**Basic stoichiometry**

1. What is the weight of oxygen required for the complete combustion of 2.8 kg of ethylene (C_2H_4)

   (A) 2.8 kg   (B) 6.4 kg   (C) 6.72 kg   (D) 9.6 kg

2. At 25°C for complete combustion of 5 mol propane (C_3H_8). The required volume of O_2 at STP will be.

   (A) 5.6 L   (B) 560 L   (C) 360 L   (D) 360 L

3. According to the following reaction the minimum quantity in gm of H_2S needed to precipitate 63.5 gm of Cu^{2+} ions will be nearly $Cu^{+2} + H_2S \rightarrow CuS + 2H^+$

   (A) 63.5 gm   (B) 31.75 gm   (C) 34 gm   (D) 20 gm

4. When 280 gm of ethylene polymerises to polyethylene according to the equation.

   $$n(CH_2 = CH_2) \longrightarrow -(CH_2-CH_2)_n-$$
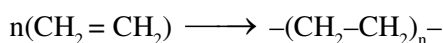
   The weight and mole of polyethylene formed will be-

   (A) 280, 10n   (B) $\dfrac{280}{n}, n$ (C) $\dfrac{280}{n}, 280$ (D) 280, $\dfrac{10}{n}$

5. 27 gm of Al with react completely with :

   $$4Al + 3O_2 \longrightarrow 2Al_2O_3$$

   (A) 24 gm of O_2 (B) 0.75 moles of O_2

   (C) 16.8 L of O_2 at 1atm,273K   (D) 0.75 N_A molecules of O_2

6. 1.5 g of oxygen is produced by heating $KClO_3$. How much KCl is produced in the reaction :

   $$2KClO_3(s) \longrightarrow 2KCl(s) + 3O_2(g)\uparrow$$

   (A) 4.15×10^2 mol   (B) 4.33 g   (C) 3.12×10^{-2} mol   (D) 2.33 g

Problem based on limiting reagent

7. For the reaction: $7A + 13B + 15C \longrightarrow 17P$

   If 15 moles of A, 26 moles of B & 30.5 moles of C are taken initially then limiting reactant is

   (A) A   (B) B   (C) C   (D) None of these

8. For the reaction : $2A + 3B \rightarrow 4C + D$, 5 moles of A and 8 moles of B will produce

   (A) 4 moles of C, 1 mole of D   (B) 20 moles of C, 5 moles of D

   (C) 10 moles of C, 2.5 moles of D   (D) 32/3 moles of C, 8/3 moles of D

9. For reaction $A + 2B \longrightarrow C$. The amount of C formed by starting the reaction with 5 moles of A and 8 moles of B is:

   (A) 5 mol   (B) 8 mol   (C) 16 mol   (D) 4 mol

10. Calculate the number of moles of $SO_3(g)$ which are produced by the reaction of 5 moles of S and 6 moles of O_2 gas

    (A) 2 moles   (B) 6 moles   (C) 4 moles   (D) 8 moles

11. 446 g of PbO, 46 g of NO_2 and 16 g of O_2 are allowed to react according to the equation

    $$PbO + 2NO_2 + \frac{1}{2}O_2 \rightarrow Pb(NO_3)_2$$
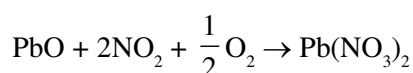
    The amount of $Pb(NO_3)_2$ that can be produced is (At. wt. of Pb = 207)

    (A) 331 gm   (B) 662 gm   (C) 165.5 gm   (D) None of these

12. The mass of P_4O_{10} produced if 440 gm of P_4S_3 is mixed with 384 gm of O_2 is $P_4S_3 + O_2 \longrightarrow P_4O_{10} + SO_2$

(A) 568 gm   (B) 426 gm   (C) 284 gm   (D) 396 gm

13. 0.6 mol of barium chloride in solution is mixed with 0.2 mol of sodium phosphate, the amount of barium phosphate produced is

(A) 0.1 mol   (B) 0.3 mol   (C) 0.4 mol   (D) 0.5 mol

14. What is the number of moles of $Fe(OH)_3$ that can be produced by allowing 1 mole of Fe_2S_3, 2mole of H_2O and 3 mole of O_2 to react

$2Fe_2S_3 + 6H_2O + 3O_2 \longrightarrow 4Fe(OH)_3 + 6S$

(A) 2   (B) 1.33   (C) 3.52   (D) None

15. 28 gm lithium is mixed with 48 gm O_2 to react according to the following reaction.

$$Li + O_2 \rightarrow Li_2O$$

The mass of Li_2O formed is :

(A) 30 gm   (B) 35 gm   (C) 45 gm   (D) 60 gm

16. Three substances A, B and C can react to form D and E as shwon :

$$2A + 3B + C \rightarrow 4D + 2E$$

If molar masses of A, B, C and D are 40, 30 , 20 and 15 respectively and 285 gm of mixture of A, B and C is reacted then maximum mass of E which can be obtained will be :

(A) 285 gm   (B) 200 gm   (C) 195 gm   (D) 100 gm

17. How many moles of potassium chlorate need to be heated to produce 11.35 litre oxygen at STP ?

(A) $\dfrac{1}{2}$ mol   (B) $\dfrac{1}{3}$ mol   (C) $\dfrac{1}{4}$ mol   (D) $\dfrac{2}{3}$ mol

18. In the reaction $4A + 2B + 3C \rightarrow A_4B_2C_3$ what will be the number of moles of product formed ? Starting from 2 moles of A, 1.2 moles of B and 1.44 moles of C.

(A) 0.5   (B) 0.6   (C) 0.48   (D) 4.64

19. 12 g of alkaline earth metal gives 14.8 g of its nitride, Atomic weight of metal is :

(A) 12   (B) 20   (C) 40   (D) 14.8

20. If 10 g of Ag reacts with 1 g of sulphur, the amount of Ag_2S formed will be :

[Atomic weight of Ag = 108, S = 32]

(A) 7.75 g   (B) 0.775 g   (C) 11 g   (D) 10 g

21. According to following reaction :

$$A + BO_3 \rightarrow A_3O_4 + B_2O_3$$

The number of moles of A_3O_4 produced if 1 mole of A is mixed with 1 mole of BO_3 is :

(A) 3   (B) $\dfrac{1}{2}$ (C) $\dfrac{1}{3}$ (D) $\dfrac{2}{3}$

Answers

RACE # 16

1. (D) **2.** (B) **3.** (C) **4.** (D) **5.** (ABCD) **6.** (D) **7.** (C) **8.** (C) **9.** (D)

10. (C) **11.** (C) **12.** (B) **13.** (A) **14.** (B) **15.** (D) **16.** (C) **17.** (B) **18.** (C) **19.** (C)

20. (A) **21.** (C)