

ALL INDIA TALENT SEARCH EXAMINATION

Science Talent Search Examination

Time: 1 hour

Class - 7

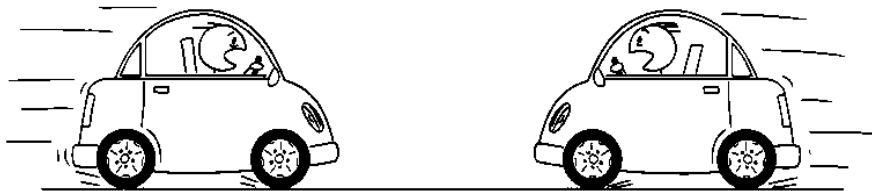
MM.100

IMPORTANT INSTRUCTIONS

1. Exam duration-1 hour
2. 25 MCQs with only one correct answer*
3. All questions are compulsory
4. Each questions carries 4 marks
5. No negative marking

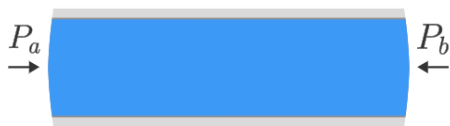
*This paper contains sample questions and are to be used for reference purpose only.

1. An ant is climbing up a 40 ft. vertical wall. Starting from the bottom it climbs up 4 ft. during the day and slips down 1 ft. at night. In how many days its displacement will be 40 ft.?
(a) 40 days (b) 13 days (c) 39 days (d) 10 days
2. Two cars are moving toward each other with a speed of 23 mph and 37 mph respectively. How far apart are they 2 minute before they pass each other?



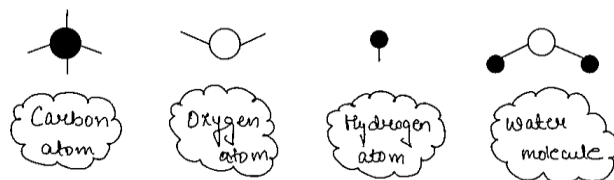
- (a) 60 miles (b) 30 miles (c) 2 miles (d) 1 miles

3. Consider the pressures on the left and right hand sides of this fluid.

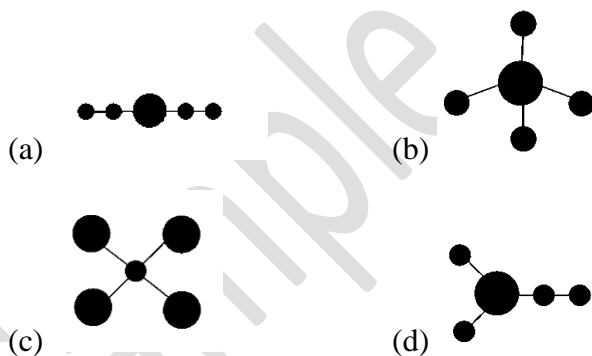


What would cause the water to flow left to right across the pipe?

- (a) If P_a is greater than P_b .
 - (b) If P_b is greater than P_a .
 - (c) Water can't flow across a flat pipe.
 - (d) If P_a is equal to P_b .
4. The diagrams below represent atoms of carbon, oxygen, hydrogen and also a molecule of water H_2O . They also show many other atoms can bond to each atom.

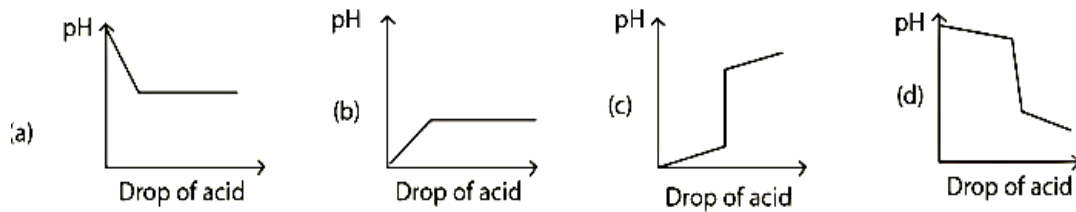


Which of the diagrams below represent a molecule of methane (CH_4)?



5. Plutonium is a heavy, silvery-white metal that melts when heated to $640^{\circ}C$, turning into a mobile liquid (phenomenon 1). Liquid plutonium reacts vigorously with water to release hydrogen (phenomenon 2). Plutonium atoms are unstable to radioactive decay (phenomenon 3). During combustion in oxygen, plutonium turn into plutonium oxide (phenomenon4), which is even less soluble in water (phenomenon 5) than quartz sand. How many physical and chemical changes are happening here respectively?
- (a) 4,1
 - (b) 3,2
 - (c) 2,3
 - (d) 1,4

6. Consider that you have a conical flask containing sodium hydroxide. Now you are provided with hydrochloric acid and you are supposed to add this to the conical flask with the help of dropper in steps. Then which of the following graph will best represent the variation of pH with addition of acid?



7. Eskimos living in areas close to the poles make igloos to protect them from the cold. Igloos are made of snow blocks with air trapped inside them. Even if the outside temperature is -45°C , the temperature inside the igloo is $+4^{\circ}\text{C}$. What could be the reason for so much difference in temperature?

- (a) Solids conduct heat better than gases.
- (b) The heat conduction of still air is lower than the heat conduction of solids.
- (c) As the space between the particles forming the substance increases, the thermal insulation decreases.
- (d) White colored snow blocks reflect sunlight.

8. Example of non-flowering plants are:

i. Grasses ii. Mosses iii. Ferns

- (a) Only i (b) Only ii (c) Only iii (d) Both ii & iii

9. Unisexual flowers which contain either only stamen (male part) or only pistil (female part) whereas bisexual flowers are those which contain both the male and female reproductive parts.

Maize, rose, papaya, *Hibiscus*

i. Unisexual: *Hibiscus*; Bisexual: Maize

ii. Unisexual: Rose; Bisexual: Papaya

iii. Unisexual: Maize; Bisexual: *Hibiscus*

iv. Unisexual: Papaya; Bisexual: Rose

- (a) i is incorrect (b) ii & iii are correct
- (c) iii & iv are correct (d) i is correct and iv is incorrect

10. Endocrine glands are ductless organs that secrete hormones, whereas exocrine glands are the organs which have ducts and secrete enzymes, sweat and mucus. Name the human organ that acts as both endocrine and exocrine gland.

(a) Liver (b) Pancreas (c) Kidney (d) Salivary gland