


## NSO Class 08

Total Questions: 35

Time: 60 min

Physics 

- A box has dimensions  $L=20$  cm,  $B=10$  cm, and  $H=5$  cm. The mass of the box is 2 kg. On which face must the box rest on a table to exert the maximum pressure on it? (Take  $g=10$  m/s<sup>2</sup>)
  - Face with dimensions 20 cm $\times$ 10 cm
  - Face with dimensions 10 cm $\times$ 5 cm
  - Face with dimensions 20 cm $\times$ 5 cm
  - The pressure is the same regardless of the face.
- Two plane mirrors are placed at an angle of 60° to each other. A point object is placed symmetrically between them. What is the total number of images formed?
  - 3
  - 4
  - 5
  - 6
- The graph shows the distance-time relationship for two objects, P and Q, moving on a straight path. Which statement is a **correct interpretation** of the graph?
  - Object P is moving with a greater speed than Q.
  - Object Q has a non-uniform motion.
  - Both objects are at rest.
  - Object P has a negative acceleration.
- A pendulum oscillates 40 times in 4 seconds. What is its frequency and time period?
  - Frequency = 10 Hz, Time Period = 0.1 s
  - Frequency = 0.1 Hz, Time Period = 10 s
  - Frequency = 160 Hz, Time Period = 0.00625 s
  - Frequency = 10 Hz, Time Period = 1 s
- In an electroplating setup, a steel spoon is to be coated with copper. Which of the following arrangements is correct?
  - Spoon at the anode, copper plate at the cathode, copper sulphate solution as electrolyte.
  - Spoon at the cathode, copper plate at the anode, copper sulphate solution as electrolyte.
  - Spoon at the anode, copper plate at the cathode, distilled water as electrolyte.
  - Spoon at the cathode, carbon rod at the anode, sodium chloride solution as electrolyte.
- If you push a heavy box across the floor, the force of friction acting on the box is an example of:
  - Static friction
  - Sliding friction
  - Rolling friction
  - Fluid friction
- A person suffering from myopia cannot see distant objects clearly, while a person with hypermetropia cannot see nearby objects clearly. Which corrective lenses are used for these defects?
  - Myopia: Concave lens; Hypermetropia: Convex lens
  - Myopia: Convex lens; Hypermetropia: Concave lens
  - Both require concave lenses.
  - Both require convex lenses.
- During a thunderstorm, it is safer to be inside a car than standing under a tree because:

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(A) The rubber tires of the car insulate you from the ground.

(B) The metal body of the car acts as a Faraday cage, conducting the lightning around the occupants to the ground.

(C) A car is heavier and cannot be struck by lightning.

(D) The tree attracts lightning more than the car.

9. Sound travels at approximately 340 m/s in air and 1500 m/s in water. A sonar pulse is sent from a ship and its echo from the seabed is received after 2 seconds. What is the depth of the sea?

(A) 340 m

(B) 680 m

(C) 1500 m

(D) 3000 m

10. Which of the following phenomena is NOT caused by the atmospheric refraction of light?

(A) Twinkling of stars.

(B) The sun appearing flattened during sunrise and sunset.

(C) The formation of a rainbow.

(D) The sun being visible about 2 minutes before actual sunrise.

11. Two balls, one of iron and one of plastic of the same size, are dropped from the same height. The force of friction (air resistance) acting on them will be:

(A) More on the iron ball.

(B) More on the plastic ball.

(C) Equal on both balls.

(D) Zero on both balls.

12. A car starts from rest and accelerates uniformly to a speed of 20 m/s in 5 seconds. What is the acceleration of the car?

(A) 2 m/s<sup>2</sup>

(B) 4 m/s<sup>2</sup>

(C) 5 m/s<sup>2</sup>

(D) 100 m/s<sup>2</sup>

#### Chemistry □

13. An experiment was conducted to study displacement reactions. Four metals P, Q, R, and S were added to aqueous salt solutions as shown in the table. '✓' means a reaction occurred and 'X' means no reaction.

Metal	Solution of P	Solution of Q	Solution of R	Solution of S
P	-	✓	✓	X
Q	X	-	X	X
R	X	✓	-	X
S	✓	✓	✓	-

| P | - | ✓ | ✓ | X |

| Q | X | - | X | X |

| R | X | ✓ | - | X |

| S | ✓ | ✓ | ✓ | - |

What is the correct order of reactivity?

(A) S > P > R > Q

(B) P > S > R > Q

(C) Q > R > P > S

(D) S > R > P > Q

14. Which of the following is a thermosetting plastic used for making electrical switches and handles of cooking utensils?



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- (A) Polyvinyl Chloride (PVC)  
(B) Melamine  
(C) Polyethene  
(D) Bakelite
15. When a magnesium ribbon is burnt in the air, it forms a white ash (Magnesium Oxide). If this ash is dissolved in water, the resulting solution will:
- (A) Turn red litmus blue, indicating it is basic.  
(B) Turn blue litmus red, indicating it is acidic.  
(C) Have no effect on litmus, indicating it is neutral.  
(D) Bleach the litmus paper.
16. The process of **fractional distillation** is used to separate petroleum into its various components. Which of the following correctly lists the fractions from **highest boiling point to lowest boiling point**?
- (A) LPG, Petrol, Kerosene, Diesel, Lubricating oil  
(B) Lubricating oil, Diesel, Kerosene, Petrol, LPG  
(C) Petrol, Diesel, Kerosene, LPG, Lubricating oil  
(D) Diesel, Lubricating oil, Kerosene, Petrol, LPG
17. Which statement correctly describes the difference between a metal and a non-metal?
- (A) Metals are brittle; non-metals are malleable.  
(B) Metals form acidic oxides; non-metals form basic oxides.  
(C) Metals are good conductors of electricity; non-metals are generally poor conductors.  
(D) Metals have low melting points; non-metals have high melting points.
18. The incomplete combustion of a fuel like coal or petroleum produces a highly poisonous gas. Which gas is it?
- (A) Carbon dioxide (CO<sub>2</sub>)  
(B) Sulphur dioxide (SO<sub>2</sub>)  
(C) Carbon monoxide (CO)  
(D) Nitrogen dioxide (NO<sub>2</sub>)
19. Why is sodium metal stored in kerosene?
- (A) To prevent it from sublimating.  
(B) To prevent it from reacting vigorously with oxygen and moisture in the air.  
(C) Because it is a key ingredient in kerosene.  
(D) To keep it soft and easy to cut.
20. Which of the following is NOT a property of synthetic fibres?
- (A) They are durable and wrinkle-resistant.  
(B) They are generally cheaper than natural fibres.  
(C) They are biodegradable and eco-friendly.  
(D) They dry up quickly and are easy to maintain.
21. Gold jewellery is often made from an alloy of gold with copper or silver. Why is pure gold (24-carat) not typically used?
- (A) Pure gold is too expensive.  
(B) Pure gold is very soft and not durable enough for jewellery.  
(C) Pure gold is a poor conductor of heat.

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- (D) Pure gold is not lustrous.
22. What are the products when a non-metal like Sulphur reacts with a concentrated acid like Nitric acid?
- (A) A basic oxide and hydrogen gas.  
(B) A salt and water.  
(C) An acidic oxide, water, and another gas.  
(D) No reaction occurs.
23. Which type of coal has the highest carbon content and is considered the highest quality of coal?
- (A) Lignite  
(B) Peat  
(C) Bituminous  
(D) Anthracite
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- Biology** □
24. A student observed a cell under a microscope and noted the presence of a cell wall, a large central vacuole, and chloroplasts. The student was most likely observing:
- (A) A human cheek cell  
(B) A bacterial cell  
(C) An amoeba  
(D) A plant cell from a leaf
25. The rhizobium bacterium, which lives in the root nodules of leguminous plants, plays a crucial role in the nitrogen cycle. What is its primary function?
- (A) Denitrification (converting nitrates to nitrogen gas)  
(B) Nitrification (converting ammonia to nitrates)  
(C) Nitrogen fixation (converting atmospheric nitrogen into usable compounds)  
(D) Ammonification (decomposing organic matter into ammonia)
26. Which of the following correctly pairs a disease with its causative microorganism and mode of transmission?
- (A) Malaria - Virus - Mosquito bite  
(B) Cholera - Bacterium - Contaminated water  
(C) Rust of wheat - Protozoan - Air  
(D) AIDS - Bacterium - Physical contact
27. The diagram shows the structure of a human sperm cell. What is the primary function of the part labelled 'X' (the tail/flagellum)?
- (A) To carry genetic material.  
(B) To provide energy for movement.  
(C) To penetrate the egg.  
(D) To facilitate movement towards the egg.
28. In the process of fertilization in humans, what happens?
- (A) The nucleus of a sperm fuses with the nucleus of an ovum.  
(B) An embryo develops into a foetus.  
(C) The ovary releases an egg.  
(D) The zygote implants in the wall of the uterus.



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29. A national park is a protected area reserved for wildlife where they can freely use the habitats and natural resources. Which of the following activities is strictly prohibited in a national park?
- (A) Scientific research  
(B) Tourism  
(C) Grazing, poaching, and cultivation  
(D) Reforestation projects
30. Which of the following organelles is known as the "control center" of the cell and contains the genetic material?
- (A) Mitochondrion  
(B) Ribosome  
(C) Nucleus  
(D) Cytoplasm
31. Pasteurization of milk involves heating it to about 70°C for 15 to 30 seconds and then suddenly chilling it. What is the purpose of this process?
- (A) To improve the taste of the milk.  
(B) To prevent the growth of harmful microbes.  
(C) To decrease the fat content.  
(D) To increase the shelf life by adding preservatives.
32. Dolly the sheep was the first mammal to be cloned. This means that Dolly:
- (A) Was produced by sexual reproduction.  
(B) Had two biological mothers and no father.  
(C) Was genetically identical to the sheep that provided the egg cell.  
(D) Was genetically identical to the sheep that provided the somatic cell nucleus.
33. Which of the following farming practices is most effective for conserving soil and water?
- (A) Ploughing the field up and down the slope.  
(B) Using excessive chemical fertilizers.  
(C) Practicing crop rotation and drip irrigation.  
(D) Leaving the field fallow for long periods.
34. A tadpole develops into an adult frog through the process of metamorphosis. This process is controlled by which hormone?
- (A) Insulin  
(B) Adrenaline  
(C) Estrogen  
(D) Thyroxine
35. A species that is facing an extremely high risk of extinction in the wild in the immediate future is called:
- (A) An extinct species.  
(B) An endemic species.  
(C) A critically endangered species.  
(D) A vulnerable species.