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### Assignment.

Write short note on the characteristics( and components )of urine.

Urine is a liquid waste material produced in and excreted by the body. Secreted by the renal tubules, it accumulates in the urinary bladder and is excreted via the urethra. While it is composed of 91 to 96 percent water, it contains many other components, both solid and liquid.

### Urine Osmolarity

The urine osmolarity is a way to assess the concentration of the urine and may vary between 50 and 1200 mOsmol/kg. on average, urinary solute comes to about 1000 mOsmol/ day, with approximately 1.4 liters of urine being secreted per day. The amount and concentration of urine varies with the level of exertion, the environment, the level of hydration, and the intake of salt and protein. The solute concentration is higher in meat-eaters, because of the large amount of urea obtained from meat, whereas lower solutes are formed in vegetarians who get most of their energy from carbohydrates.

### Urinary Physical Characteristics

- \* The pH of urine is normally around 6.2 with a range of 5.5–7.0. A high dietary protein and alcohol intake leads to increased pH, while vegetables and fruit bring about a more alkaline pH.
- \* The specific gravity of urine may range from 1.002 to 1.037.
- \* The mean calorific content of urine may be approximately 100 kcal/day.

### Normal Urine Characteristics

Characteristic	Normal values
Colour	Pale yellow to deep amber
Odour	Odourless
Volume	750- 2000mL/24hr
pH	4.5- 8.0
Specific gravity	1.003- 1.032
Osmolarity	40- 1350mOsmol/kg

Urobilinogen	0.2- 1.0 mg/100ml
White blood cells	0- 2 HPF (per high power field of microscope)
Leukocytes esterase	None
Protein	None or trace
Bilirubin	<0.3 mg/100mL
Ketones	None
Nitrites	None
Blood	None
Glucose	None

### Urine Composition

Over 99 percent of urinary solutes are composed of only 68 chemicals which have a concentration of 10 mg/L or more. 42 compounds are actually involved. They may be classified as follows:

- \* Electrolytes such as sodium, potassium, calcium, magnesium and chloride
- \* Nitrogenous chemicals such as urea and creatinine
- \* Vitamins
- \* Hormones
- \* Organic acids such as uric acid
- \* Other organic compounds