

Class- 4

# BIOLOGY

# UPSC -2023

Consider the following statements:

1. Some microorganisms can grow in environments with temperature above the boiling point of water.
2. Some microorganisms can grow in environments with temperature below the freezing point of water.
3. Some microorganisms can grow in highly acidic environment with a pH below 3.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

# Fungal diseases

- Candidiasis
- Ringworm
- Athlete's foot

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# Helminthic diseases

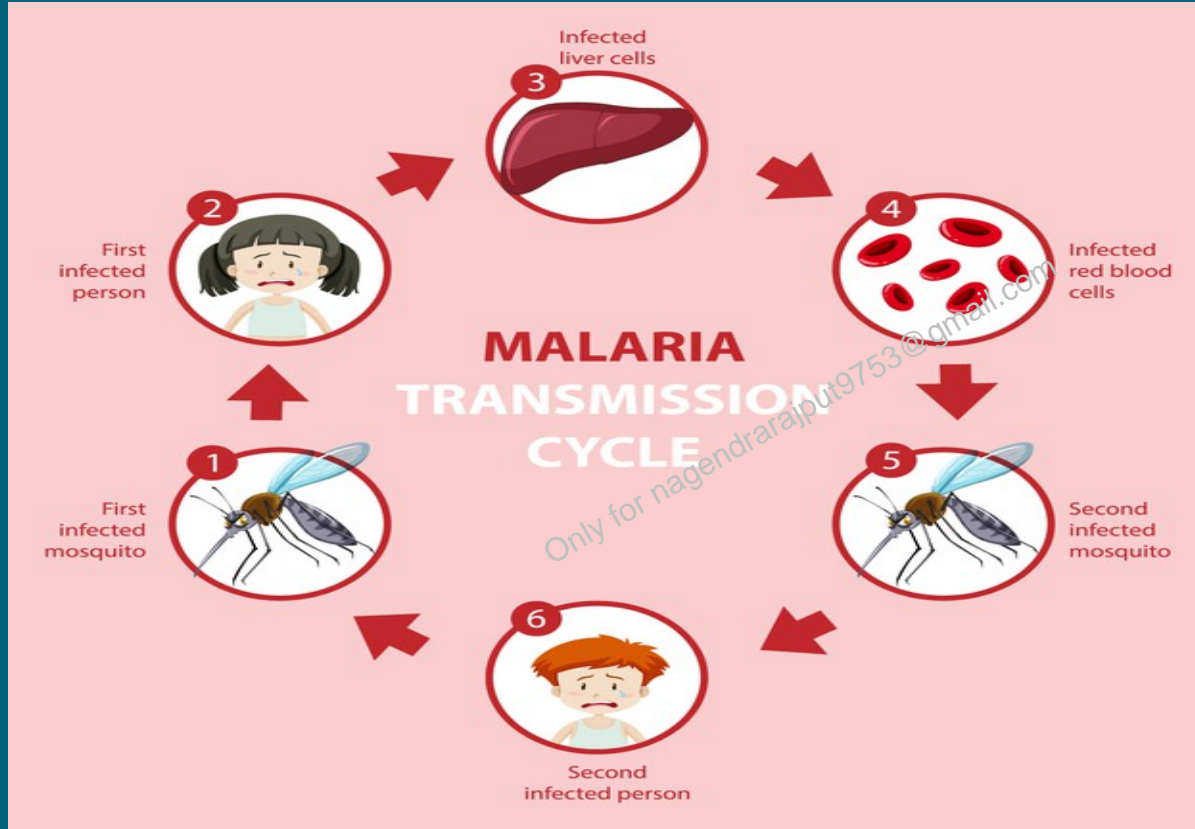
- Ascariasis
- Taeniasis
- Lymphatic filariasis
- Hookworm infection

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# Protozoan Disease

- Amoebiasis
- Giardiasis
- Malaria

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# Viral diseases

- ◉ Hepatitis
- ◉ Chicken pox
- ◉ Polio
- ◉ Dengue
- ◉ Zika
- ◉ Chikungunya
- ◉ AIDS

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Which of the following statements is / are correct?

1. Viruses lack enzymes necessary for the generation of energy.
2. Viruses can be cultured in any synthetic medium.
3. Viruses are transmitted from one organism to another by biological vectors only.

Select the correct answer using the codes given below.

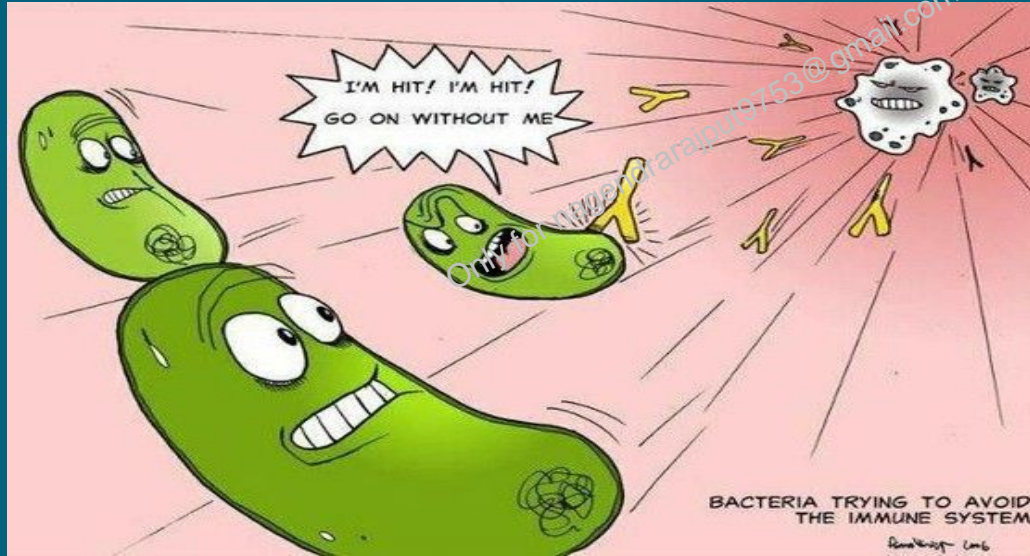
- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3



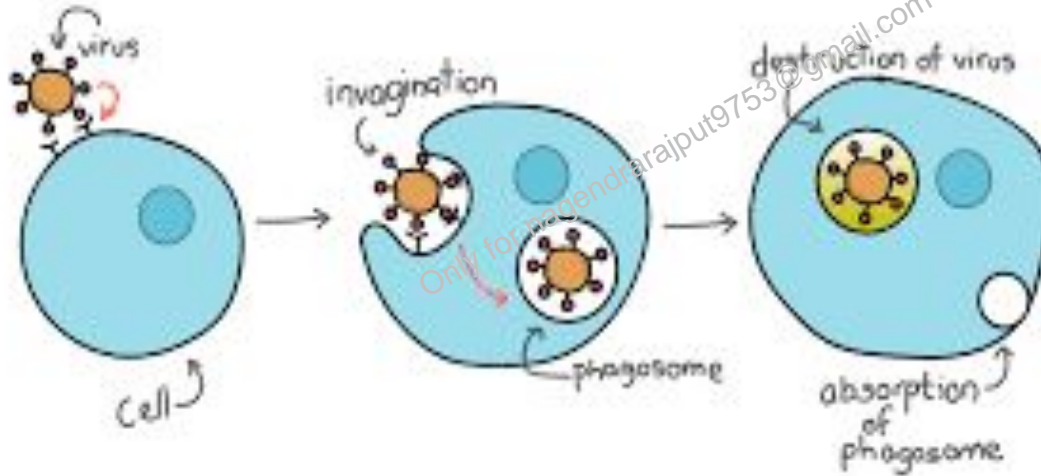
# Immunity



# Antigen- Antibody



## Phagocytosis

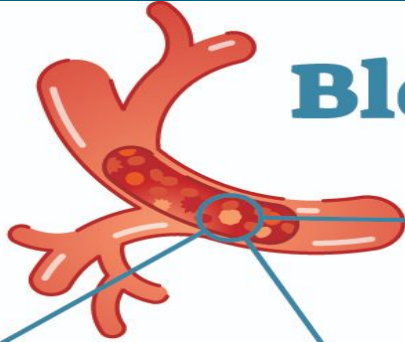




Widespread resistance of malarial parasite to drugs like chloroquine has prompted attempts to develop a malarial vaccine to combat malaria. Why is it difficult to develop an effective malaria vaccine ?

- (a) Malaria is caused by several species of Plasmodium
- (b) Man does not develop immunity to malaria during natural infection
- (c) Vaccines can be developed only against bacteria
- (d) Man is only an intermediate host and not the definitive host

# Blood Cells



## Platelets



Thrombocytes

## Red Blood Cells

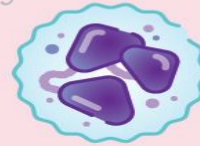


Erythrocytes

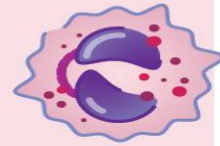
## White Blood Cells



Basophil



Neutrophil



Eosinophil

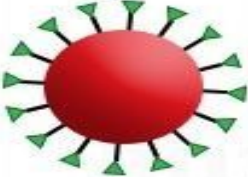
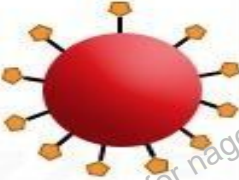

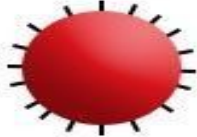








Monocyte



Lymphocytes



# Blood groups

	Group A	Group B	Group AB	Group O
Red blood cell type				
Antibodies in Plasma	 Anti-B	 Anti-A	None	 Anti-B and Anti-A
Antigens in Red Blood Cell	 A antigen	 B antigen	 A and B antigens	None

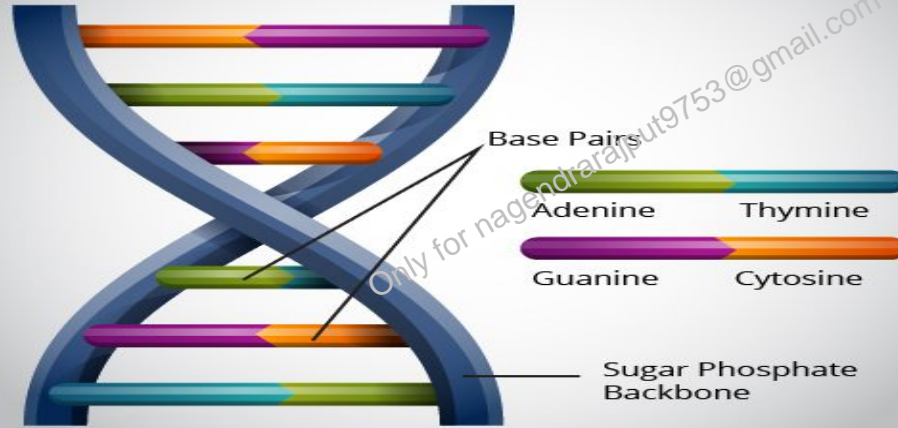
A man whose blood group is not known meets with a serious accident and needs blood transfusion immediately. Which one of the blood groups mentioned below and readily available in the hospital will be safe for transfusion?

- (a) O, Rh–
- (b) O, Rh+
- (c) AB, Rh–
- (d) AB, Rh+

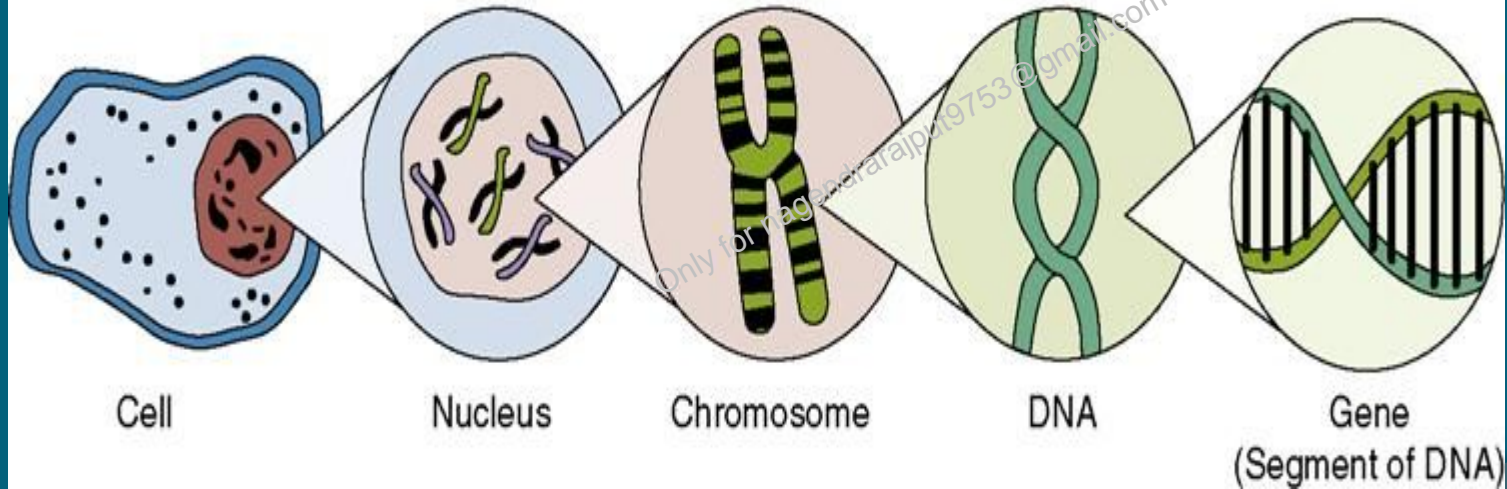


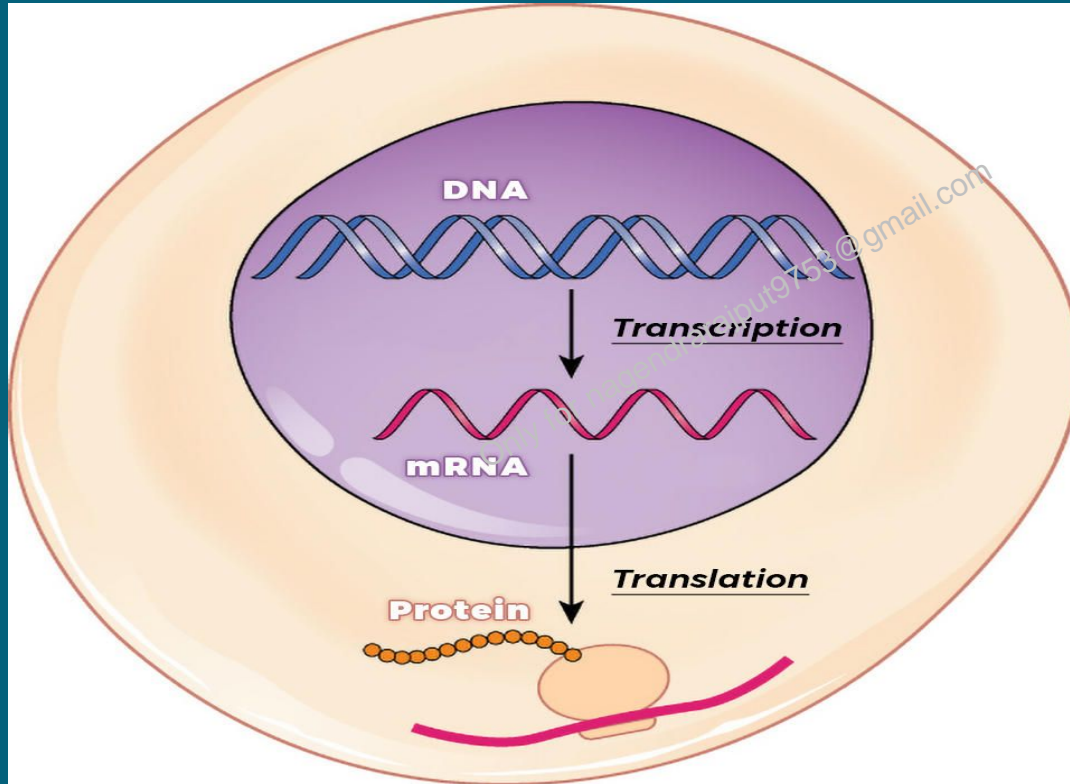
	DNA	RNA
Shape	Double helix (like a twisted ladder) 	Single stranded 
Nitrogen bases used	Adenine Guanine Cytosine Thymine	Adenine Guanine Cytosine Uracil
Type of sugar used	Deoxyribose	Ribose

# DNA Structure



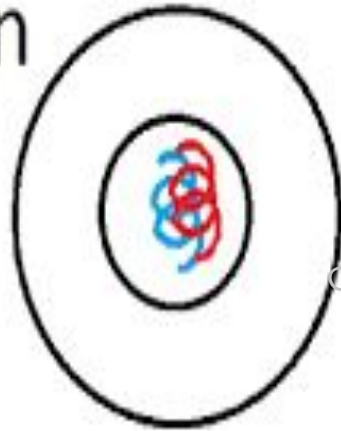
## INSIDE THE CELL





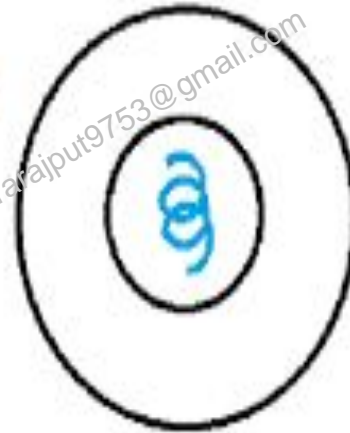
DIPLOID CELL

$2n$



HAPLOID CELL

$n$



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# Homologous Chromosomes

