**76.** A volume of 20 ml of 8.5% (w/v) $H_2O_2$ solution is diluted to 50 ml. A volume of 10 ml of the diluted solution is reacted with excess of an oxidant. It will cause liberation of ___ ml of ___ gas at 0°C and 1 atm.

(a) 11.2, $O_2$
(b) 112, $O_2$
(c) 11.2, $H_2$
(d) 112, $H_2$

**77.** A volume of 50 ml of '20 vol' $H_2O_2$ solution is mixed with 50 ml of '10 vol' $H_2O_2$ solution. The volume strength of resulting solution is (assume neither expansion nor contraction in volume of solution, on mixing)

(a) '30 vol' (b) '10 vol'
(c) '15 vol' (d) '22.5 vol'

**78.** In 200 g of a sample of oleum labelled as 109.0%, 12 g water is added. The new labelling of the oleum sample is

(a) 106.0%
(b) 103.0%
(c) 102.8%
(d) 105.6%

**79.** When 200 g of an oleum sample labelled as 109% is mixed with 300 g of another oleum sample labelled as 118%, the new labelling of resulting oleum sample becomes

(a) 114.4%
(b) 112.6%
(c) 113.5%
(d) 127%

**80.** A sample of oleum is labelled as 112%. In 200 g of this sample, 18 g water is added. The resulting solution will contain

(a) 218 g pure $H_2SO_4$
(b) 218 g $H_2SO_4$ and 6 g free $SO_3$
(c) 212 g $H_2SO_4$ and 6 g free $SO_3$
(d) 191.33 g $H_2SO_4$ and 26.67 g free $SO_3$

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## Section B (One or More than one Correct)

**1.** A quantity of 0.22 g of a gas occupies a volume of 112 ml at pressure of 1 atm and temperature of 273 K. The gas may be

(a) nitrogen dioxide
(b) nitrous oxide
(c) carbon dioxide
(d) propane

**2.** The number of hydrogen atoms in 0.9 g glucose, $C_6H_{12}O_6$, is same as

(a) 0.48 g hydrazine, $N_2H_4$
(b) 0.17 g ammonia, $NH_3$
(c) 0.30 g ethane, $C_2H_6$
(d) 0.03 g hydrogen, $H_2$

**3.** The composition of universe is approximately 90% hydrogen and 10% helium, by mass. It represents that

(a) there are 18 hydrogen atoms in the universe per atom of helium.
(b) there are 9 hydrogen atoms in the universe per atom of helium.
(c) there are 36 hydrogen atoms in the universe per atom of helium.
(d) the average molar mass of universe is 2.20 g per mole.

**4.** The vapour density of a sample of hydrogen fluoride gas is measured by an experiment as 20. It may represent that (F = 19)

(a) some molecules of hydrogen fluoride are dissociated.
(b) some molecules of hydrogen fluoride are in dimer form.
(c) all hydrogen fluoride molecules are in dimer form.
(d) some hydrogen fluoride molecules are in trimer form.