

**Topic :- Excretory Products & Their Elimination**

- 1 (b)  
**Haemodialyser** is also known as blood dialyser or artificial kidney and is used in the condition of renal failure. During dialysis, the blood is taken from radial artery, mixed with heparin (anticoagulant) cooled to 0°C and passed through cellophane tubes of the disposable dialyser. The nitrogenous waste products are passed out into dialysing fluid through simple diffusion. Then purified blood is mixed with antiheparin and passed into radial vein.
- 2 (a)  
**Polyuria** amount of urine passed out is more
- 3 (b)  
Because these are ATP dependant substances whose movement occurs against concentration gradient. In active transport, ATP provided by mitochondria, provides energy needed to move these ions and molecules across the cell membrane
- 4 (b)  
**Urea** is both nitrogenous product as well as osmoregulator. It is the excretory product in man and mammals, *Ascaris*, earthworm, fishes like sharks and string rays, etc.
- 5 (b)  
Mostly aquatic arthropods, bony fishes, freshwater fishes, amphibian tadpoles, etc, excrete ammonia, *i.e.*, phenomenon called ammonotelism and the animal concerned is called **ammonotelic**.
- 6 (d)  
Blood vessels, which supply blood to glomerulus is called the afferent arteriole and the outgoing or exit is done by efferent arteriole
- 7 (c)  
The yellow colour of urine is due to the presence of pigment Urochrome. This pigment is formed by bile pigment bilirubin.

Bilirubin

↓Liver

Intestine

↓

Urobilinogen

↓

Urochrome (Yellow pigment of urine)

- 8 **(c)**  
Excessive loss of fluid activate the receptor, which stimulate hypothalamus to release the ADH from posterior lobe of pituitary. Facilitate the water reabsorption of water from the lateral part of tubule (DCT and CT)
- 9 **(c)**  
Each kidney has nearly one million complex tubular structures called nephrons, which are called functional unit of kidney
- 10 **(d)**  
In certain marine molluscs, crustaceans and teleost fishes, the excretory product is TMO (trimethylamine oxide). In these animals, ammonia is converted into **trimethylamine** (TMA) after its methylation. Thus, either TMA or its oxidation product **trimethyl oxide** (TMO) is the excretion product in these causes.
- 11 **(a)**  
A - Calyx  
B - Cortex  
C - Renal column  
D - Ureter
- 12 **(d)**  
Effective Filtration Pressure (EFP) or Net Filtration Pressure (NFP) is glomerular blood hydrostatic pressure (GBHP) minus the colloidal osmotic pressure of blood (BCOP) and capsular hydrostatic pressure (CHP).  
$$\text{EFP/NFP} = \text{GBHP} - (\text{BCOP} + \text{CHP})$$
$$= 60 - (32 + 18)$$
$$= 10 \text{mmHg}$$
- 13 **(c)**  
Water is a high threshold substance. During selective reabsorption 99.5% of water is reabsorbed (active transport) and reabsorption takes place in loop of Henle.
- 14 **(c)**  
The JGA plays a complex regulatory role. A fall in glomerular blood flow/glomerular blood pressure/GFR can activate the JG cells to release renin, which converts angiotensinogen in blood to angiotensin I and further to angiotensin-II. Angiotensin-II, being a powerful

vasoconstrictor, increase the glomerular blood pressure and thereby GFR. Angiotensin-II also activates the adrenal cortex to release aldosterone. Aldosterone causes reabsorption of  $\text{Na}^+$  and water from the distal parts of the tubule. This also leads to an increase in blood pressure and GFR. This complex mechanism is generally known as the renin-angiotensin mechanism.

An increase in blood flow to the atria of the heart can cause the release of Atrial Natriuretic Factor (ANF). ANF can cause vasodilation (dilation of blood vessels) and thereby decrease the blood pressure. ANF mechanism, therefore, acts as a check on the renin-angiotensin mechanism

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**(b)**

Passage of urine in humans is

Glomerulus → DCT → Loop of Henle → PCT → Collecting tubule → Ureter → Bladder → Urethra → Outside

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**(d)**

Excretion is the elimination of metabolic wastes from the body. Carbon dioxide is removed as a gas by respiratory organs. The common excretory product in man are  $\text{CO}_2$ , minerals, salts, urea, water, pigments, etc.

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**(c)**

Uricotelism is found in those animals, which need water conservation. It is the elimination of uric acid and urates as the main nitrogenous wastes in the form of paste or in a semisolid state.

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**(b)**

Juxta glomerular apparatus is a modification in afferent arteriole and distal convoluted tubule for regulation of osmoregulation in body

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**(d)**

Renin angiotensin mechanism, vasopressin and juxta-glomerular apparatus autoregulate the GFR

ANSWER-KEY										
<b>Q.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>A.</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>D</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>D</b>
<b>Q.</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>
<b>A.</b>	<b>A</b>	<b>D</b>	<b>C</b>	<b>C</b>	<b>B</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>D</b>	<b>D</b>