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# FBISE Biology Class 10

## Topical workbook - Volume 2 of 2

118 questions arranged by official framework topic.

National Curriculum 2022-23; supported examinations from 2027.

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# Immunity

Domain I: Disease and immunity

|      |                                                                                                                               |     |                                                                                                                                                                                                      |                 |
|------|-------------------------------------------------------------------------------------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| (iv) | Enlist any three sources of drugs with one example each.<br>ادویات کے کسی بھی تین ذرائع کے نام لکھیں۔ ہر ایک کی ایک مثال دیں۔ | 1x3 | OR<br>Briefly explain bactericidal and bacteriostatic antibiotics. Give one example of each.<br>بیکٹیریائی سائیکل اور بیکٹیریوسٹائٹک اینٹی بائیوٹکس کی مختصر وضاحت کریں۔ نیز ہر ایک کی ایک مثال دیں۔ | 1.5<br>+<br>1.5 |
|------|-------------------------------------------------------------------------------------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|

|      |                                                                                                                                                                              |    |    |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|
| (vi) | How do vaccines help the body to develop immunity against a specific disease? Write mechanism.<br>وکیسین جسم کو کسی مخصوص بیماری کے خلاف قوت مدافعت پیدا کرنے میں کس طرح مدد | 03 | OR |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|

(12) If a patient has severe throat infection, which one of the following types of medicine is required?

- |             |                       |                |                       |
|-------------|-----------------------|----------------|-----------------------|
| A. Sedative | <input type="radio"/> | B. Antibiotics | <input type="radio"/> |
| C. Vaccine  | <input type="radio"/> | D. Narcotics   | <input type="radio"/> |

x. Describe the role of vaccines in producing immunity against specific diseases.

(2+3)

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# Biotechnology

Domain J: Biotechnology





|                                                                                        |    |
|----------------------------------------------------------------------------------------|----|
| Write a short note on single cell protein.<br>سنگل سیل پروٹین پر مختصر نوٹ تحریر کریں۔ | 03 |
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| (x) Describe the process of fermentation in fermenters.<br>فریمینٹرز میں فریمینٹیشن کا پروسس تحریر کریں۔ | 03 |
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| Describe briefly the role of genetic engineering in the field of medicine. | 03 |
|----------------------------------------------------------------------------|----|

|     |                                                                      |    |
|-----|----------------------------------------------------------------------|----|
| Q.3 | Discuss basic steps in genetic engineering for gene transplantation. | 05 |
|-----|----------------------------------------------------------------------|----|

| Which of the following is a product of fermentation? | Yogurt | Insulin | DNA | Alcoholic disinfectant |
|------------------------------------------------------|--------|---------|-----|------------------------|
|                                                      |        |         |     |                        |

|    |    |                                                                                                                    |
|----|----|--------------------------------------------------------------------------------------------------------------------|
| 03 | OR | Suggest any three measures to control water pollution.<br>آپ، آلودگی کو کنٹرول کرنے کے لیے تین اقدامات تجویز کریں۔ |
|----|----|--------------------------------------------------------------------------------------------------------------------|

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|----------------------------------------------------------|----|
| اپنی اعداد و ارقام سے دیکھ کر جانیں کہ کیسے ہے۔          |    |
| How is yogurt produced using bacteria? Describe briefly. | 03 |
| کیسے بنایا جاتا ہے؟ مختصراً بیان کریں۔                   |    |

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|                                                                                                                                                       |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| What is genetic engineering? How is it used in agriculture and medicine?<br>ماحولیاتی مینجمنٹ کے لیے - 2025 - 2026 کے سالانہ امتحان کے استعمال کے لیے | 1+4 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----|

|                                                                                                                                                                                                       |       |       |          |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|----------|----------|
| Which microorganism is commonly used to produce human insulin biotechnologically?<br>کون سا مائیکروآرگنزم انسانی انسولین کو بائیو ٹیکنالوجی کے ذریعہ پیدا کرنے کے لیے عام طور پر استعمال کیا جاتا ہے؟ | Virus | Algae | Bacteria | Protozoa |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|----------|----------|

|                                                                                                                                                                                                                         |     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| What is meant by food biotechnology? Also name one genetically modified crop grown in Pakistan.<br>غذائی بائیو ٹیکنالوجی سے کیا مراد ہے؟ نیز پاکستان میں اگائی جانے والی ایک جینیاتی طور پر تبدیل شدہ فصل کا نام لکھیں۔ | 2+1 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|

|        |                                                                                         |     |
|--------|-----------------------------------------------------------------------------------------|-----|
| (viii) | Briefly describe medical benefits obtained through marine biotechnology. (Three points) | 1x3 |
|--------|-----------------------------------------------------------------------------------------|-----|

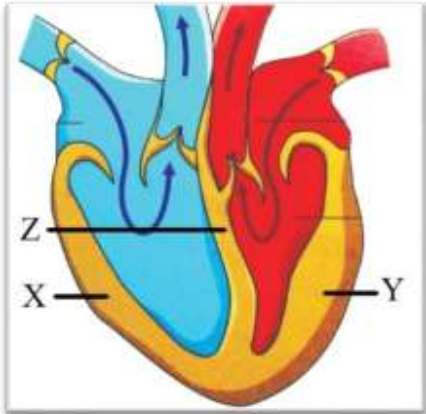
|     |                                                                  |     |    |                                                                                       |           |
|-----|------------------------------------------------------------------|-----|----|---------------------------------------------------------------------------------------|-----------|
| Q.5 | Explain the concept and application of industrial biotechnology. | 2+3 | OR | Describe the structure and function of human stomach. Also draw its labelled diagram. | 3.5 + 1.5 |
|-----|------------------------------------------------------------------|-----|----|---------------------------------------------------------------------------------------|-----------|

|                                                                      |            |             |                   |                    |
|----------------------------------------------------------------------|------------|-------------|-------------------|--------------------|
| Which biotechnology-based method helps in early detection of cancer? | X-ray only | Vaccination | Genetic screening | Antibiotic therapy |
|----------------------------------------------------------------------|------------|-------------|-------------------|--------------------|

|      |                                                                                 |          |
|------|---------------------------------------------------------------------------------|----------|
| (iv) | Give two examples showing the role of biotechnology in agriculture in Pakistan. | 1.5<br>+ |
|      |                                                                                 | 1.5      |

|      |                                                                     |    |
|------|---------------------------------------------------------------------|----|
| (ix) | How marine biotechnology helps in food production? Explain briefly. | 03 |
|------|---------------------------------------------------------------------|----|



| Q. 2   | Attempt the following questions. (11 × 3 = 33)                                                              |           |    |                                                                                                                                                                                                                                                                                                                  |       |                  |          |
|--------|-------------------------------------------------------------------------------------------------------------|-----------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------|----------|
| (i)    | Narrate the series of events that take place during swallowing of food.                                     | 3         | OR | How does a kidney transplant help a patient with kidney failure?                                                                                                                                                                                                                                                 | 3     |                  |          |
| (ii)   | How myocardial infarction is life threatening?                                                              | 3         | OR | What would happen if a chromosome lacked kinetochore during cell division?                                                                                                                                                                                                                                       | 3     |                  |          |
| (iii)  | Compare the composition of inspired air and expired air in tabular manner.                                  | 3         | OR | Compare main types of Diabetes.                                                                                                                                                                                                                                                                                  | 3     |                  |          |
| (iv)   | List the components of reflex arc.                                                                          | 3         | OR | Complete the following table by giving at least one response in each box                                                                                                                                                                                                                                         | 1+1+1 |                  |          |
|        |                                                                                                             |           |    | Endocrine gland                                                                                                                                                                                                                                                                                                  |       | Hormone          | Function |
|        |                                                                                                             |           |    | Thyroid                                                                                                                                                                                                                                                                                                          |       |                  |          |
|        |                                                                                                             |           |    | Ovary                                                                                                                                                                                                                                                                                                            |       |                  |          |
|        |                                                                                                             |           |    | Parathyroid                                                                                                                                                                                                                                                                                                      |       |                  |          |
| (v)    | While focusing on the labeled parts of the following diagram of heart, answer the questions relevant to it. | 1.5 + 1.5 | OR | Answer the questions related to the diagram. <div></div> <p>A. What is the physiological significance of the fact that “Y” is thicker than “X”?</p> <p>B. What would you expect to happen if there was a pore left in “Z”?</p> | 1+1+1 |                  |          |
| (vi)   | What are the benefits of internal fertilization in land animals?                                            | 1x3       | OR | Name and give roles of components of gastric juice which help in digestion of different materials.                                                                                                                                                                                                               | 1+2   |                  |          |
| (vii)  | List any three traits of pea plant with their contrasting phenotypes studied by Mendel.                     | 1x3       | OR | Complete the following table related to diseases.                                                                                                                                                                                                                                                                | 1+1+1 |                  |          |
|        |                                                                                                             |           |    | Pathogen                                                                                                                                                                                                                                                                                                         |       | Example          | Disease  |
|        |                                                                                                             |           |    |                                                                                                                                                                                                                                                                                                                  |       | Salmonella typhi |          |
|        |                                                                                                             |           |    |                                                                                                                                                                                                                                                                                                                  |       |                  | Ringworm |
|        |                                                                                                             | Protozoa  |    |                                                                                                                                                                                                                                                                                                                  |       |                  |          |
| (viii) | Why do some vaccines require booster shots after some time?                                                 | 3         | OR | What is Bt cotton, and why is it important in Pakistan?                                                                                                                                                                                                                                                          | 1+2   |                  |          |

|        |                                                                                      |    |    |                                                                                  |     |
|--------|--------------------------------------------------------------------------------------|----|----|----------------------------------------------------------------------------------|-----|
|        | پارہیٹو-سس، لوس طرح ظاہر کرتا ہے؟ وجوہات لکھیں۔                                      |    |    |                                                                                  |     |
| (viii) | An increase or decrease in predator population affects prey population. Explain how? | 03 | OR | Name the type of fermentation done by yeast. How this process is used in baking? | 1+2 |
|        | شکاریوں کی تعداد میں اضافہ یا کمی شکار کی آبادی میں تبدیلی لاتا ہے۔ وضاحت کریں       |    |    | ییسٹ میں خمیر کی کون سی قسم ہوتی ہے؟ یہ عمل بیکنگ میں کیسے استعمال ہوتا ہے؟      |     |

|     |                                                                                                                                                                                  |                |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Q.5 | Enlist the main parts of a fermenter. How fermenters help in the production of microbial products? Also draw labelled diagram of fermenter.                                      | 1+<br>2.5<br>+ |
|     | فہرست کریں کہ خمیر کرنے کے مکینے کے اہم حصے کیا ہیں۔ خمیر کرنے کے مکینے کیسے مائیکروبیل مصنوعات کی پیداوار میں مدد کرتے ہیں؟ نیز خمیر کرنے کے مکینے کا لیبلڈ ڈیگرام بھی کھینچیں۔ | 4.5            |

- (4) The single cell protein involves replication of all microorganisms **EXCEPT**:
- |    |       |                       |    |          |                       |
|----|-------|-----------------------|----|----------|-----------------------|
| A. | Virus | <input type="radio"/> | B. | Bacteria | <input type="radio"/> |
| C. | Algae | <input type="radio"/> | D. | Yeast    | <input type="radio"/> |

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# Biostatistics and data handling

Domain K: Biostatistics and Data Handling



|              |
|--------------|
| <b>3+2+1</b> |
|--------------|

| Name of student | Score |
|-----------------|-------|
| A               | 5     |
| B               | 10    |
| C               | 4     |
| D               | 8     |
| E               | 11    |
| F               | 4     |
| G               | 7     |



|       |                                                                                                                                                               |     |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| (vii) | The number of fruits produced on each of the 10 trees are given. Find out the median value and mean of fruit produced.<br>3, 5, 18, 21, 15, 10, 8, 12, 13, 7. | 1+2 |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|

|                                                                                                       |     |
|-------------------------------------------------------------------------------------------------------|-----|
| Describe any five uses of bio-statistics.<br>بائیو سٹیکس کے کوئی سے پانچ استعمالات تفصیلاً بیان کریں۔ | 1x5 |
|-------------------------------------------------------------------------------------------------------|-----|

|     |                                            |                                        |                        |                                  |                              |         |
|-----|--------------------------------------------|----------------------------------------|------------------------|----------------------------------|------------------------------|---------|
| (x) | Most relevant example of biostatistics is: | Studying the effects of a new medicine | Writing a medical book | Treating a patient in a hospital | Drawing pictures of bacteria | ○ ○ ○ ○ |
|-----|--------------------------------------------|----------------------------------------|------------------------|----------------------------------|------------------------------|---------|

**OR**

Define mean and mode. Calculate the mean and mode of the given data.  
Score of students in a game:

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2+3

| Name of student | Score |
|-----------------|-------|
| A               | 5     |
| B               | 10    |
| C               | 4     |
| D               | 8     |
| E               | 11    |
| F               | 4     |
| G               | 7     |

A student studied the effect of limiting factors on rate of photosynthesis and obtained following data shown in **Table 3.1**

| Concentration of CO <sub>2</sub> (% age)              | 0.00 | 0.02 | 0.04 | 0.06 | 0.08 | 0.10 | 0.12 | 0.14 |
|-------------------------------------------------------|------|------|------|------|------|------|------|------|
| Rate of photosynthesis in <b>LOW LIGHT INTENSITY</b>  | 0    | 20   | 29   | 35   | 39   | 42   | 45   | 47   |
| Rate of photosynthesis in <b>HIGH LIGHT INTENSITY</b> | 0    | 22   | 35   | 47   | 68   | 84   | 94   | 99   |

- a) Make two graphs of above data to show rates of photosynthesis in low and high intensities of light. Compare the rates of photosynthesis in both graphs. [2]
- b) Label the region of graphs that show carbon dioxide as limiting factor. [2]
- c) Name two factors other than CO<sub>2</sub> and light intensities, that may act as limiting factor for rate of photosynthesis. How a factor becomes limiting factor for the process of photosynthesis? [2]

- 
- A** **Figure 5.1** **B**

Figure: 5.1

- | <b>Height range in inches</b> | <b>Number of students</b> |
|-------------------------------|---------------------------|
| 59-60                         | 2                         |
| 61-62                         | 5                         |
| 63-64                         | 12                        |
| 65-66                         | 18                        |
| 67-68                         | 9                         |
| 69-70                         | 3                         |
| 71-72                         | 1                         |

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# Digestion

Domain R: Human Physiology

|     |                                                                         |   |
|-----|-------------------------------------------------------------------------|---|
| (i) | Narrate the series of events that take place during swallowing of food. | 3 |
|-----|-------------------------------------------------------------------------|---|

|                                                                                                    |            |
|----------------------------------------------------------------------------------------------------|------------|
| Name and give roles of components of gastric juice which help in digestion of different materials. | <b>1+2</b> |
| Complete the following table related to                                                            | <b>1+1</b> |



|                                                     |    |
|-----------------------------------------------------|----|
| Briefly explain the role of the liver in digestion. |    |
| ڈاکی جیشن میں جگر کا کردار مختصر بیان کریں۔         | 03 |

|     |                                                                         |    |
|-----|-------------------------------------------------------------------------|----|
| (x) | Describe the structure of a villus.<br>ویلس (Villus) کی ساخت بیان کریں۔ | 03 |
|-----|-------------------------------------------------------------------------|----|



|                 |    |                                                                                                          |    |
|-----------------|----|----------------------------------------------------------------------------------------------------------|----|
| 1.5<br>+<br>1.5 | OR | Briefly explain the role of the liver other than digestion.<br>ڈائیجیشن کے علاوہ جگر کا کردار بیان کریں۔ | 03 |
|-----------------|----|----------------------------------------------------------------------------------------------------------|----|

|      |                                                                                        |     |
|------|----------------------------------------------------------------------------------------|-----|
| (x)  | What is a lacteal? What is its function?<br>لیکٹیل (Lacteal) کیا ہے؟ اس کا کیا کام ہے؟ | 1+2 |
| (xi) | Differentiate between inspired air and expired air in                                  |     |

|            |                                                             |            |
|------------|-------------------------------------------------------------|------------|
| <b>Q.4</b> | Describe the structure and function of the small intestine. | <b>2+3</b> |
|------------|-------------------------------------------------------------|------------|

**Q.1** A student carried out biochemical tests on the given food material to find out its nutrient contents.

a) Re-draw table 1.1 on E-sheet and complete with required information. [3]

| Table: 1.1                      |              |              |
|---------------------------------|--------------|--------------|
| Reagent                         | Used to test | Observations |
| Absolute ethanol and cold water |              |              |
|                                 | Protein      |              |
| Benedict's solution             |              |              |

b) A student's test on food sample gives colour change with iodine. Does it indicate anything about the presence of glucose in the sample? If your answer is no, then, which biochemical test would the student have to perform to find out about the presence of glucose? [2]

c) Identify the enzyme catalyzing the reaction shown in figure 1.1? [1]

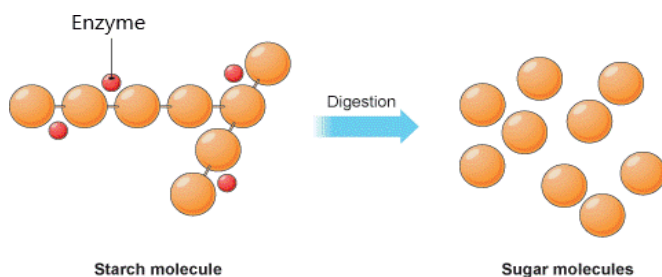


Figure: 1.1

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# Circulation

Domain R: Human Physiology

|      |                                                |   |
|------|------------------------------------------------|---|
|      | during swallowing of food.                     |   |
| (ii) | How myocardial infarction is life threatening? | 3 |
| ***  | Comment the composition of insulin & its       | 2 |

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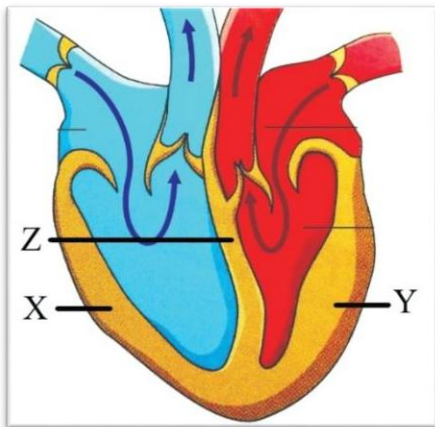
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While focusing on the labeled parts of the following diagram of heart, answer the questions relevant to it.

1.5  
+  
1.5



- A. What is the physiological significance of the fact that “Y” is thicker than “X”?
- B. What would you expect to happen if there was a pore left in “Z”?



|      |                                                                       |     |
|------|-----------------------------------------------------------------------|-----|
| (xi) | What is the role of red blood cells (RBCs) in body?<br>(Three points) | 1x3 |
|------|-----------------------------------------------------------------------|-----|

|     |                                                                              |          |
|-----|------------------------------------------------------------------------------|----------|
| (v) | Briefly explain the role of blood in transport of Oxygen and Carbon dioxide. | 1.5<br>+ |
|-----|------------------------------------------------------------------------------|----------|



| Q. 2 | Attempt the following questions. (11 × 3 = 33)                          |   |    |                                                           |
|------|-------------------------------------------------------------------------|---|----|-----------------------------------------------------------|
| (i)  | Narrate the series of events that take place during swallowing of food. | 3 | OR | How does a kidney transplan with kidney failure?          |
| (ii) | How myocardial infarction is life threatening?                          | 3 | OR | What would happen if a chrc kinetochore during cell divis |

|      |                                               |   |
|------|-----------------------------------------------|---|
| (xi) | Why do veins have valves but arteries do not? | 3 |
|------|-----------------------------------------------|---|

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# Urinary system

Domain R: Human Physiology

|      |                                                 |              |        |         |                 |
|------|-------------------------------------------------|--------------|--------|---------|-----------------|
| (vi) | Urine flows from the kidneys to the bladder by: | Renal pelvis | Ureter | Urethra | Urinary bladder |
|------|-------------------------------------------------|--------------|--------|---------|-----------------|

|                                                                  |   |
|------------------------------------------------------------------|---|
| How does a kidney transplant help a patient with kidney failure? | 3 |
|------------------------------------------------------------------|---|

|                                          |        |       |           |       |
|------------------------------------------|--------|-------|-----------|-------|
| Which organ filters urea from the blood? | Kidney | Lungs | Intestine | Heart |
|------------------------------------------|--------|-------|-----------|-------|

|    |                                                                             |         |             |      |        |
|----|-----------------------------------------------------------------------------|---------|-------------|------|--------|
| 2. | The basic purpose of urine formation is the removal of _____ from the body. | Glucose | Blood cells | Urea | Mucous |
|----|-----------------------------------------------------------------------------|---------|-------------|------|--------|

|     |                                                              |    |
|-----|--------------------------------------------------------------|----|
| (v) | Draw labeled diagram of urinary system of man.               | 03 |
|     | انسان کے پورے جسم کی یسٹم کی لیبل شدہ ڈیگرام مگر رسم بنائیں۔ |    |

|                                                                                                                            |                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <p>الف۔ درج شکل میں پھیپھڑوں کی بیماری کی نشاندہی کریں۔<br/>ب۔ اس بیماری کی علامات اور وجوہات لکھیں۔</p>                   |  <p>1+2</p> |
| <p>How xerophytes overcome their problem of shortage of water?<br/>زبردقائیت پانی کی کمی کے مسئلے کو کیسے حل کرتے ہیں؟</p> | <p>03</p>                                                                                    |
| <p>a. Label the parts A, B, C, and D<br/>b. Write function of nephron.<br/>الف۔ حصہ A، B، C، اور D کو لیبل کریں۔</p>       |  <p>2+1</p> |

|                                                                                                                                   |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-----|
| Explain the three processes involved in urine formation. How does the kidney contribute to maintaining water balance in the body? | 3+2 |
|-----------------------------------------------------------------------------------------------------------------------------------|-----|

|                                                                          |                 |        |         |        |
|--------------------------------------------------------------------------|-----------------|--------|---------|--------|
| The main organ of the urinary system responsible for urine formation is: | Urinary bladder | Kidney | Urethra | Ureter |
|--------------------------------------------------------------------------|-----------------|--------|---------|--------|

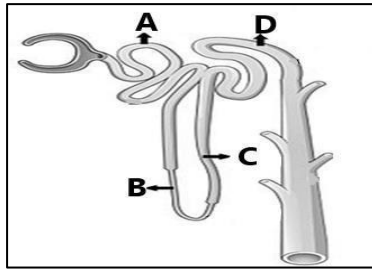
|                                                                                       |     |
|---------------------------------------------------------------------------------------|-----|
| What is meant by glomerular filtration in urine formation? Write its process briefly. | 1+2 |
|---------------------------------------------------------------------------------------|-----|

$$\begin{array}{r} 1+2 \\ +2 \\ \hline \end{array}$$

|    |                                            |        |        |         |         |
|----|--------------------------------------------|--------|--------|---------|---------|
| 8. | Which organ carries urine out of the body? | Kidney | Ureter | Bladder | Urethra |
|----|--------------------------------------------|--------|--------|---------|---------|

|                                                                          |                                                               |
|--------------------------------------------------------------------------|---------------------------------------------------------------|
| <p>Briefly explain the process of selective reabsorption in nephron.</p> | <p>نیفرن میں سلیکٹیو ریزورپشن کے عمل کی مختصر وضاحت کریں۔</p> |
|--------------------------------------------------------------------------|---------------------------------------------------------------|



$$(1+1+1+1+1)$$


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# Respiratory system

Domain R: Human Physiology

|       |                                                |                       |                          |                  |                   |
|-------|------------------------------------------------|-----------------------|--------------------------|------------------|-------------------|
| (vii) | Which function is NOT related to nasal cavity? | Filter dust particles | Moisten the incoming air | Gaseous exchange | Warm incoming air |
|-------|------------------------------------------------|-----------------------|--------------------------|------------------|-------------------|

|       |                                                                            |   |
|-------|----------------------------------------------------------------------------|---|
| (iii) | Compare the composition of inspired air and expired air in tabular manner. | 3 |
|-------|----------------------------------------------------------------------------|---|

|    |                                                                  |         |         |             |         |
|----|------------------------------------------------------------------|---------|---------|-------------|---------|
| 1. | The part of respiratory system where gaseous exchange occurs is: | Trachea | Bronchi | Bronchioles | Alveoli |
|----|------------------------------------------------------------------|---------|---------|-------------|---------|

|     |                                                                           |      |        |                |                |
|-----|---------------------------------------------------------------------------|------|--------|----------------|----------------|
| 10. | The mixture of smoke and fog that cause respiratory problems is known as: | Smog | Clouds | Eutrophication | Global warming |
|-----|---------------------------------------------------------------------------|------|--------|----------------|----------------|

Complete the table with respect to respiratory disorders.

سانس کی بیماریوں کو مد نظر رکھتے ہوئے ٹیبل مکمل کریں۔

| Disease<br>بیماری کا نام | Causes<br>وجوہات   | Treatment<br>علاج           |
|--------------------------|--------------------|-----------------------------|
|                          | Allergens<br>الرجن |                             |
|                          |                    | Pneumectomy<br>نیومونیکٹومی |
| Emphysema<br>ایمفم، سیما |                    |                             |

03

Q.3

Discuss the mechanism of breathing.

بریدنگ کے میکانزم کی وضاحت کریں۔

05

Enlist causes, symptoms and treatment of pneumonia.

نمونیا کی وجوہات، علامات اور علاج تحریر کریں۔

03

First Annual 2025 | Section C Q4 OR | 5 marks

**Explain parts of air passage way beyond the pharynx in humans.**

[illegible]

05

|                                                  |     |
|--------------------------------------------------|-----|
| Differentiate 'respiration' from 'breathing'.    | 1.5 |
| تفہس (breathing) اور ریسپریشن میں فرق بیان کریں۔ | +   |
|                                                  | 1.5 |

17 A

$$\begin{array}{r} 3.5 \\ + \\ 1.5 \\ \hline \end{array}$$

سأبذل شرفي بأكمله في فضحك تفتيح قلبك من هذه الحزن لكاتبه

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 | 221 | 222 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 | 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 | 256 | 257 | 258 | 259 | 260 | 261 | 262 | 263 | 264 | 265 | 266 | 267 | 268 | 269 | 270 | 271 | 272 | 273 | 274 | 275 | 276 | 277 | 278 | 279 | 280 | 281 | 282 | 283 | 284 | 285 | 286 | 287 | 288 | 289 | 290 | 291 | 292 | 293 | 294 | 295 | 296 | 297 | 298 | 299 | 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 310 | 311 | 312 | 313 | 314 | 315 | 316 | 317 | 318 | 319 | 320 | 321 | 322 | 323 | 324 | 325 | 326 | 327 | 328 | 329 | 330 | 331 | 332 | 333 | 334 | 335 | 336 | 337 | 338 | 339 | 340 | 341 | 342 | 343 | 344 | 345 | 346 | 347 | 348 | 349 | 350 | 351 | 352 | 353 | 354 | 355 | 356 | 357 | 358 | 359 | 360 | 361 | 362 | 363 | 364 | 365 | 366 | 367 | 368 | 369 | 370 | 371 | 372 | 373 | 374 | 375 | 376 | 377 | 378 | 379 | 380 | 381 | 382 | 383 | 384 | 385 | 386 | 387 | 388 | 389 | 390 | 391 | 392 | 393 | 394 | 395 | 396 | 397 | 398 | 399 | 400 | 401 | 402 | 403 | 404 | 405 | 406 | 407 | 408 | 409 | 410 | 411 | 412 | 413 | 414 | 415 | 416 | 417 | 418 | 419 | 420 | 421 | 422 | 423 | 424 | 425 | 426 | 427 | 428 | 429 | 430 | 431 | 432 | 433 | 434 | 435 | 436 | 437 | 438 | 439 | 440 | 441 | 442 | 443 | 444 | 445 | 446 | 447 | 448 | 449 | 450 | 451 | 452 | 453 | 454 | 455 | 456 | 457 | 458 | 459 | 460 | 461 | 462 | 463 | 464 | 465 | 466 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|

9. by:

 $\text{CO}_2$ 

sound

 $\text{CO}_2$ 

warming air

Final Answer:  $\boxed{1}$

|      |                                                              |
|------|--------------------------------------------------------------|
| (vi) | What is bronchitis? Mention one cause and one symptom of it. |
|------|--------------------------------------------------------------|

**1x3**

|                                                                               |     |    |    |    |    |    |
|-------------------------------------------------------------------------------|-----|----|----|----|----|----|
| مریض (Patient)                                                                | 9   | 13 | 44 | 14 | 44 | 40 |
| Compare the composition of inspired and expired air.                          | 1.5 |    |    |    |    |    |
| سانس لیتے وقت اندر جانے والی اور باہر نکلنے والی ہوا کی ترکیب کا موازنہ کریں۔ | +   |    |    |    |    |    |
| What is meant by glomerular filtration in urine                               | 1.5 |    |    |    |    |    |

|                                                                                                 |     |
|-------------------------------------------------------------------------------------------------|-----|
| Describe the mechanism of breathing in terms of movements of ribs and diaphragm. Draw diagrams. | 3+2 |
| پیلیوں اور ڈیافراگم کی حرکات کے حوالے سے سانس لینے کے عمل کی وضاحت کریں۔                        |     |



|                                                                                                                                                |           |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Describe the mechanism of inhalation and exhalation explaining the movement of ribs and diaphragm. Draw diagram.                               | 2+2<br>+1 |
| سانس اندر لینے (Inhalation) اور باہر نکالنے (Exhalation) کے عمل کی وضاحت کریں اور پسلیوں اور ڈایا فرام کی حرکت بیان کریں۔ ڈائیگرام بھی بنائیں۔ |           |
| Explain the adverse effects of COVID-19 on human body. (Any four)                                                                              | 1x5       |
| انسانی جسم پر COVID-19 کے مضر اثرات بیان کریں۔ (کوئی سے چار)                                                                                   |           |

|     |    |                                                                                          |     |
|-----|----|------------------------------------------------------------------------------------------|-----|
| 1+2 | OR | Which characteristics of alveoli make them most suitable structure for gaseous exchange? | 1x3 |
|-----|----|------------------------------------------------------------------------------------------|-----|



[illegible]

reference to white and gray matter.

v. Describe the mechanism of breathing in term of movements of ribs and diaphragm.

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Explain structure and function of Nasal cavity and Trachea in the Human Respiratory system. (3+2)

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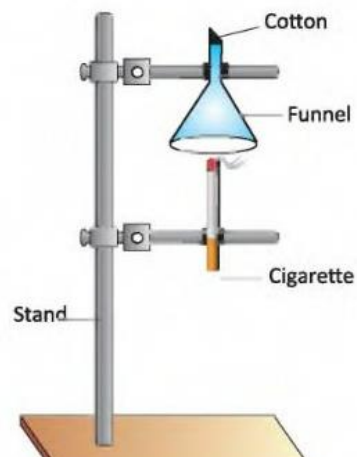
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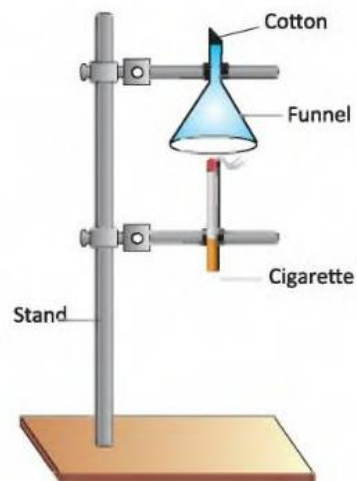
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Describe the roles of parts of air passageways and of lungs.

Carefully observe the following figure showing an experiment:



Q1. Carefully observe the following figure showing an experiment:



- i. What do you expect to observe when you rub a white tissue paper on the inner surface of funnel? (01)

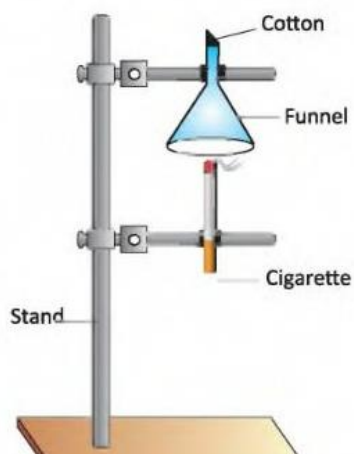
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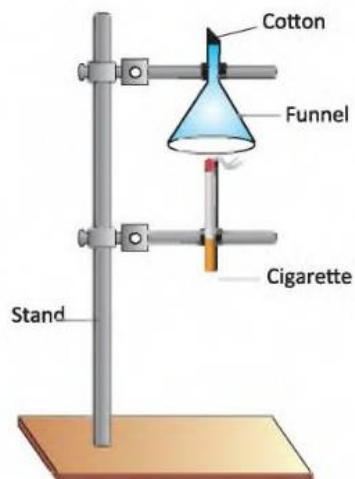
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Carefully observe the following figure showing an experiment:



Q1. Carefully observe the following figure showing an experiment:



- i. What do you expect to observe when you rub a white tissue paper on the inner surface of funnel? (01)

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- ii. Name at least four harmful substances found in cigarette smoke? (02)

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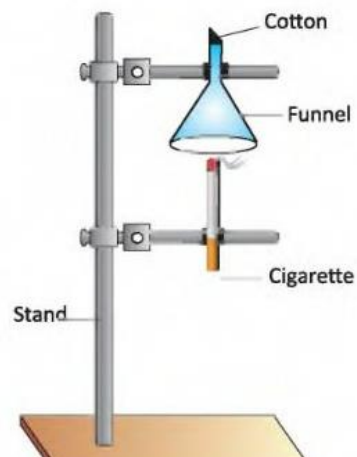
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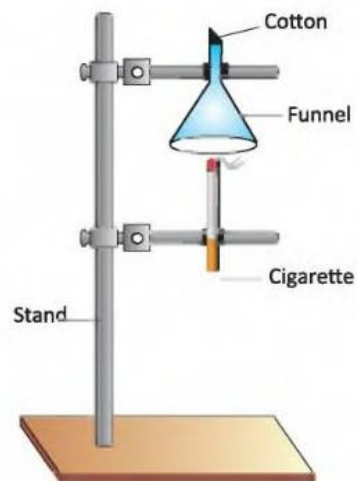
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Carefully observe the following figure showing an experiment:



Q1. Carefully observe the following figure showing an experiment:



- i. What do you expect to observe when you rub a white tissue paper on the inner surface of funnel? (01)

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- ii. Name at least four harmful substances found in cigarette smoke? (02)

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- iii. Name any two diseases caused by chemicals present in cigarette smoke? (01)

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iv.      How can you differentiate between lungs of smokers and non-smokers from their pictures? Give any two differences. (2)

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APOLLO

# Diseases

Domain R: Human Physiology

|                    |                                      |         |        |         |          |
|--------------------|--------------------------------------|---------|--------|---------|----------|
| ans Energy demand: |                                      |         |        |         |          |
| (ix)               | Which bacterial disease is zoonotic? | Malaria | Rabies | Anthrax | Ringworm |

|                                                        |    |
|--------------------------------------------------------|----|
| What is arthritis? Enlist its symptoms and treatments. | 03 |
|--------------------------------------------------------|----|

|                                                         |                |                |                   |                   |
|---------------------------------------------------------|----------------|----------------|-------------------|-------------------|
| Zoonotic diseases are those which are transmitted from: | Human to human | Water to human | Animals to humans | Humans to animals |
|---------------------------------------------------------|----------------|----------------|-------------------|-------------------|

|                                               |         |        |          |        |
|-----------------------------------------------|---------|--------|----------|--------|
| Which of the following is a zoonotic disease? | Rickets | Rabies | Diabetes | Scurvy |
|-----------------------------------------------|---------|--------|----------|--------|

|      |                                      |         |        |         |          |                       |                       |                       |                       |
|------|--------------------------------------|---------|--------|---------|----------|-----------------------|-----------------------|-----------------------|-----------------------|
| (ix) | Which bacterial disease is zoonotic? | Malaria | Rabies | Anthrax | Ringworm | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
|------|--------------------------------------|---------|--------|---------|----------|-----------------------|-----------------------|-----------------------|-----------------------|