CLASSIFICATION OF CLASS INSECTA UPTO ORDERS

Insect is a six legged arthropod. Taxonomist A.D. Imms proposed a classification of insect.

**Phylum:** Arthropoda (with several classes)

**Class:** Insecta (Hexapoda)

**Characters of class Insecta**

1. Body is divided into three regions
2. In head a pair of antenna and a pair of compound eyes are usually present.
3. Thorax is the centre of locomotion with, 3 pairs of five jointed legs and two pairs of wings.
4. Excretion is mainly through malpighian tubules.
5. Tracheal system of respiration well developed.
6. Brain is divided into protocerebrum, deuto cerebrum and tritocerebrum.

The class Insecta has two subclasses viz., Apterygota and Pterygota.

<table>
<thead>
<tr>
<th></th>
<th>Apterygota</th>
<th>Pterygota</th>
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<tbody>
<tr>
<td>1.</td>
<td>Primarily wingless-evolved from wingless ancestors</td>
<td>Winged or secondarily wingless- evolved from winged ancestors. e.g. Flea, head louse, bed bug.</td>
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<td>2.</td>
<td>Metamorphosis is totally absent or slight.</td>
<td>Present.</td>
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<td>3.</td>
<td>Mandibular articulation in head is monocondylic i.e., single</td>
<td>Dicondylic i.e., double.</td>
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<td>4.</td>
<td>Pleural sulcus in thorax is absent.</td>
<td>Present.</td>
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<td>5.</td>
<td>Pregenital abdominal appendages present.</td>
<td>Absent.</td>
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The subclass Apterygota has 4 orders namely

1. Thysanura - Silverfish (Thysan-fringed, Ura-tail)
2. Collembola - Springtail or snowflea (coll-glue; emb-peg)
3. Protura - Proturans or Telsontail (Pro-first, Ura-tail)
4. Diplura - Diplurans or Japygids (Di-two; Ura-tail)

   The sub-class Pterygota has two division, namely Exopterygota and Endopterygota based on the wing development.

<table>
<thead>
<tr>
<th>Character</th>
<th>Exopterygota</th>
<th>Endopterygota</th>
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<tbody>
<tr>
<td>1. Wing development</td>
<td>External</td>
<td>Internal</td>
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<tr>
<td>2. Type of metamorphosis</td>
<td>Incomplete (Hemimetabola) or</td>
<td>Complete (Holometabola)</td>
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<td></td>
<td>gradual (Pau-rametabola)</td>
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<td>3. Pupal stage</td>
<td>Absent</td>
<td>Present</td>
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<td>4. Immature stage</td>
<td>Naiad or Nymph</td>
<td>Larva</td>
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<td>5. No. of orders</td>
<td>16</td>
<td>9</td>
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</tbody>
</table>

The class Insecta has 29 orders (4 in Apterygota and 25 in Pterygota)

**EXOPTERYGOTA**

01. Ephemeroptera - Mayflies
02. Odonata-Dragonfly, Damselfly
03. Plecoptera - Stonefly
04. Grilloblatodia - Rock crawlers
05. Orthoptera-Grasshopper, locust, cricket, mole cricket
06. Phasmida-stick insect, leaf insect

**GROUPS**

Group I. Paleopteran orders (1,2)
Group II. Orthopteroid orders (3-11)
07. Dermaptera - Earwigs
08. Embioptera - Webspinners/Embids
09. Dictyoptera - cockroach, preying mantis
10. Isoptera - Termites
11. Zoraptera - Zorapterans
12. Psocoptera - Book lice Group III. Hemipteroid orders (12-16)
13. Mallophaga - Bird lice
14. Siphonculata - Head and body louse
15. Hemiptera - Bugs
16. Thysanoptera - Thrips

ENDOPTERYGOTA

01. Neuroptera - Antilions, aphidion, owl flies, mantispid flies.
02. Mecoptera - Scorpionflies. Group IV. Panorpoid complex (1-6)
03. Lepidoptera - Butterflies and moths.
04. Trichoptera - Caddisfly.
05. Diptera - True fly.
06. Siphonaptera - Fleas.
07. Hymenoptera - Bees, wasps, ants.
08. Coleoptera - Beetles and weevils.
09. Strepsiptera - Stylopids.