



CHEMISTRY

BOOKS - SURA CHEMISTRY (TAMIL ENGLISH)

SURA'S. MODEL QUESTION PAPER-3

PART-A

1. The volume occupied by any gas at S.T.P. is

A. 22.4 litres

B. 2.24 litres

C. 224 litres

D. 0.224 litres

Answer: A::B::D



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2. Assertion : Helium has the highest value of ionisation energy among all the elements known

Reason : Helium has the highest value of electron affinity among all the elements known

A. Both assertion and reason are true and reason is not the correct explanation for the assertion

B. Both assertion and reason are true but the reason is not the correct explanation for the assertion

C. Assertion is true and the reason is false

D. Both assertion and the reason are false

Answer: A::C::D



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3. For alkali metals, which one of the following trends is incorrect ?

A. Hydration energy : $Li > Na > K > Rb$

B. Ionisation energy : $Li > Na > K > Rb$

C. Density : $Li > Na > K > Rb$

D. Atomic size : $Li > Na > K > Rb$

Answer: A::B::C::D



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4. Match the list I with list II and select the correct answer using the code given below the lists

List -I

A. Chloromycetin

B. Thyroxine

C. Chloroquine

D. Halothana

List -II

1. Malaria

2. Typhoid Fever

3. Anaesthetic

4. Goitre

A. $A \ B \ C \ D$
1 2 3 4

B. $A \ B \ C \ D$
3 1 4 2

C. $A \ B \ C \ D$
2 3 1 4

D. $A \ B \ C \ D$
4 2 3 1

Answer: A::B::C::D



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5. Almost the entire mass of an atom is concentrated in the ____

A. Proton

B. electrons

C. neutrons

D. nuckeus

Answer: C::D



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6. The partial pressure of nitrogen in air of 0.76 atm and its Henry's law constant is 7.6×10^4 atm at 300K. What is the mole

fraction of nitrogen gas in the solution
obtained when air is bubbled through water
at 300 K ?

A. 1×10^{-4}

B. 1×10^{-6}

C. 2×10^{-5}

D. 1×10^{-5}

Answer: A::D



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7. Molar heat of vapourisation of a liquid is 4.8kJmol^{-1} . If the entropy change is $16\text{Jmol}^{-1}\text{K}^{-1}$, the boiling point of the liquid is

A. 323 K

B. 27°C

C. 164 K

D. 0.3K

Answer: B::C



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8. Assertion: Oxygen molecule is paramagnetic.

Reason: It has two unpaired electron in its bonding molecular orbital

A. Both assertion and reason are true and reason is not the correct explanation of assertion

B. both assertion and reason are true but reason is not the correct explanation of assertion

C. assertion is but reason is false

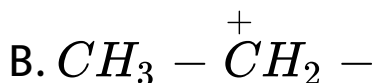
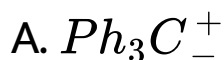
D. Both assertion and reason are false

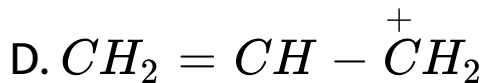
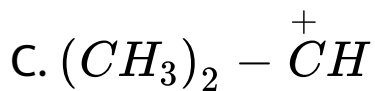
Answer: A::B::C



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9. Which of the following carbocation will be most stable ?





Answer: A:C



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10. Which one of the following is incorrect statement ?

A. For a ssystem at equilibrium , Q is always less than the equilibrium constant.

B. Equilibrium can be attained from either side of the reaction.

C. Presence of catalyst affects both the forward reaction and reverse reaction to the same extent.

D. Equilibrium constant varied with temperature.

Answer: A::B::C



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11. Match the list I with list II and select the correct answer using the code given below the lists

List I

List II

A. Depletion of ozone layer

1. CO_2

B. Acid rain

2. NO

C. Photochemical smog

3. SO_2

D. Green house effect

4. CFC

A.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
3	4	1	2

B.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
2	1	4	3

C.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
4	3	2	1

D.

<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
2	4	1	3

Answer: A::B::C::D



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12. Rate of diffusion of a gas is

A. directly proportional to its density

B. directly proportional to its molecular weight

C. directly proportional to its square root of its molecular weight

D. inversely proportional to the square root of its molecular weight

Answer: A::C::D



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13. Which one of the following statements is incorrect with regard to ortho and para dihydrogen ?

A. They are nuclear spin isomers

B. Ortho isomer has zero nuclear spin
whereas the para isomer has one
nuclear spin

C. The para isomer is favoured at low
temperatures

D. The thermal conductivity of the para
isomer is 50 % greater than that of the
ortho isomer.

Answer: A::B::C



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14. The general formula for alkadiene is ___



Answer: B::C



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15. Benzene reacts with chlorine in presence of sun light gives a compounds (A). The compound and its use are

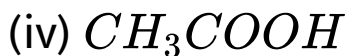
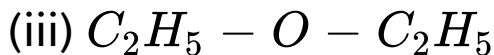
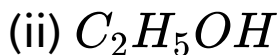
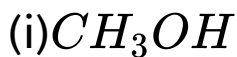
- A. C_6Cl_6 insecticide
- B. $C_6G_6Cl_6$ insecticide
- C. C_6H_5Cl insecticide
- D. $C_6H_6Cl_6$ sterlising agent

Answer: C::D



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1. Write the common name for the following compounds.



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2. An atom of an element contains 29 electrons and 35 neutrons. Deduce

(i) the number of protons .

(ii) the electronic configuration of the element.



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3. Define modern periodic law.



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4. What is abnormal molar mass?



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5. Categorise the redox reactions that occur in our daily life.



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6. What are ternary Hydrides ? Give examples.



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7. What is dead burnt plaster ?

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8. Define resonance effect.

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9. Which bond is stronger σ or π ? Why ?

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PART-C

1. List out the uses of alkenes.



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2. Among ortho, meta and para substituted dihalobenzenes which has high melting point ? Give reason with example.



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3. What is the effect of added inert gas on the reaction at equilibrium ?

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4. What do you understand by stoichiometric coefficients in a chemical equation ?

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5. What are spontaneous reactions ? What are the conditions for the spontaneity of a process ?



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6. Write the uses of calcium hydroxide.



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7. How can domestic waster be used as manure ?

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8. How will you convert ethyl chloride in to
(i) ethane (ii) n - butane

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PART-D

1. (a) Calculate the number of atoms/molecules present in the following:

(a) 10g of Hg

A. (a) 10g of Hg

B.

C.

D.



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2. (a) Calculate the number of atoms/molecules present in the following:

(b) 1.8g of water



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3. (a) Calculate the number of atoms/molecules present in the following:

(c) 100g of sulphur dioxide



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4. (a) Calculate the number of atoms/molecules present in the following:

(d) 1 kg of acetic acid



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5. (b) (i) The effect of uncertainty principle is significant only for motion of microscopic particles. Justify the statement with the help of a suitable example.

(ii) How does the Bohr theory of the hydrogen atom differ from that of Schrodinger ?



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6. (b) (ii) How does the Bohr theory of the hydrogen atom differ from that of Schrodinger ?



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7. (a) Define hydrogen bond and its types.



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8. State the third law of thermodynamics.



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9. (ii) Orbits are also called as stationary states. Say whether the above statement is true or false. Justify your answer.

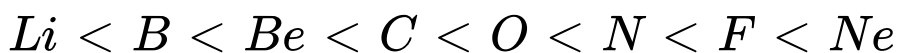


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10. (a) (i) Radius of a cation is smaller than the parent atom. Account for the following.

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11. (ii) I.E increases as we move across the period but Ionisation enthalpies (I.E) of second period of elements in the order.



Explain why ?

(1) Be has higher I.E and B

(2) O has lower I.E than N & F



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12. (b) Explain the following observations

(a) Aerated water bottles are kept under water during summer



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13. (b) Explain the following observations

(b) Liquid ammonia bottle is cooled before opening the seal



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14. (b) Explain the following observations

(c) The tyre of an automobile is inflated to slightly lesser pressure in summer than in winter



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15. (b) Explain the following observations

(d) The size of a weather balloon becomes

larger and larger as it ascends up into larger altitude



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16. (a) Give a detailed account on the different mechanisms followed in elimination reaction.



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17. (b) (i) Why do you classify mesomeric effect (M-effect) into $.^+ M$ and $.^- M$ effect?



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18. (ii) Why type of mesomeric effect is observed in phenol ? Explain.



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19. (a) Describe Fajan's rule



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20. (b) (i) When does a non-ideal solution is said to show a negative deviation ?



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21. (b) (ii) Analyse the deviation observed in the solution of phenol and aniline.



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