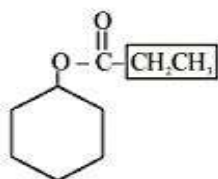
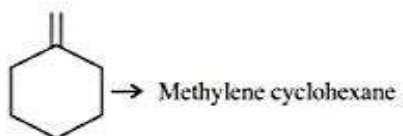
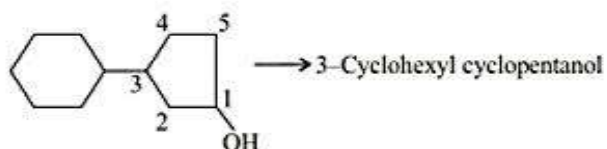
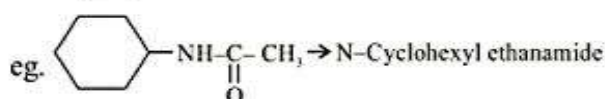
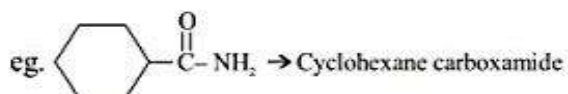
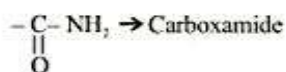


Cyclobutyl cyclohexane carboxylate

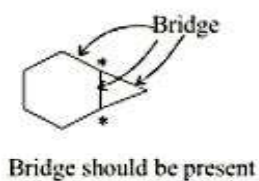
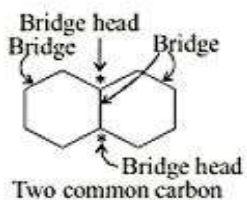


Cyclohexyl ethane carboxylate



NOMENCLATURE OF BICYCLO COMPOUNDS

Bicyclo compounds : If two rings are fused at two common carbon atoms then compound are known as bicyclic compound.



(i) Unsubstituted bicyclo compounds

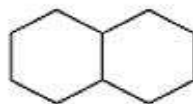
Prefix
Bicyclo

+

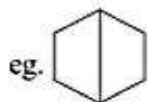
Numbering of
carbon atoms in
each bridge in
decreasing order

+

Suffix



Bicyclo (4.4.0) decane
(Bridge head C not considered)



Bicyclo [2.2.0] Hexane



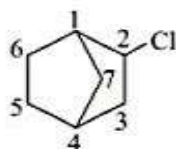
Bicyclo [2,1,1] Hexane



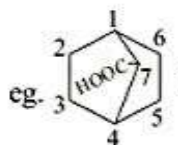
Bicyclo [3,2,0] Heptane

(ii) **Substituted bicyclo (Bicyclo with substitution or functional group)**

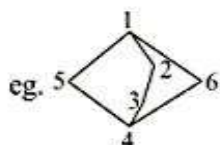
In substituted bicyclic compounds numbering starts from a bridge head carbon atom and proceeds towards longest bridge then smaller bridge & then smallest bridge.



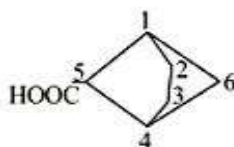
2-Chloro bicyclo [2.2.1] heptane



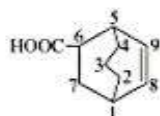
bicyclo [2.2.1] heptane-7-carboxylic acid



Bicyclo [2.1.1] hexane



Bicyclo [2.1.1] hexane-5-carboxylic acid

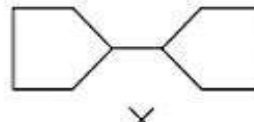
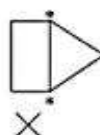
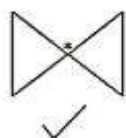
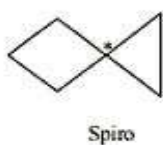


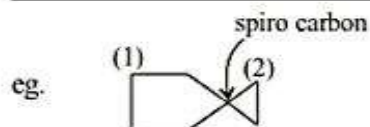
F.G. is preferred over double bond.
Bicyclo [3.2.2] dec-9-en-carboxylic acid

Bicyclo [3.2.2] non-8-ene-6-carboxylic acid

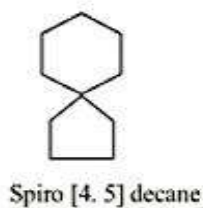
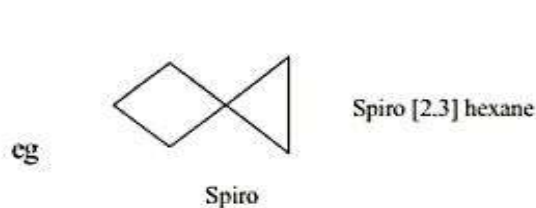
NOMENCLATURE OF SPIRO COMPOUNDS

Spiro comp. - Two cyclic rings are fused at one common carbon (only one bridge head)

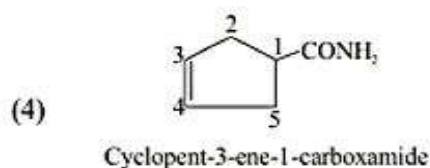
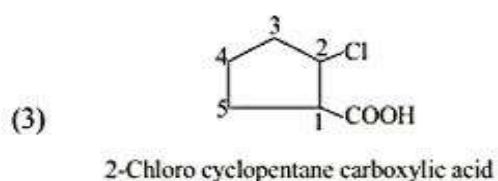
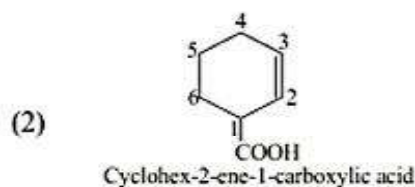
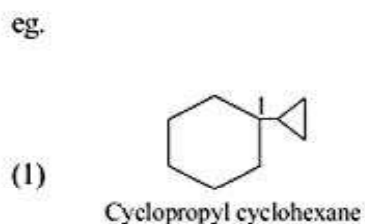
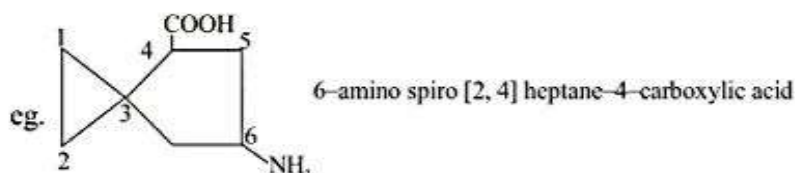
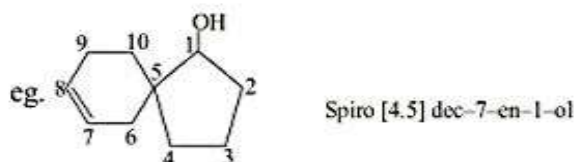
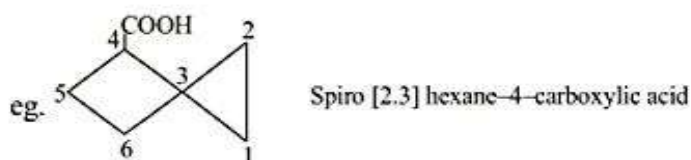


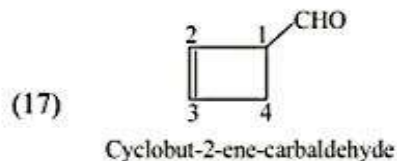
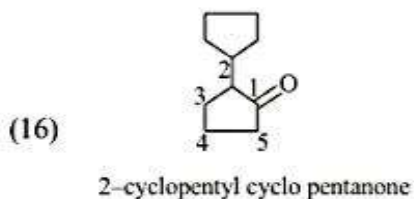
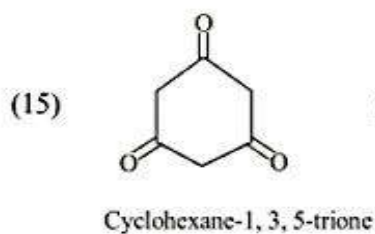
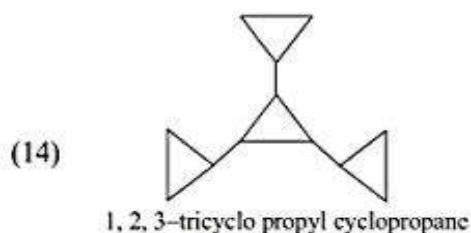
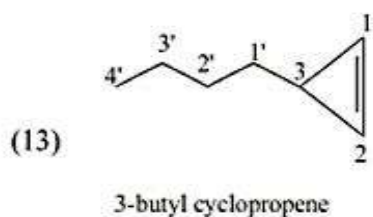
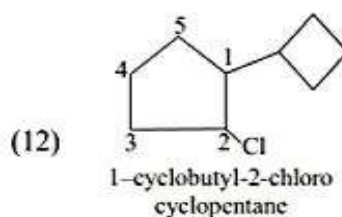
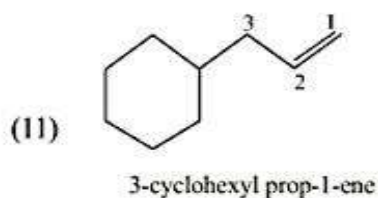
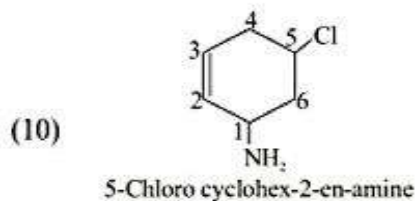
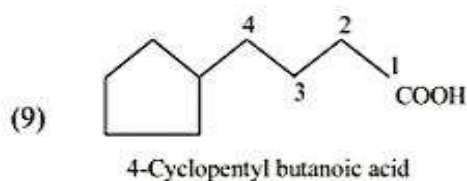
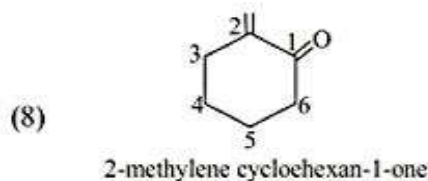
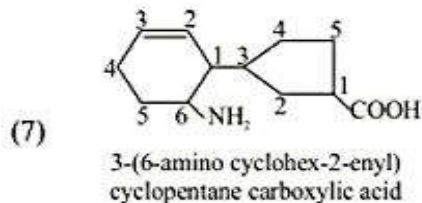
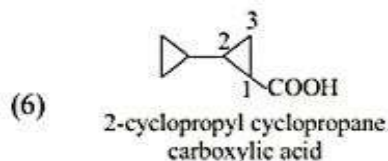
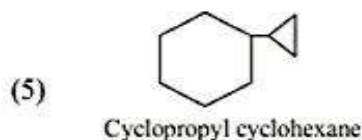


Name : Prefix + no. of carbon in bridges in increasing order + suffix
Spiro [2. 4] heptane

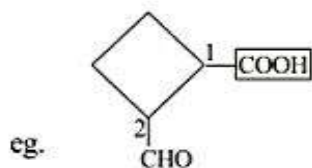


Rule for numbering :- In spiro compounds numbering starts from carbon of smaller ring which is next to spiro carbon proceeds towards other carbon atoms of smaller ring then towards larger ring via spiro carbon atom.

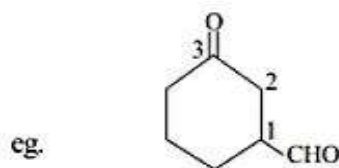




Rule :- If more than one functional group is present at cyclic chain, then principal function group (PFG) is selected



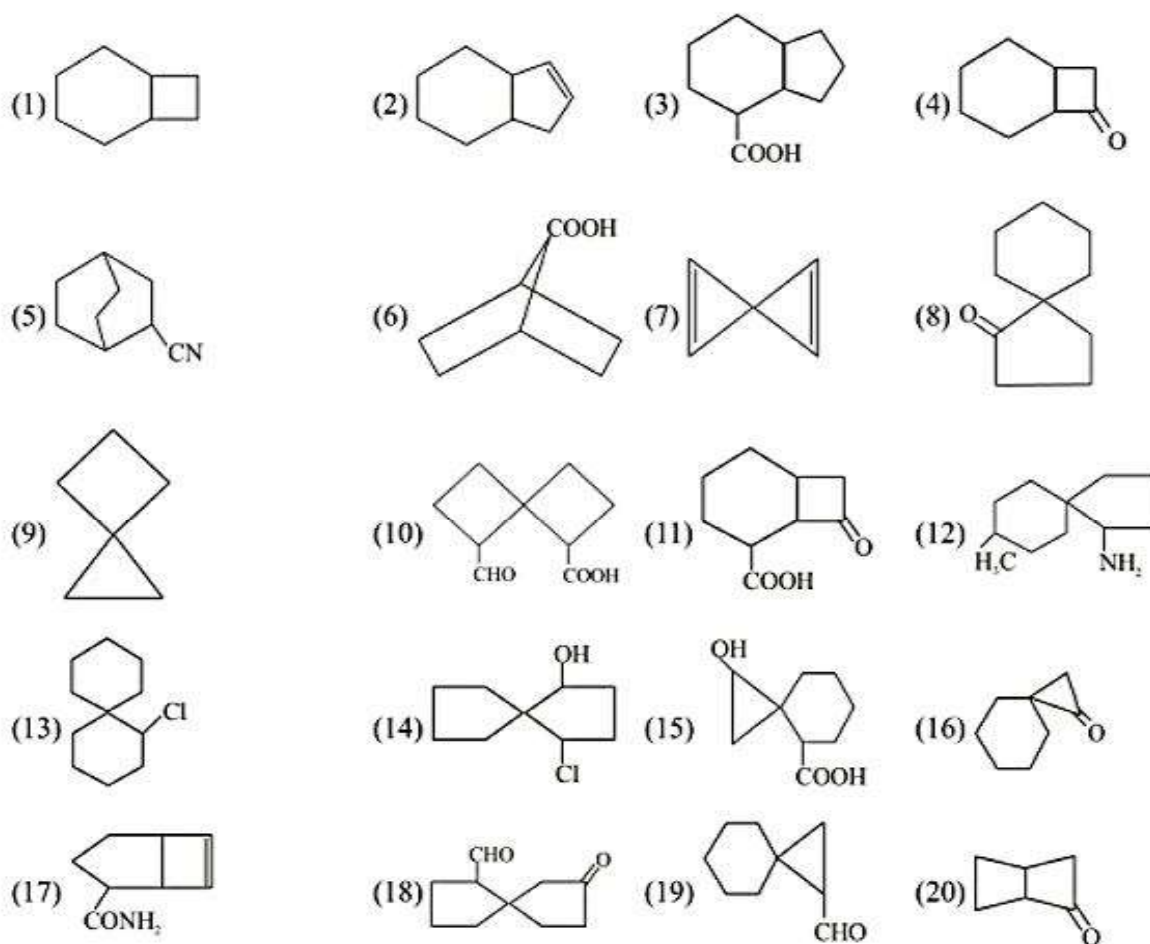
2-formyl cyclobutane carboxylic acid



3-oxo cyclohexane carbaldehyde

PROBLEMS

Write the IUPAC Nomenclature of following compounds :


ANSWER

- | | |
|---|---|
| (1) bicyclo [4.2.0] octane | (2) bicyclo [4.3.0] non-7-ene |
| (3) bicyclo [4.3.0] nonane-2-carboxylic acid | (4) bicyclo [4.2.0] octane-7-one |
| (5) bicyclo [2.2.2] octane-2-carbonitrile | (6) bicyclo [2.2.1] heptane-7- carboxylic acid |
| (7) spiro [2.2.0] penta-1, 4-diene | (8) spiro [4.5] decan-1-one |
| (9) spiro [2.3] hexane | (10) 5-formyl spiro [3.3] heptane-1-carboxylic acid |
| (11) 8-oxo bicyclo [4.2.0] octane-2-carboxylic acid | (12) 8-methyl spiro [4.5] decan-1-amine |
| (13) 1-chloro spiro [5.5] undecane | (14) 4-chloro spiro [4.4] nonan-1-ol |
| (15) 1-hydroxy spiro [2.5] octane-4-carboxylic acid | (16) spiro [2.5] octan-1-one |
| (17) bicyclo [3.2.0] hept-6-ene-2-carboxamide | (19) spiro [2.5] octane-1-carbaldehyde |
| (18) 7-oxo spiro [4.4] nonane-1-carbaldehyde | |
| (20) bicyclo [2.2.0] hexan-2-one | |