



189258775

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## JUNIOR SCIENCE COMPETITIVE EXAM SAMPLE PAPER

Time Allowed : 90 Mins

Marks : 150

1. Two blocks of ice when pressed together join to form one block because
  - (a) Of heat produced during pressing
  - (b) Of cold produced during pressing
  - (c) Melting point of ice increases with increase of pressure
  - (d) Melting point of ice decreases with increase of pressure
  
2. "Cells are a structural and functional unit of organisms". Who found out?
  - (a) Schleiden and schwann
  - (b) Robert Hook
  - (c) Aristotle
  - (d) Mendel
  
3. The temperature will be Same on both Celsius and Fahrenheit Scales at
  - (a)  $-40^{\circ}\text{C}$
  - (b)  $40^{\circ}\text{C}$
  - (c)  $50^{\circ}\text{C}$
  - (d)  $-50^{\circ}\text{C}$
  
4. Seeds sown deep in the soil do not germinate because they
  - (a) Do not get enough sunlight
  - (b) Do not get much water
  - (c) Do not get enough oxygen
  - (d) None of the above
  
5. A current of 100 mA is allowed to pass through a conductor for 2 minute. How many electrons will pass through the conductor per minute ? ( $e = 1.6 \times 10^{-19} \text{ C}$ )
  - (a)  $2.5 \times 10^{19}$
  - (b)  $3 \times 10^{19}$
  - (c)  $3.75 \times 10^{19}$
  - (d)  $4.5 \times 10^{19}$
  
6. For a metallic wire, the ratio  $\frac{V}{i}$  ( $V =$  applied potential difference and  $i =$  current flowing) is
  - (a) independent of temperature
  - (b) increases as the temperature rises
  - (c) decreases as the temperature rises
  - (d) increases or decreases as temperature rises depending upon the metal
  
7. Starting from the innermost part, the correct sequence of parts in an ovule is,
  - (a) egg, nucellus, embryo sac, integument
  - (b) egg, embryo sac, nucellus, integument
  - (c) embryo sac, nucellus, integument, egg
  - (d) egg, integument, embryo sac, nucellus.
  
8. An object is placed 40 cm from a concave mirror of focal length 20 cm. the image formed is
  - (a) real, inverted and same in size
  - (b) real, inverted and smaller in size
  - (c) virtual, erect and larger in size
  - (d) virtual, erect and smaller in size
  
9. A point object is placed at a distance of 30 cm from a convex mirror of focal length 30 c. The image will form at
  - (a) infinity
  - (b) pole
  - (c) focus
  - (d) 15 cm behind the mirror
  
10. The magnification produced by a plane mirror is
  - (a) +1
  - (b) -1
  - (c) zero
  - (d) between 0 & 1
  
11. Which disease is caused by drinking contaminated water?
  - (a) Pneumonia
  - (b) Cholera
  - (c) Smallpox
  - (d) Hypertension
  
12. The particle which can also be called a proton is:
  - (a) Na
  - (b)  $\text{H}^{+1}$
  - (c)  $\text{He}^{++}$
  - (d)  $\text{Ca}^{+2}$

13. By sucking through a straw, a student can reduce the pressure in his lungs from 760 mm to 750 mm of mercury. Using the straw, he can drink water from a glass upto a maximum depth of  
 (a) 10 cm                      (b) 75 cm                      (c) 13.6 cm                      (d) 1.36 cm
14.  $P_A$  and  $P_B$  are the pressures exerted by water columns on the bottoms of vessels A and B respectively. Then, we conclude that

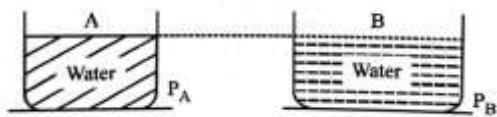


Diagram Refer to Q.14

- (a)  $P_A > P_B$                       (b)  $P_B > P_A$   
 (c)  $P_A = P_B$                       (d) Pressure depends upon the shape of the vessel

**Assertion Type Question Q.15 to 23.**

Directions: In the following questions, a statement of assertion is followed by a statement of reason.

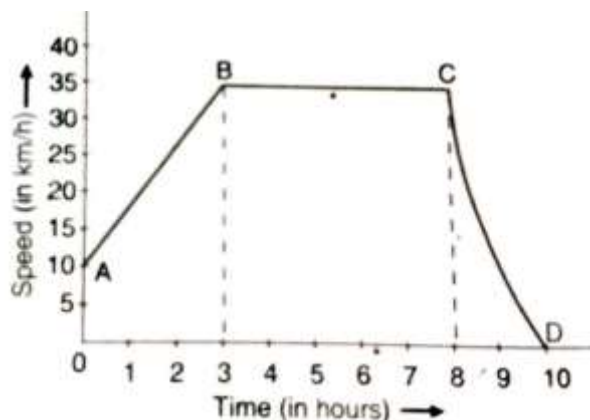
Mark the correct choice as:

- a) If both assertion and reason are true and reason is the correct explanation of assertion.  
 b) If both assertion and reason are true but reason is not the correct explanation of assertion.  
 c) If assertion is true but reason is false.  
 d) If assertion is false but reason is true.

15. Assertion: Compression and rarefaction involve changes in density and pressure.  
 Reason: When particles are compressed, density of medium increases and when they are rarefied, density of medium decreases.  
 (a) a                      (b) b                      (c) c                      (d) d
16. Assertion: The velocity of sound in hydrogen gas is less than the velocity of sound in oxygen gas.  
 Reason: The density of oxygen is more than the density of hydrogen  
 (a) a                      (b) b                      (c) c                      (d) d
17. Assertion: Sound would travel faster on a hot summer day than on a cold winter day.  
 Reason: Velocity of sound is directly proportional to the square of its absolute temperature.  
 (a) a                      (b) b                      (c) c                      (d) d
18. Assertion: Hepatitis is a viral infection of liver causing its inflammation.  
 Reason: Hepatitis is a contagious disease.  
 (a) a                      (b) b                      (c) c                      (d) d
19. Assertion: Cleistogamous flowers produce assured seed set in the absence of pollinators.  
 Reason: These flowers do not open at all.  
 (a) a                      (b) b                      (c) c                      (d) d
20. Assertion: It is difficult to cook food at sea level as compared to higher altitudes.  
 Reason: The boiling point of water increase at high altitude.  
 (a) a                      (b) b                      (c) c                      (d) d
21. Assertion: Volume of given mass of gas is compared at STP  
 Reason : Volume of gas changes with change in T and P  
 (a) a                      (b) b                      (c) c                      (d) d
22. Assertion -Nucleus plays central role in cellular functions.  
 Reason -Eukaryote organisms have compact nucleus in cytoplasm surrounded by cell membrane.  
 (a) a                      (b) b                      (c) c                      (d) d

23. Assertion: Isotopes are element with same atomic number but different mass number  
Reason: It is possible to have atoms of the same element with different number of protons.  
(a) a (b) b (c) c (d) d

The below diagram refers to Q.24 to Q.26

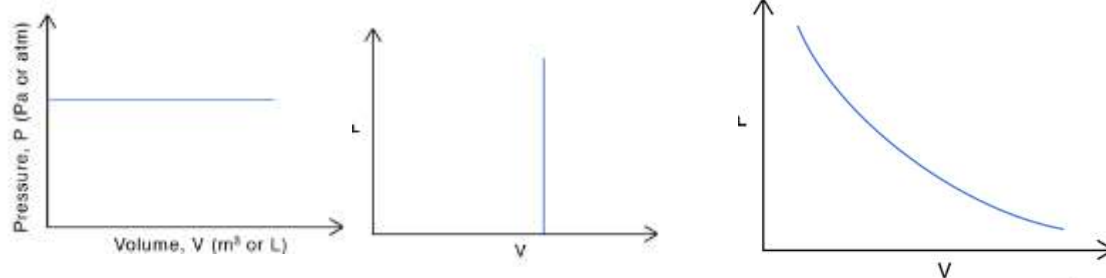


24. Which part of the graph shows zero acceleration?  
(a) AB (b) BC (c) CD (d) Both AB and CD
25. Distance travelled in first 8 hours  
(a) 242.5 Km (b) 232.5 Km (c)  $2.425 \times 10^5$  m (d) Both (a) and (c)
26. Which Part of the graph shows varying retardation?  
(a) AB (b) BC (c) CD (d) None of the above
27. Two thin circular metal plates A and B of radii 2 cm and 3 cm are kept in water at depths of 75 cm and 150 cm respectively below the free surface of water.  $F_A$  and  $F_B$  are the thrusts on the plates A and B respectively. What is the ratio  $\frac{F_A}{F_B}$ ?  
(a)  $\frac{1}{3}$  (b)  $\frac{2}{5}$  (c)  $\frac{2}{9}$  (d)  $\frac{3}{4}$
28. A metal which can donate one or three electrons while formation of compounds:  
(a) Ag (b) Cu (c) Fe (d) Au
29. A gas evolved on thermal dissociation of dinitrogen tetroxide is -  
(a) Neutral gas (b) Acidic gas (c) colored gas (d) Both B & C
30. Maximum shared pairs of electrons are present in \_\_\_\_\_ molecule  
(a)  $\text{Cl}_2$  (b)  $\text{O}_2$  (c)  $\text{CH}_4$  (d)  $\text{N}_2$
31. Which of the following change will have no effect on volume of gas:  
(a) Increasing T by 40 percent and decreasing P by 40 percent  
(b) Increasing T by 30 percent and increasing P by 60 percent  
(c) Doubling T and increasing P by 100 percent  
(d) Decreasing T by 50 percent and P by 30 percent
32. You are given the solution of lead nitrate. To obtains a yellow precipitate you should mix it to a solution of:  
(a) Potassium chloride (b) Potassium nitride (c) Potassium sulphide (d) Potassium iodide
33. A student of height 1.9 m can see his full image in a plane mirror fixed on a wall. His eyes are 1.85 m from the floor level. What is the minimum length of the plane mirror required to get the full image of the student?  
(a) 0.85 m (b) 0.75 (c) 0.95 m (d) 0.8 m

34. The percentage water of crystallization in washing soda is  
(Na = 23, C=1, O = 16 H=1)
- (a) 24% (b) 62 % (c) 60% (d) 64%

35. The graph which validates the Boyle's law.

- (a) (b) (c) (d) None of these



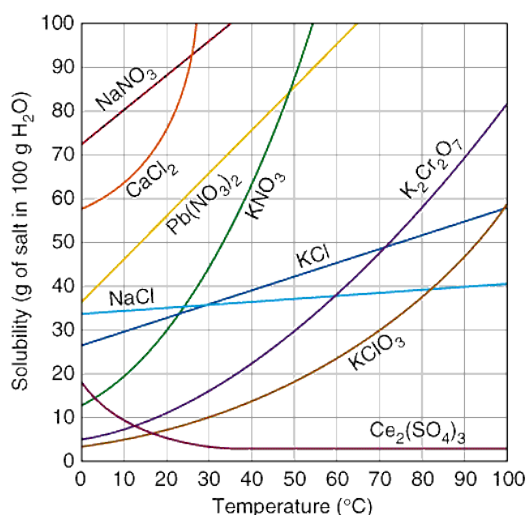
36. Substance with strong affinity for water molecule:

- (a)  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  (b)  $\text{FeCl}_3$  (c)  $\text{NH}_3$  (d) Conc.  $\text{H}_2\text{SO}_4$

37. If atomic number of A is 13, how many protons will  $\text{A}^{-3}$  contain?

- (a) 10 (b) 13 (c) 16 (d) 26

The below graph refers to Q.38 to Q.40



38. Identify the solution which is unsaturated at 40 degrees:

- (a) 44g of KCl (b) 72g of  $\text{KNO}_3$  (c) 70g of  $\text{Pb}(\text{NO}_3)_2$  (d) 35g of potassium dichromate

39. Minimum Temperature after which potassium dichromate will have more solubility than potassium chloride.

- (a) 50 degrees (b) 60 degrees (c) 70 degrees (d) 80 degrees

40. Amount of potassium chlorate that will dissolve in 150 g water at  $70^\circ\text{C}$  is:

- (a) 30g (b) 35g (c) 40g (d) 45g

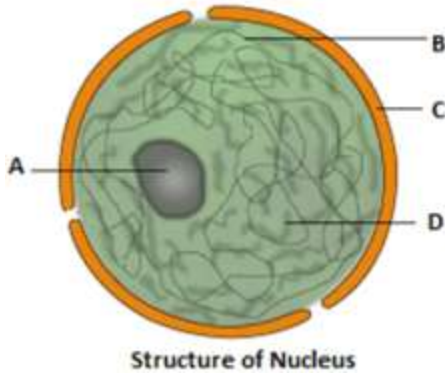
41. Which of the following sentences is false?

- (a) Lysosomes possess a double-layer structure (b) Lysosome is a suicidal bag  
(c) Lysosome digests all complex compounds (d) Lysosomes possess digestive enzymes

42. The ions not present in common salt can be

- (a)  $\text{Ca}^{+2}$  (b)  $\text{Na}^+$  (c)  $\text{Fe}^{+2}$  (d)  $\text{Mg}^{+2}$

43. An unripe green fruit changes colour when it ripens. The reason being:  
 (a) Chromoplasts changes to chlorophyll (b) Chromoplasts changes to chromosomes  
 (c) Chromosomes changes to chromoplasts (d) Chloroplast changes to chromoplasts
44. The area of the cytoplasm without any cytoplasm is called as  
 (a) Vacuoles (b) Chloroplast (c) Cytoplasmic Gap (d) Mitochondria
45. The nucleus controls all the activities of the cell and acts as a site of DNA material and protein synthesis. It is composed of some components which all together give the nucleus its functionality. Here is shown a figure of nucleus with some of its components labeled as A, B, C and D. can you name these components correctly?



- (a) A – Nucleons; B – Chromatin; C – Nuclear membrane; D – Nucleoplasm  
 (b) A – Nucleus; B – Chromatin; C – Nuclear membrane; D – Nucleoplasm  
 (c) A – Nucleolus; B – Chromatin; C – Nuclear membrane; D – Nucleoplasm  
 (d) A – Nucleolus; B – Chromatin; C – Nuclear membrane; D – Nuclear wall
46. Aditi observed following observations while looking into a permanent slide.  
 (i) Cells are long and cylindrical  
 (ii) Light and dark bands are present.  
 It could be a slide of :  
 (a) striated muscle fibre (b) smooth muscle fibre (c) neuron (d) parenchyma cells
47. A typical flower has four different kinds of whorls arranged successively on the swollen end of the stalk or pedicel , called  
 (a) thalamus (b) receptacle (c) both a and b (d) all the above
48. Which of the following is a dioecious, submerged, fresh water plant?  
 (a) Vallisneria (b) Cannabis (c) Neelakurunji (d) Zoster
49. Consider the following features seen in a plant:  
 I. Male and female reproductive organs are generally found in separate flowers.  
 II. The male flowers having a number of long filaments terminating in exposed stamens.  
 III. The female flowers having long, feather-like stigmas.  
 The flowers of this plant would most likely be pollinated by:  
 (a) Wind (b) Water (c) Bee (d) Birds
50. In exalbuminous seeds, there is  
 (a) Nonformation of endosperm (b) Abundant formation of endosperm  
 (c) Abundant protein (d) Consumption of endosperm during development of seed