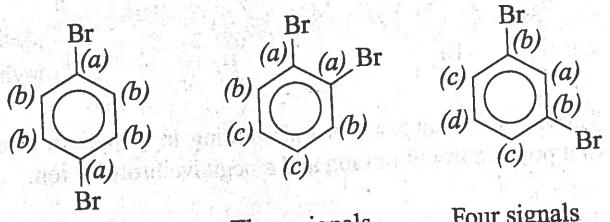
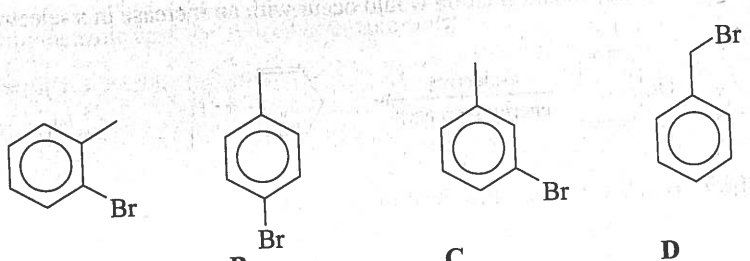
14.14 Because of their symmetries, *p*-dibromobenzene would give two ^{13}C signals, *o*-dibromobenzene would give three, and *m*-dibromobenzene would give four.



Two signals Three signals Four signals

14.15



A **B** **C** **D**

A. Strong absorption at 740 cm^{-1} is characteristic of ortho substitution.

B. A very strong absorption peak at 800 cm^{-1} is characteristic of para substitution.

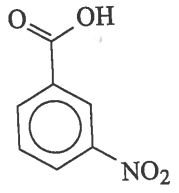
C. Strong absorption peaks at 680 and 760 cm^{-1} are characteristic of meta substitution.

D. Very strong absorption peaks at 693 and 765 cm^{-1} are characteristic of a monosubstituted benzene ring.

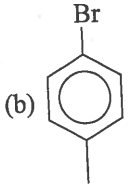
Problems

Nomenclature

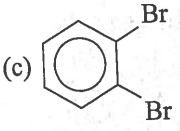
14.16 (a)



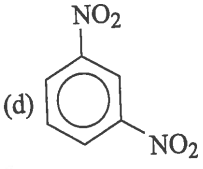
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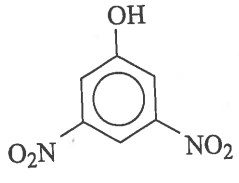
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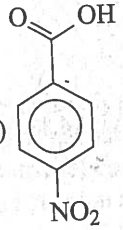
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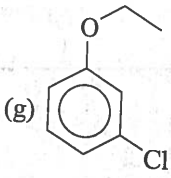


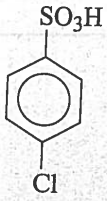
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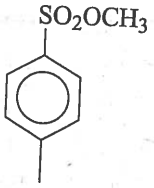


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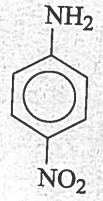


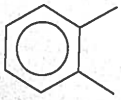
(g) 

(h) 

(i) 

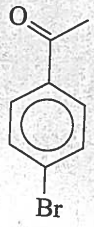
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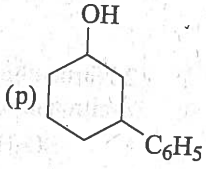
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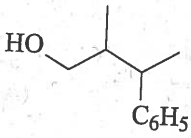
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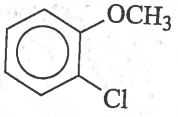
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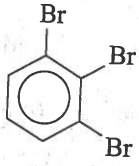
(n) 

(o) 

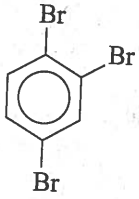
(p) 

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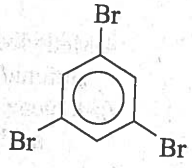
(r) 

14.17 (a) 

1,2,3-Tribromo-benzene



1,2,4-Tribromo-benzene



1,3,5-Tribromo-benzene