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CHEMISTRY

BOOKS - ARIHANT PUBLICATION JHARKHAND

LAWS OF CHEMICAL COMBINATION AND GAS LAWS

Exam Booster For Cracking Exam

1. Which one of the following is a correct relationship between mass and energy?

A. E= hc

B. $E = \frac{m}{c^2}$

C. $c = \sqrt{\frac{E}{m}}$

D. $m = Ec^2$

Answer: C

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2. The law of multiple proportion was proposed by

A. Lavoisier

B. Dalton

C. Proust

D. Gay-Lussac

Answer: B

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3. Which one of the following pairs of compounds illustrate the law of multiple proportion?

A. H_2O, Na_2O

B. H_2O, H_2O_2

C. Na_2O, BaO

D. All of these

Answer: B

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4. Which of the following laws deals with mass of reactants and products during chemical reactions?

A. Law of definite proportions

B. Law of conservation of energy

C. Law of conservation of mass

D. Law of reciprocal proportions

Answer: C

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5. Hydrogen, sulphur and oxygen gives , and .

This is according to the law of

A. constant proportions

B. multiple proportions

C. reciprocal proportions

D. conservation of mass

Answer: C

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6. In the reaction $N_2 3H_2 \rightarrow 2NH_3$ ratio by volume of N_2, H_2 and NH_3 is 1:3:2 . This suggested law of

A. definite proportions

B. multiple proportions

C. reciprocal proportions

D. combining volume

Answer: D

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7. Law of conservation of mass is not correct for

A. radloactive change

B. oxidation

C. hydrolysis

D. None of these

Answer: A

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8. Radioactive change follows the law of

A. conservation of mass

B. conservation of mass-energy

C. Both (a) and (b)

D. None of the

Answer: B

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9. Different proportions of oxygen in the various oxides of nitrogen prove the law of

A. equivalent proportion

B. multiple proportions

C. constant proportions

D. conservatlon of matter

Answer: B

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10. Two different oxides of a metal contain 20% and % oxygen by weight. This is an accordance with the law of

A. conservation of mass

B. constant composition

C. multiple proportion

D. reciprocal proportion

Answer: C

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11. Two elements A and B combine to form two compounds in which a g of A combines with b_1 , and b_2, g of B, respectively. According to the law of multiple proportions

A. $b_1 = b_2$

B. b_1 and b_2 bear a simple whole number ratio

C. a_1 and b_1 bear whole number ratlo

D. no relation exists between b_1 , and b_2

Answer: B

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12. Chemical equation is balanced according to the law of

A. multiple proportions

B. reciprocal proportion

C. conservation of mass

D. definite proportion

Answer: C

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13. One part of element A reacts with two parts of another element B. 6 parts of element C reacts with 4 parts of element B. If A and C combine together, the ratio of their weights be governed by

A. law of definite proportions

B. law of multiple proportions

C. law of reciprocal proportions

D. law of conservation of mass

Answer: C

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14. Two samples of lead oxide were separately reduced to metallic lead by heating in a current of hydrogen. The weight of lead from one oxide was half the weight of lead obtained from the other oxide. The data illustrate

A. law of reciprocal proportions

B. law of constant proportions

C. law of multiple proportions

D. law of equivalent proportions

Answer: C

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15. The law of constant proportion was proposed by

A. Proust

B. Einstein

C. Richter

D. Dalton

Answer: A

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16. Formation of CO and CO_2 illustrates the law of

A. reciprocal proportions

B. multiple proportions

C. conservation of mass

D. constant composition

Answer: B

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17. Which of the following compounds do not conform to the law of multiple proportion?

A. NaCl and $BaCl_2$

B. CaO and Na_2O

C. H_3PO_4 and $Ca_3(PO_4)$

D. All of these

Answer: D

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18. Equal masses of oxygen, hydrogen and methane kept under identical conditions. The ratio of the volumes of gases will be

A. $1:1:1$

B. $1:16:2$

C. $2:16:1$

D. $1:4:1$

Answer: B

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19. Law of combining volumes was proposed by

A. Dalton

B. Tswett

C. Gay-Lussac

D. Einstein

Answer: C

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20. The law of multiple proportions is not illustrated by which pair of compounds

A. CO and CO_2

B. CuO and Cu_2O

C. CO_2 and H_2CO_3

D. SO_2 and SO_3

Answer: C

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21. Which of the following compounds conform the law of multiple proportion?

A. $HgCl_2$, and Hg_2Cl_2

B. Na_2O and CaO

C. NaCl and $BaCI_2$

D. H_3PO_4 and $Ca_3(PO_4)_2$

Answer: A

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22. A balanced chemical equation is based on

A. law of conservation of mass

B. law of constant proportions

C. law of multiple proportions

D. law of combining welghts

Answer: A

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23. Consider the following laws

(I) Law of conservation of mass

(II) Law of definite proportions

(III) Law of multiple proportions

Which of the above govern (s) the quantitative aspects of chemical changes?

A. Only (I)

B. (II) and (III)

C. (I) and (II)

D. All of these

Answer: D

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24. 8 g of oxygen combine with 1 g of hydrogen and 29 g of calcium therefore, when calcium combines with hydrogen it must combine in the ratio of 20:1. This statement conforms to the law of

A. multiple proportions

B. reciprocal proportions

C. definite proportions

D. gaseous volume

Answer: B

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25. If 2.0 g of the hydrogen on burning in 16.0 g of oxygen forms 18.0 g of water then which of the following laws is applicable?

A. Law of conservation of mass

B. Law of constant compositions

C. Law of multiple proportions

D. Law of reciprocal proportions

Answer: A

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26. The ratio in weight by which carbon and oxygen combine in a molecule of carbon monoxide is

A. $3:4$

B. $3:3$

C. $3:2$

D. $3:1$

Answer: A

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27. Which of the following statements are correct?

(I) When water is decomposed volume ratio of to is 2:1, but the mass ratio is 1:8.

(II) Water is a polar compound

(III) Water is good conductor of electricity.

Select the correct answer given below

A. (I) and (II)

B. (I) and (III)

C. (II) and (III)

D. All of these

Answer: D

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28. A gaseous mixture contains H_2 , and N_2 , in the ratio of 1:4 by weight, the ratio of the molecules is

A. $7:2$

B. $1:8$

C. $2:7$

D. $1:4$

Answer: A

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29. Real gas will approach the behaviour of ideal gas at

A. low temperature and high pressure

B. high temperature and low pressure

C. low temperature and low pressure

D. high temperature and high pressure

Answer: B

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30. Nitrogen combines, with oxygen to form five gaseous oxides N_2O, NO, N_2O_4, NO_2, and N_2O_5 . This illustrates

A. Gay-Lussac law

B. Law of constant composition

C. Law of multiple proportion

D. Avogadro's law

Answer: C

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31. Equal volumes of all gases under same temperature and pressure contain equal number of molecules according to

A. Avogadro's law

B. Charle's law

C. Boyle's law

D. Graham's law

Answer: A

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32. Matter can be converted into energy. It is represented by

A. $E^2 = mc$

B. $E = mc^2$

C. $E = \frac{1}{2}mc^2$

D. $E = m^2c$

Answer: B

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33. Which of the following is not a chemical reaction?

A. Burning of coal

B. Purification of milk

C. Vaporisation

D. Formation of water

Answer: C

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34. The law regarding the conversion of mass into energy was given by

A. Rutherford

B. Einstein

C. Currie

D. Bohr

Answer: B

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35. The law of multiple proportions is illustrated by the two compounds

A. NaCl and NaBr

B. ordinary and heavy water

C. caustic soda and caustic potash

D. SO_2 , and SO_3

Answer: D

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36. If the pressure of a gas is reduced to half and temperature is doubled, its volume becomes

A. $\frac{V}{4}$

B. $2V^3$

C. 6V

D. 4 V

Answer: D

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37. Sparking is produced in a mixture 20 mL O_2 , and 20 mL CO, the volume of the gaseous mixture obtained will be

A. 15 ml

B. 30 mL

C. 40 mL

D. 45 mL

Answer: B

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38. A 500 mL flask contains 400 mL H_2, at 700 mm, 200 mL N_2, at 350 mm and 100 mL He at 250 mm. The total pressure of the mixture is

A. 750 mm

B. 700 mm

C. 1300 mm

D. None of these

Answer: A

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39. Hydrogen diffuses 6 times faster than the gas X, the molecular weight of X is

A. 6

B. 36

C. 24

D. 72

Answer: D

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40. Which is correct relation between rate of diffusion and their densities

A. $\frac{r_1}{r_2} = \sqrt{\frac{d_1}{d_2}}$

B. $\frac{r_1}{r_2} = \sqrt{\frac{d_2}{d_1}}$

C. $\frac{r_1}{r_2} = \frac{d_1}{d_2}$

D. $\frac{r_1}{r_2} = \frac{d_2}{d_1}$

Answer: B

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41. At constant pressure the volume of a gas is Vat 0° C. At which temperature it will be 3V?

A. 300°

B. 273°

C. 573°

D. 546°

Answer: D

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42. A sample of nitrogen gas occupies a volume of 320 mL at STP calculate its volume at 66° C and 0.825 atm pressure

A. 526 ml

B. 570.8 ml

C. 481.6 mL

D. 446.7 mL

Answer: C

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43. Equal weights of methane and oxygen are mixed in a vessel. The partial pressure of oxygen is

A. $1/3$

B. $2/3$

C. $\frac{1}{2}$

D. $\frac{1}{2} \times \frac{273}{298}$

Answer: A

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44. Two gases A and B have molecular weight 60 and 45. 0.6 g of A and 0.9 g of B are mixed

in a closed vessel. Total pressure is 720 mm. The partial pressure of A is

A. 240 mm

B. 480 mm

C. 600 mm

D. None of these

Answer: A

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45. A gas have volume 400 cc at 1 atm and 7° C the volume at 77° C and 1.875 atm will be

A. 2346 "CC "

B. 8250 "CC "

C. 266 "CC "

D. None of these

Answer: C

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46. 24 mL H_2 , diffuses in 100 s. How much volume of SO_2 , will diffuse during the same time?

A. 11.312 mL

B. 5.656 mL

C. 8 mL

D. none of these

Answer: D

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47. 32 mL H_2 , diffuses in 100 s. How much SO_2 , will in the same time?

A. 11.312 ml

B. 5.656 ml

C. 8 ml

D. None of these

Answer: B

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48. Elements A and B combines to form three compounds

0.3 g of A + 0.4 g of B $\rightarrow$ 0.7 g of X

18g of A + 48 g of B $\rightarrow$ 66 g of Y

40 g of A + 159.99 g of B $\rightarrow$ 199.99 g of Z

Above data shows an example of

A. law of multiple proportion

B. law of constant proportion

C. law of reciprocal proportion

D. None of the above

Answer: A

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