2. CARBON COMPOUNDS

Q. No	Question	Marks
	Free Response Question/ Subjective Question	
Q.7	Combustion analysis of compound X revealed the ratio of its elements in a molecule to be carbon:hydrogen:oxygen::3:6:2. The compound undergoes esterification to yield an ester and water. (a) Identify the compound X. Write its chemical formula. (b) Write the balanced equation for the combustion of compound X.	2
Q.8	Bonding of oxygen with carbon and with hydrogen are highly exothermic processes. Compare the amount of energy released on combustion of methane and propane. (a) Which compound will yield more energy per mole on combustion? Justify your answer. (b) Write the balanced chemical equations for complete combustion of propane and methane.	3
Q.9	One mole of an alkane P is burned in an excess of oxygen to yield 6 moles of carbon dioxide and 14 moles of water. (a) Write the chemical formula and chemical name of the compound. (b) Will this compound produce a clear or sooty flame on burning? Justify your answer.	3

Answer Key & Marking Scheme

Q. No	Answers	Marks
Q.7	(a) Propionic acid / Propanoic acid [0.5 marks] C_2H_5COOH [0.5 marks] (c) $2C_2H_5COOH + 7O_2 \rightarrow 6CO_2 + 6H_2O$ + energy	2
Q.8	(a) Energy released per mole will be more in propane since it has more number of carbon atoms. (b) 1 mark for each correct equation: $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$ $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$	3
Q.9	(a) 1 mark each for the correct name and formula: chemical name - Hexane chemical formula - C_6H_{14} (b) It will burn with a clear flame since it is a saturated hydrocarbon.	3