A- Transudates

1- Excessive accumulation of fluid in a body cavity or as oedema.

2- Causes of formation of transudates are

1- Increased pressure in venous capillaries that lead to increased capillary permeability.
2- Increased capillary permeability due to toxin.
3- Hypoproteinemia.
4- Obstruction of the lymphatic return such as occurs with tumor.

3- The transudate is known under different terms, depending upon its location:

a- Hydrothorax in thoracic cavity
b- Hydropericardium in pericardial sac
c- Hydroperitonia in peritoneal cavity

4- Collection of sample

At least 10 ml of fluid should be aseptically obtained.

5- Physical examination:

1- Color

a- Light to dark depend upon the amount of bilirubin present and serum or plasma present.

b- Red to dark red or reddish brown: It mean present of erythrocytes.

c- White creamy or yellow or gray or green : present of leukocytes .

d- Milky white to green : it mean chyle.

2- Turbidity

Clear ⟶ normal

Turbid ⟶ infection

3- Coagulation: rarely show spontaneous complete or partial coagulation.

4- Odor: usually odorless unless combined with putrefactive change.

5- Specific gravity: determined by hydrometer as used in urinalysis. The normally under 1.017.

6- Chemical examination

Protein : determined as for plasma protein (Biuret method). Content is less than 3 g / dl.

7- Cytological examination

1- Totally cells count (WBC), normally less than 100 cell/ mm^3 .

2- Differential cells count by make thin film of transudate on slide stained by giemsa or leishman stain.

If fluid thin and watery centrifuge of fluid and make smear from sediment .

Examined under oil immersion and the result are:

Few erythrocyte or endothelial cells or few lymphocyte or tumor cells.

8- Bacteriological examination: negative

B- Exudate

Excessive accumulation of the fluid in the body cavities, It inflammation in origin.

Causes:

1- Infection: bacterial, fungal, viral, parasite.

2- Trauma: physical, chemical, thermal injuries.

3- Sterile inflammation or foreign body.

4- Neoplastic disease.

2- Collection of sample

1- Collection of the sample under aseptic condition.

2- It is preferable to add anticoagulant to prevent coagulation.

3- Physical examination

1- Color: gray to light yellow depending upon causative agent.

2- Turbidity: depend upon number of suspended cells.

3- Coagulation: coagulation of exudate usually just after collection, coagulation may be prevented in case of purulent inflammation due to destruction of fibrin by cellular enzymes or bacteria.

4- Odor: odorless unless combined with putrefactive bacteria.

5- Specific gravity: more than 1.017 due to greater protein content .

4- Chemical examination

Protein : more than 3 g / dl.

5- Cytological examination

1- Total cells count is over 50000 cell/ mm^3 .

2- Polymorphnuclear leukocyte predominant followed by lymphocytes and monocytes.

a- Purulent exudate: the neutrophils are predominant.

b- Chronic exudate: lymphocytes predominate.

c- Allergic or parasitic: eosinophils predominate.

6- Bacteriological examination: determine the causative agents.

Summary between exudate and transudate :

		Transudate	Exudate
1-	Appearance	Clear	cloudy
2-	Coagulation	Non	Clot spontaneously
3-	Specific gravity	Less than 1.017	Above 1.017
4-	cells	Few endothelial cells with small lymphocytes and erythrocyte	Neutrophils or lymphocytes
5-	Bacteria	absent	present
6-	protein	Less than 3 g/ dl	More than 3 g/ dl