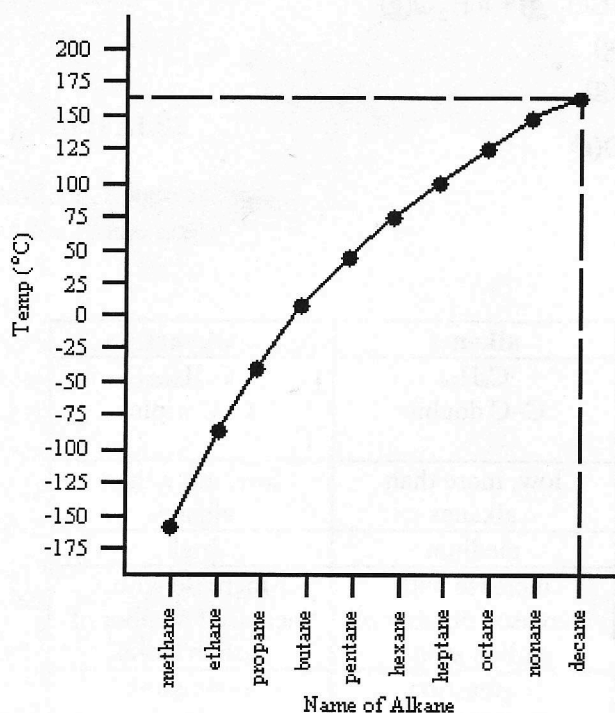
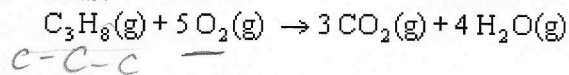


Boiling Points of Alkanes

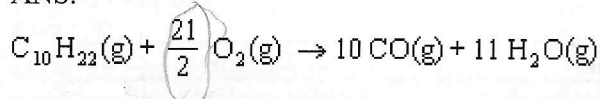


- As the number of carbon atoms increases, Van der Waals forces increase, causing higher attraction between molecules. Boiling points increase as a result.
- The boiling point of decane is 174 °C.

8. ANS:

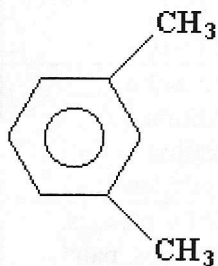


9. ANS:



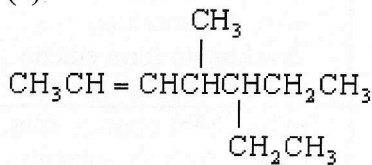
10. ANS:

(a)



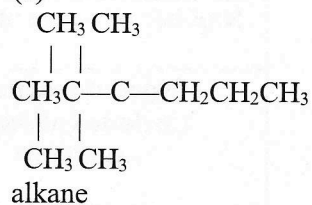
aromatic

(b)

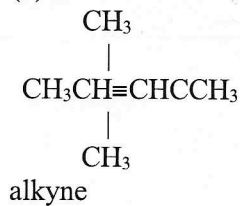


alkene

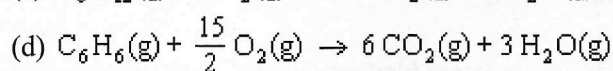
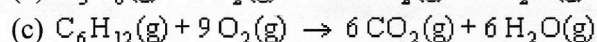
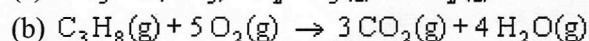
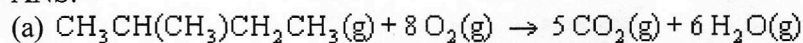
(c)



(d)



11. ANS:



12. ANS:

Sample Response:

Property	alkanes	alkenes	alkynes
structural formula and main characteristics	$\text{C}_n\text{H}_{2n+2}$ C–C single	C_nH_{2n} C–C double	$\text{C}_n\text{H}_{2n-2}$ C–C triple
solubility in water	low	low, more than alkanes	low, more than alkanes
reactivity	low	medium	high
melting and boiling points	increase with increased number of carbon atoms	increase with increased number of carbon atoms	increase with increased number of carbon atoms
types of reactions	combustion, substitution with UV light, cracking, reforming	combustion, addition, polymerization	combustion, addition

13. ANS:

-Ethene: C_2H_4 , nonpolar, 5 covalent bonds (1 C=C, 4 C–H bonds)

14. ANS:

Sample Response:

Characteristic	Ethane	Ethene
Structure, formula, shape	single covalent bond C_2H_6 tetrahedral	double covalent bond C_2H_4 trigonal planar
Number of covalent bonds	1 C–C 6 C–H	1 C=C 4 C–H
Types of reactions (include balanced equations)	combustion, substitution, cracking to form ethene	combustion, addition, polymerization to form polyethylene
Uses and consumer products	feedstock for plastics, tiles, textile products, solvents, fuel for energy	feedstock for plastics, textiles, solvents, paints