

QUESTION 6

2019

DURING EXHALATION

- Diaphragm relax
- It curves upward
- This reduces the volume in thoracic cavity
- Causing higher air pressure in lungs
- Air is forced out



DURING INHALATION

- It contracts
- Lowers and flatten
- Volume of thoracic cavity increases
- Low air pressure in lungs
- Causes air to be forced in

FUNCTION OF DIAPHRAGM

- Dome-shaped
- Separate abdomen and thorax
- Plays important role in breathing mechanism

4 MARKS

SIMILARITIES & DIFFERENCES BTW RESPIRATORY SYSTEM HUMAN AND INSECTS

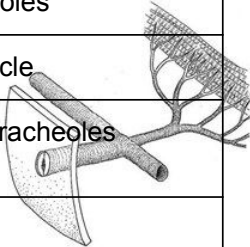
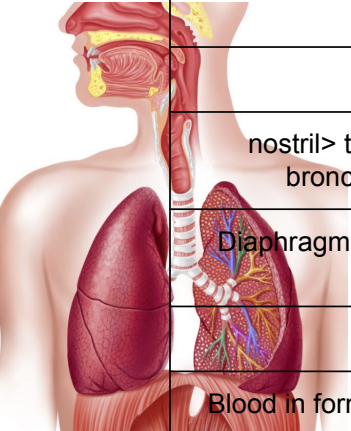
S

- Large surface area to volume ratio (TSA/V)
- Wall of respiratory surface one cell thick
- Respiratory surface is moist
- Involve diffusion of gases O₂, CO₂

10 MARKS

D

HUMAN	ASPECT	INSECTS
lungs	Organs	tracheae
alveolus	Site of gas exchange	tracheoles
nostril	Respiratory opening	spiracle
Numerous alveolus	Respiratory structure to increase surface area	Numerous tracheoles
rich	Network of blood capillaries	-
nostril> trachea> bronchi> bronchioles> alveoli	Air passage	spiracle> trachea> tracheoles>body cells
Diaphragm, rib cage, intercostal muscle	Structures that help	thorax, abdomen
cartilage	To prevent collapse	Air sacs
Blood in form of oxyhaemoglobin	Transportation of gases	Directly contact with body tissue



-After 100 m run,
-oxygen has been used up for
cellular respiration



REGULATORY MECHANISM OF OXYGEN AFTER A 100 M RUN (VIGOROUS ACTIVITY)

Partial pressure of **carbon dioxide level** increases, carbonic acid formed

Blood pH drop

Detected by **peripheral chemoreceptor** (at aortic bodies)

Send nerve impulses to **respiratory centre**

Send nerve impulses to **diaphragm and intercostal muscle**

Diaphragm and intercostal muscle will **contract and relax** at faster rate

Breathing and ventilation rate increases

Heartbeat increases, more carbon dioxide **exhaled**

Carbon dioxide concentration and pH level return **normal**

8 MARKS

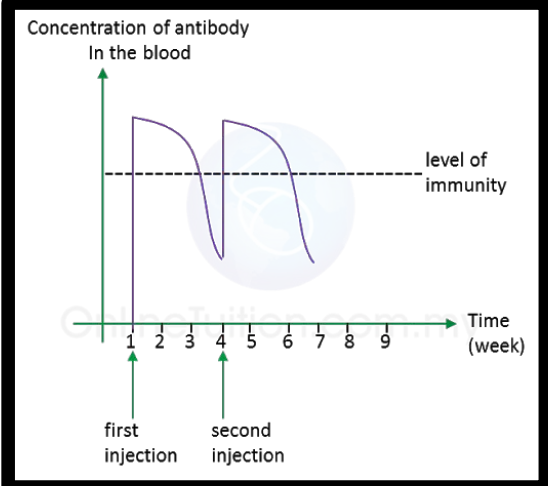
QUESTION 7

4 MARKS

Type of immunity;
PASSIVE ARTIFICIAL IMMUNITY

Injection of **anti-serum** which contain antibody

After 1st injection, concentration of **antibody** increase immediately and rapidly above immunity level



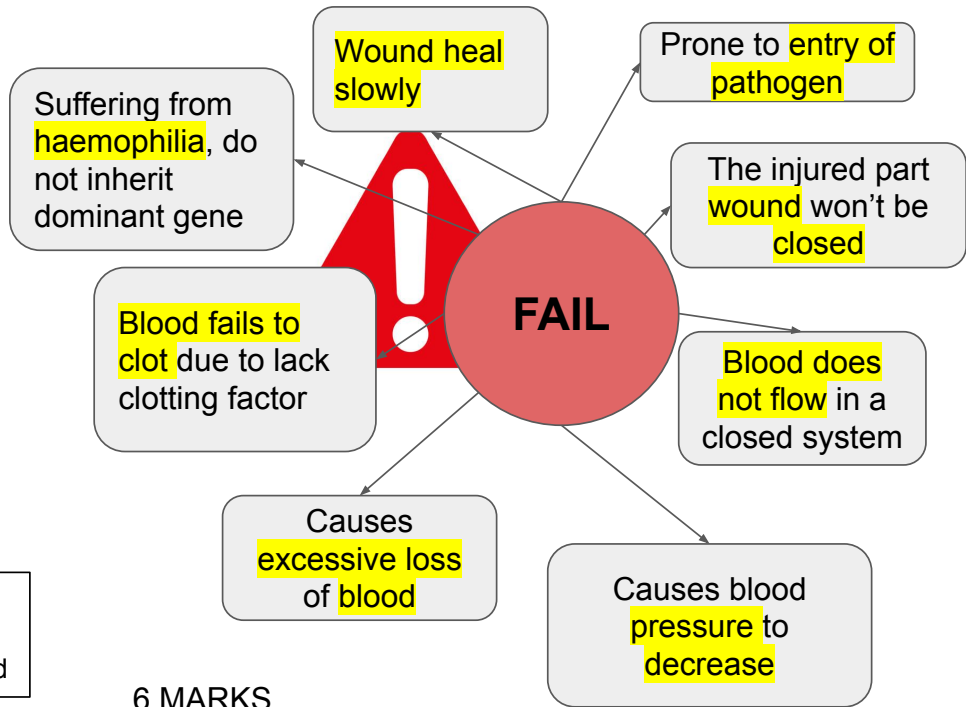
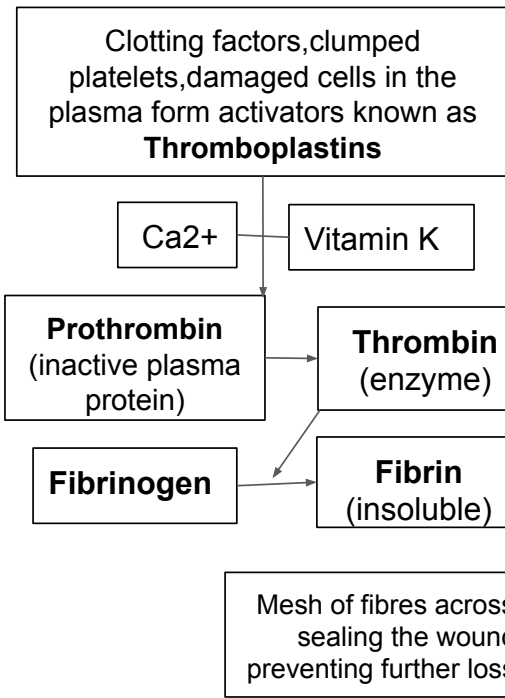
Because she or he **obtain antibody**

2nd injection is given when concentration of antibody decrease from 1st injection

Thus, **Concentration of antibody** decrease rapidly again

Lymphocytes of individual M does not produce antibody

BLOOD CLOTTING MECHANISM & CONSEQUENCES IF FAILS



BLOOD CIRCULATORY SYSTEM AND LYMPHATIC SYSTEM (10 MARKS)

SIMILARITIES

- Involve in transportation of substances
- Both have vessels
- Have fluid for medium to transport
- Involve in body defence process
- Vein and lymphatic vessels have valves
- Both contain leucocytes

Blood circulatory system

- Has pumping organ
- Has 3 types of blood vessels (vein, artery, capillary)
- Artery has no valve
- Has no lymph nodes
- Has low lymphocytes
- Has erythrocytes, platelets, plasma protein
- Blood is circulated in closed vessels
- Medium of transport is red in colour as it contains haemoglobin

Lymphatic system

- Has no pumping organ
- Has 2 types of vessels, lymphatic vessels and capillary
- Lymphatic vessels have valves
- Has lymph nodes
- Has higher lymphocytes
- Has no erythrocytes, platelet, plasma protein
- Lymph flow from lymph capillary to subclavian vein
- Medium of transport lymph is yellowish, colourless

QUESTION 8



WHY?



- Plant is planted in **greenhouse** to overcome the extreme changes of weather
- To able the **control of factors affecting the photosynthesis rate/** at optimum level
- To Increase **crop yield** at any seasons
- It consists of **glass** that allow light penetration
- Heat is trapped

HOW IT WORKS?

GREENHOUSE



10 MARKS

DURING WINTER, AUTUMN, FALL

- Light intensity low
- Temperature is low
- Rate of photosynthesis is lowest
- Light intensity is controlled by **artificial light**
- Electric heater** is used to optimise temperature

IN SUMMER

- Excessive intensity of light
- Dry
- Normal rate of photosynthesis
- External shading roof** control excessive light intensity
- Air ventilator, shuttle fan** to cool the temperature
- Paraffin wax** is burned to control CO₂
- Carbon dioxide pump is used to increase R.O.P
- Automatic water sprinkler** system to supply water continuously
- Air humidifier** to prevent dryness and excessive loss of water

JUSTIFY (YES/ NO) THE DAILY MENU OF PREGNANT WOMAN PRACTICE

SUITABLE/ YES/ BALANCED DIET

- **Rice, bread, chapati, carbonated drinks** contains carbohydrates/ sugar
- Which provides energy
- **Chicken, eggs, meat** contain **protein**
- Which is needed for growth, forming new cells for foetus
- Protein also needed to repair damaged cells of mother
- **Chicken soup** provide **vitamin and minerals**
- As source of iron for haemoglobin formation in foetus and mother
- **Fruit custard** and green salad provide **fibres**
- To avoid constipation and aid in peristalsis
- **Fried chicken and meat curry** contain **fat, lipid, cholesterol**
- Formation of new plasma membrane and act as heat insulator
- **Carbonated drink and tea** provides **water**
- To prevent dehydration
- **Tea** contains **caffeine**
- To stimulate nerve action



NOT SUITABLE/ NO/ NOT BALANCED

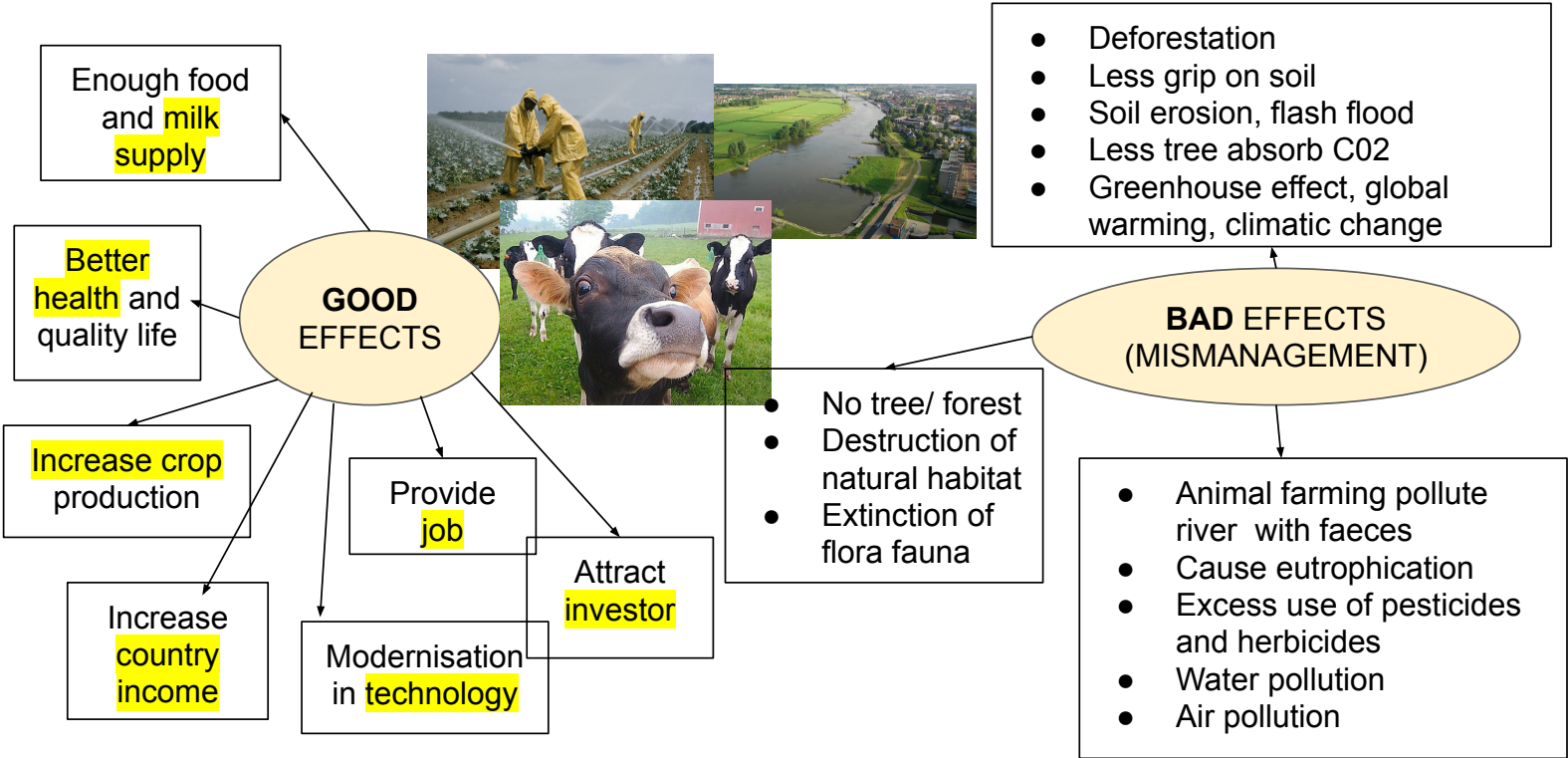
- **Rice, bread, chapati, carbonated drinks** contains carbohydrates/ sugar
- Excessive of carb can lead to obesity and diabetes
- **Chicken, eggs, meat** contain **protein**
- Excessive protein cause gout, kidney failure, increase in uric acid
- **Less fibres**
- Leads to constipation
- **Fried chicken and meat curry** contain **fat, lipid, cholesterol**
- Excess fat causes cardiovascular problem, heart attack, stroke, atherosclerosis
- **Carbonated drink and tea** contains excess **sugar, colouring, acid**
- Leads to diabetes, cancer, tooth caries
- **Tea** contains **caffeine**
- Excess intake of drugs effect growth of foetus
- **Not enough water**
- Cause dehydration



10 MARKS

QUESTION 9

HUMAN ACTIVITIES IN AGRICULTURE AND ANIMAL FARMING



IMPORTANCE PROPER MANAGEMENT OF DEVELOPMENT ACTIVITIES (5 MARKS)

- To balance the demands for resources
- A nation needs continuous development for improvement of lives of its people (health, education, living conditions)
- To build parks in the cities to encourage healthy lifestyle in community
- The resources can be replenished for future generations
- Electric train reduces air pollution as it reduces cars in town
- Reduce bad impacts to environment
- Forest reserve to maintain economic potential and tourist attraction
- To preserve and conserve forest
- Maintain natural habitat
- Resources of medicine, logs,
- Maintain food chain
- Stable dynamic ecosystem

MEASURE TAKEN IN MANAGEMENT TO SUSTAIN BALANCE OF NATURE (5 MARKS)

- Implementation of laws to protect environment (Environment Quality Act 1974)
- Use of technology (catalytic converter, unleaded petrol, sewage treatment plants)
- Education on the management of resources (4Rs recycle, reuse, reduce, recover)
- Preserve and conserve forests and mangrove swamps (water catchment areas, rainforest, selective harvesting, crop rotation, contour farming, effective drainage and irrigation)
- The practice of biological control (prey-predators relationship, biomagnification)
- The use of renewable energy (solar, wind, water, wave, geothermal, gasohol, palm oil fuel)
- The efficient use of energy (reduce burning of coal, petroleum, fossil fuels)