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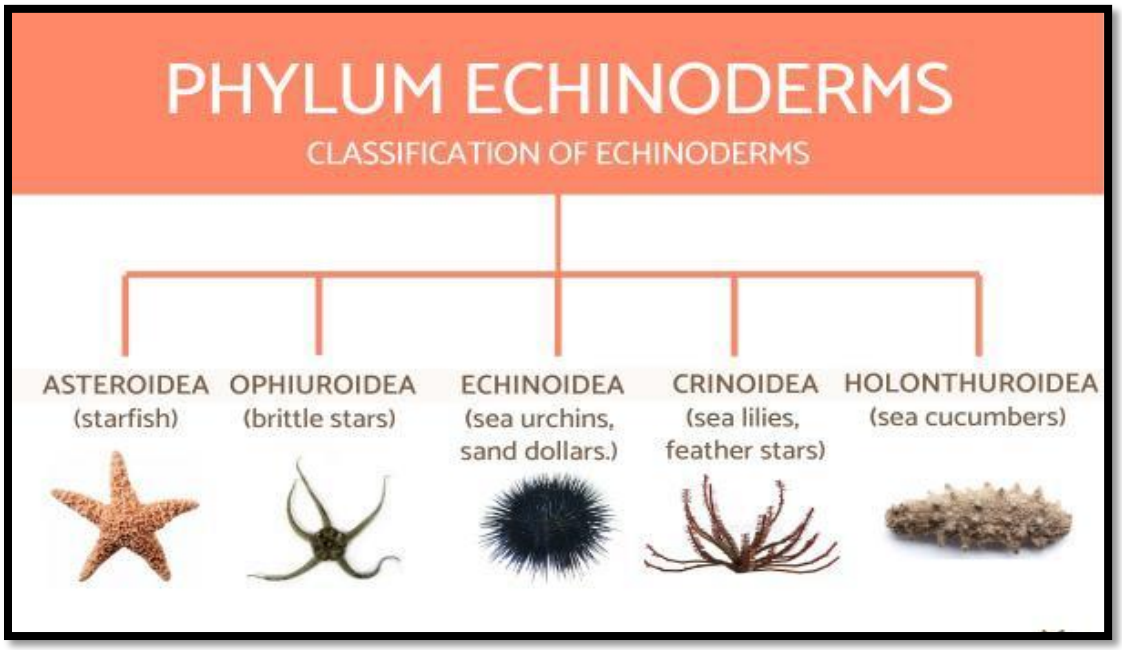
Zoology (Hons.)
Paper – I– A.



CLASSIFICATION OF ECHINODERMATA:----

Subphylum I. Eleutherozoa

(Gr., eleutheros, free + zoios = zoon, animal)

- Free-living echinoderms.
- Pentamerous body strictures.
- The oral surface bearing mouth is downward or lying on one side.
- Anus usually on the aboral surface.
- Tube feet with suckers are chiefly locomotory organ.

CLASS 1. Asteroidea

(Gr., aster, star +eidos, form)

1. Starfishes or sea stars.
2. Five arms or more and not sharply marked off from the central disc.
3. Tube feet in orally placed ambulacral grooves and with suckers.
4. Anus and madreporite aboral.
5. Pedicellariae present.
6. Free-living, slow-creeping, predaceous and scavengerous.

Subclass 1. Somasteroidea

1. Fossil Palaeozoic sea stars.
2. *Platasterias latiradiata* is the only living species.

Subclass 2. Euasteroidea

1. Living sea stars.

Order 1. Phanerozonia

1. Body with marginal plates and usually with papulae, on aboral surface.
2. Pedicellariae sessile, not crossed.
3. Tube feet without suckers.
4. Mostly burrowers in soft bottom.

   Examples : *Astropecten, Luidia.*

Order 2. Spinulosa

1. Usually without conspicuous marginal plates and with papulae on both surfaces.
2. Pedicellariae rare.
3. Tube feet with suckers.
4. Aboral surface with low spines.

   Examples : *Asterina, Solaster, Pteraster, Echinaster.*

Order 3. Forcipulata

1. No conspicuous marginal plates.
2. Pedicellariae pedunculate and straight or crossed type.
3. Four rows of tube feet.

   Examples : *Asterias, Heliaster.*

CLASS 2. Ophiuroidea

(Gr., ophis, snake + oura, tail + eidos, form)

1. Brittle-stars and allies.
2. Body star-like with arms sharply marked off from the central disc.
3. Pedicellariae absent.
4. Stomach sac-like , no anus.
5. Ambulacral grooves absent or covered by ossicles, tube feet without suckers.
6. Madreporite oral.

Order 1. Ophiurae

1. Brittle and serpent stars.
2. Small and five-armed.
3. Arms move transversely.
4. Disc and arms usually covered with plates.

Examples : *Ophiura, Ophiothrix, Ophioderma, Ophiopholis.*

Order 2. Euryalae

1. Arms simple or branched.
2. Arms move vertically.
3. Disc and arms covered by soft skin.

Examples: *Gorgonocephalus* (basket star), *Asteronyx.*

CLASS 3. Echinoidea

(Gr., echinos, hedgehog + eidos, form)

1. Sea urchins and dollars.
2. Body discoid, oval or semi-spherical and without arms.
3. Skeleton or test compact bearing movable spines and three-jawed pedicellariae.
4. Chewing apparatus or Aristotle's lantern with teeth.
5. Ambulacral grooves covered by ossicles, tube feet with suckers.
6. Gonads usually five or less.

Subclass I. Bothriocidaroida

1. A single row of plates in each inter-ambulacral area.
2. Without typical lantern.

3. Madreporite radial.

Example : Single extinct Ordovician genus *Bothriocidaris.*

Subclass 2 Regularia

1. Body globular, pentamerous, with two rows of inter-ambulacral plates in existing members.
2. Mouth central.
3. Aristotle's lantern well developed.
4. Anus central on aboral surface with well-developed apical plates.
5. Madreporite oral.

Order 1. Lepidocentroida

1. Test flexible with overlapping plates.
2. Ambulacral plates extend up to mouth lip.
3. Inter-ambulacral plates in more than two rows in extinct forms. Example : *Palaeodiscus.*

Order 2. Melonechinoida

1. Test spherical and rigid.
2. Ambulacral plates continue to mouth lip.
3. Inter-ambulacral plates in four or more rows.
4. Wholly extinct carboniferous.

Example : *Melonechinus.*

Order 3. Cidaroida

1. Test globular and rigid.

2. Two rows of long narrow ambulacral plates and two rows of inter-ambulacral plates.
3. No peristomial gills.
4. Anus aboral and central.

   Examples : *Histocidaris, Goniocidaris.*

Order 4. Diadematoida

1. Test globular usually with compound ambulacral plates.
2. Peristomial gills present.
3. Anus aboral and central.

   Examples : *Diadema, Echinus, Arbacia.*

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