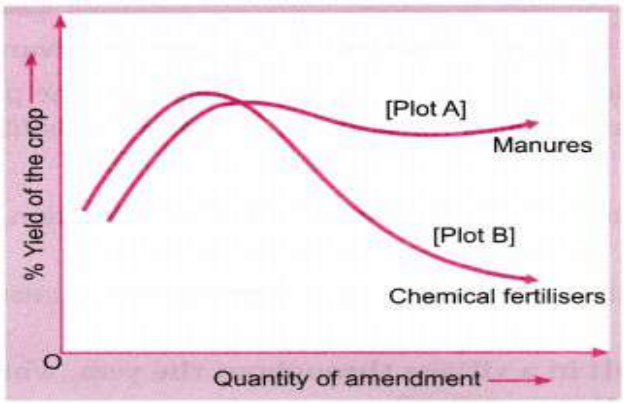
9. If there is low rainfall in a village throughout the year, mention any two measures which you will suggest to the farmers for better cropping? [2]

10. Explain the significance of the following: [2]
(a) Hair- like structures on root epidermal cells
(b) Presence of chemical suberin in cork cells.

11. (a) Mention two advantages of beekeeping?
(b) Write any two desirable traits in bees [2]

SECTION:- C

12. Figure shows the two crop fields [plots A and B] have been treated by manures and chemical fertilisers respectively, keeping other environmental factors same.
Observe the graph and answer the following questions.
(i) Why does plot B show sudden increase and then gradual decrease in yield?
(ii) Why is the highest peak in plot A graph slightly delayed?
(iii) What is the reason for the different pattern of the two graphs? [3]



OR

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Differentiate between:

a) Inland fishery and marine fishery
b) Apiculture and aquaculture
c) Intercropping and mixed cropping

13. Name the organelles which show the analogy written as under [3]

(a) Transporting channels of the cell
(b) Power house of the cell
(c) Packaging and dispatching unit of the cell
(d) Digestive bag of the cell
(e) Storage sacs of the cell
(f) Kitchen of the cell.

SECTION:- D

14. (a) Draw well labelled diagrams of various types of muscles found in human body.
(b) Diffferentiate between them on the basis of structure, function and location. [5]

OR

(a) Draw a well labelled diagram to show the location of meristematic tissues in plant body
(b) Distinguish between
(i) meristematic tissue and permanent tissue.
(ii) Simple tissue and complex tissue
(iii) Epidermis and epithelium

SECTION: -E

15. Read the text carefully and answer the questions:

Poultry is the rearing of domesticated fowl (chicken), ducks, geese, turkey and some varieties of pigeon for their meat and eggs. Poultry birds are of two types that is broilers and layers. One is specialized meat-producing poultry birds while other is egg-laying poultry birds. The tremendous rise in the availability of poultry products is called Silver Revolution.



i) What is the meaning of layers regarding poultry?
ii) Enlist the name of Indigenous and Exotic breed of poultry birds.
iii) Distinguish between layers and broilers.

OR

iii) Mention two desirable traits required to develop new varieties in poultry farming [4]

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