Unit 3 (3.2.3)

Venous System in vertebrates:

Embryonic Veins:
In all the vertebrate embryos, the venous system is simple and similar. The veins are mostly paired and symmetrically arranged. In embryos without a yolk sac, a sub-intestinal vein is formed in the splanchnic mesoderm below the gut.

It loops around the anus and is continued posteriorly as:
(i) A caudal vein into the tail. In all embryos having a yolk sac (whether containing yolk or not), a pair of vitelline veins arises from the yolk sac and joins the posterior part of the developing heart which becomes the sinus venosus. In fact the fusion of these vitelline veins is responsible for the heart formation in bony fishes, reptiles and birds. Each vitelline vein at its posterior end joins the subintestinal vein formed in the same way as in the embryos having no yolk sac.

(ii) A pair of subcardinal veins arises between the kidneys and joins the caudal vein.

(iii) Paired anterior and posterior cardinal veins are formed, which carry the blood from the head and posterior parts of the body respectively. The anterior and posterior cardinal veins of each side unite to form a ductus Cuvieri or common cardinal vein which passes inwards through the transverse septum to enter the sinus venosus.

In fishes and salamanders (urodeles) an inferior jugular vein comes from the ventral side of the head to join the common cardinal vein. It has no homologue in other vertebrates. In an amniotes a pair of lateral or ventral abdominal veins comes from the body wall to enter the common cardinal veins.