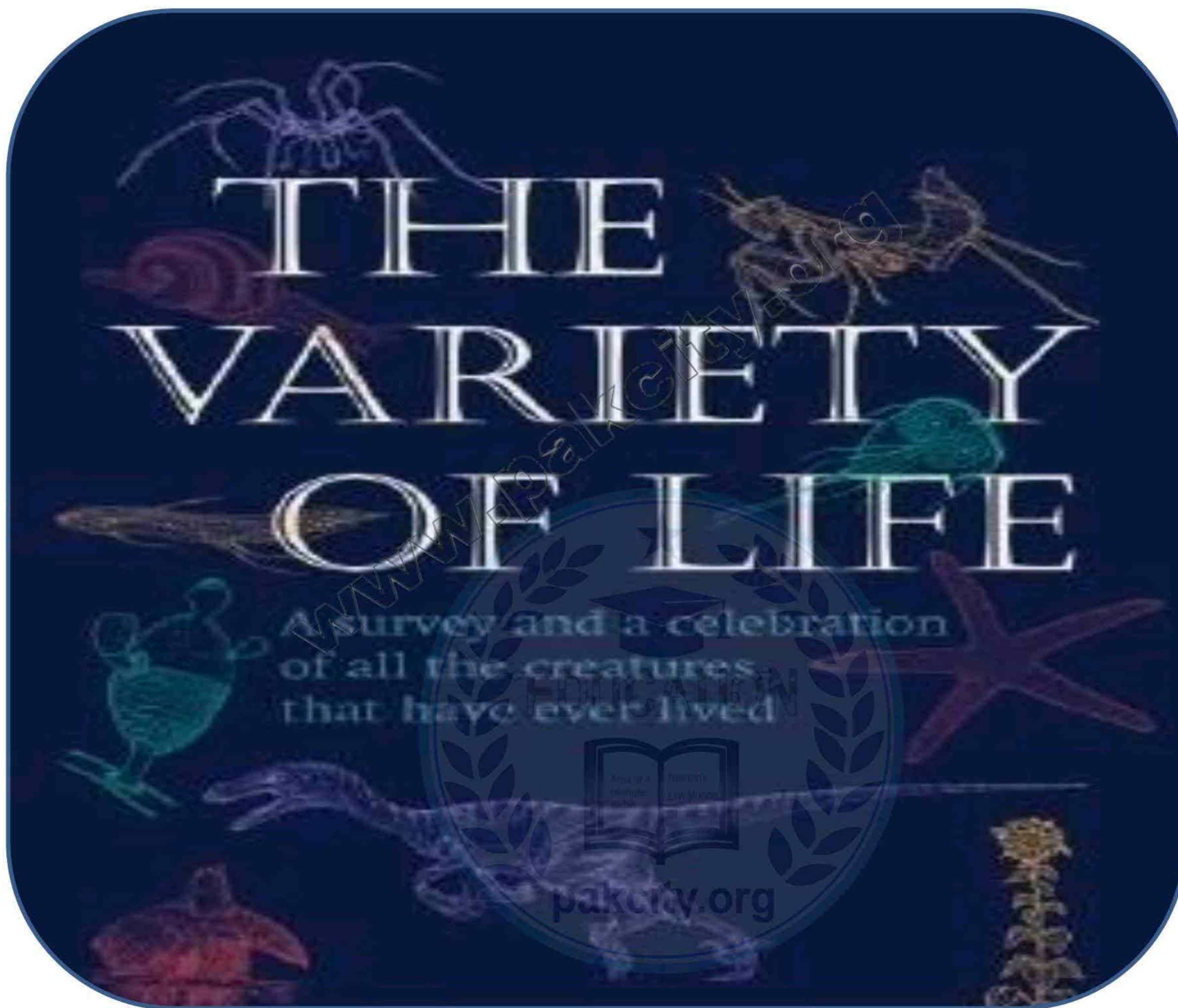




CHAPTER 5

Variety of Life



- **Important Short answers**
- **Exercise MCQ's**
- **Important Additional MCQ's**
- **Past MDCAT MCQ's**

Exercise MCQ's

❖ Encircle the correct answer from the multiple choices.

- 1) The enzyme involved in viral replication are synthesized:
 - a) On the viral ribosomes
 - b) On the interior surface of viral membrane
 - c) By the host cell
 - d) On the interior surface of viral coat
- 2) A virion is a:
 - a) Virus
 - b) Viral protein
 - c) Viral lysozyme
 - d) Viral gene
- 3) An isolated virus is not considered living, since it.....:
 - a) Separates into two inert parts
 - b) Cannot metabolize
 - c) Rapidly loses its genome chemically inert
 - d) Is coated with an air tight shield
- 4) In the lytic cycle of a bacteriophage, the host DNA is:
 - a) Replicated
 - b) Turned off by a protein coat
 - c) Digested into its nucleotides
 - d) Turned on by removal of a protein coat
- 5) In the lysogenic cycle the DNA of a bacteriophage:
 - a) Join the bacterial chromosome
 - b) Attaches to the inner surface of the host membrane
 - c) Is immediately degraded when it enters the host
 - d) Goes directly to the host's ribosome for translation
- 6) Temperate phage may exist as:
 - a) Prophage
 - b) Capsid
 - c) Viroid
 - d) Retrovirus
- 7) Phylogeny describes a species:
 - a) Morphological similarities with other species
 - b) Attaches to the inner surface of the host membrane
 - c) Reproductive compatibilities with other species
 - d) Geographic distribution
- 8) In the binomial system of taxonomy, developed during the 18th century by C.Linnaeus, the first word of an organism's name (e.g., *Homo sapiens*) is its:
 - a) Species
 - b) Genus
 - c) Race
 - d) Family
- 9) In the five kingdom system of classification developed by Robert Whittaker, member of the kingdom Plantae are autotrophic, eukaryotic and.....:
 - a) Multicellular
 - b) Motile
 - c) Uni/multicellular
 - d) Have sexual reproduction
- 10) Five kingdom system of classification proposed by Margulis and Schwartz is not based on:
 - a) Genetics
 - b) Cellular organization
 - c) Nucleic acid
 - d) Mode of nutrition
- 11) The common name of *Allium cepa* is:
 - a) Piyaz
 - b) Bathu
 - c) Amaltas
 - d) Chana
- 12) Arrange the following in order of increase group size, beginning with the smallest: family, kingdom, species, phylum (or division), genus, order and class:
 - a)
 - b)
 - c)
 - d)
 - e)
 - f)
 - g)
- 13) Pigs are reservoirs to:
 - a) Hepatitis A
 - b) Hepatitis B
 - c) Hepatitis C
 - d) Hepatitis D
 - e) Hepatitis E
- 14) Which one of the following is false about AIDS:
 - a) HIV
 - b) Acquired-immune deficiency syndrome
 - c) T-lymphocyte
 - d) Host specific
 - e) None of these

Answer key:

1	c	2	a	3	b	4	c	5	a
6	a	7	b	8	b	9	a	10	c
11	a	12	Species, genus, family, order, class, phylum, kingdom						
13	e	14	e						

Most Important MCQ's

❖ Encircle the correct answer from the multiple choices.

Taxonomy and classification

- Phylogeny describes a species:**
 - Morphological similarities with other species
 - Evolutionary history
 - Reproductive compatibilities with other species
 - Geographical distribution
- Of the following terms, which one includes all the others?**
 - Species
 - Class
 - Phylum
 - Order
- Orders include related:**
 - Families
 - Genera
 - Specie
 - Classes
- The basic unit of classification is:**
 - Genus
 - Phylum
 - Class
 - Species
- Lions and tigers are different species. The result of mating of male tiger and female lion are offspring called Tiglions. They are**
 - Sterile
 - Fertile
 - Infertile
 - Do not survive
- Some ranks of classification are listed below. In which group, would there be the greatest similarity between members in terms of structure and function:**
 - Species
 - Genus
 - Kingdom
 - Phylum
- Binomial system of Nomenclature of organisms was devised by:**
 - Robert Whittakar
 - Ernst Hackel
 - E-Chatton
 - Carlous Linnaeus
- Carlous Linnaeus took the scientific names from:**
 - Latin words
 - Greek words
 - English
 - Spanish
- In classification the order of Zea mays is:**
 - Poales
 - Anthophyta
 - Plantae
 - Poaceae
- Poales is the taxonomic group to which corn (Zeamays) belong. What is the rank of the taxon Poales?**
 - Division
 - Class
 - Order
 - Family
- The genus for corn plant is:**
 - Pisum
 - Salanum
 - Mays
 - Zea
- Common name of Allium cepa is:**
 - Payaz
 - Bathu
 - Amaltas
 - Chana
- The biological name of onion is:**
 - Allium cepa
 - Solanum tubersome
 - Cassia fistula
 - Zea mays
- The botanical name for potato is:**
 - Solanum nigram
 - Solanum tuberosum
 - Cassia fistula
 - Solanum melangena
- According to binomial nomenclature Solanum melangena is the botanical name of the.....:**
 - Potato
 - Tomato
 - Brinjal
 - Spinach
- Solanum esculentum is the scientific name of:**
 - Potato
 - Tobacco
 - Onion
 - Tomato
- The biological name of Amaltas is:**
 - Cassia senna
 - Bauhinia variegata
 - Cassia fistula
 - None of these
- To accommodate euglena like organisms and bacteria, kingdom Protista was proposed by:**
 - Ernst Haeckel
 - Linnaeus
 - Robert Whittaker
 - E-Chatton
- An independent organism is discovered that does not contain a nucleus. In all likelihood, I would be classified in the kigdom:**
 - Monera
 - Protista
 - Fungi
 - Animal
- Eukaryotic multicellular autotrophs are included in kingdom:**
 - Animalia
 - Monera
 - Protista
 - Plantae
- Which of the one in the following is a prokaryotes:**
 - Amoeba
 - Blue green algae
 - Fungi
 - Algae
- Organelle of symbiotic origin is:**
 - Cell wall
 - Cell membrane
 - Mitochondrion
 - Vacuole
- So far over _____ number of species of animals are known:**
 - 0.5 million
 - 1 million
 - 1.5 million
 - 2 million
- Which of the following category is most general with its members lest resembling with each other than the other categories:**
 - Species
 - Genus
 - Family
 - Order
- Those organisms which can prepare their own food from simple inorganic material and can store energy are called:**
 - Autotrophs
 - Heterotrophs
 - Prokaryotic
 - Eukaryotic
- Which of the Euglenas (a Protoctista) character resembles that of animals:**
 - They can move
 - They lack cell wall
 - They do not have chlorophyll
 - Both a and b

27. The word which E-Chatton suggested for bacteria and blue green algae was:

- a) Autotrophs b) Heterotrophs c) Prokaryotic d) Eukaryotic

28. Organisms of which of the following kingdom have absorptive modes of nutrition:

- a) Prokaryotae b) Protoctista c) Animalia d) Fungi

29. Which of the following organisms have Chitin as a major structural component of their cell wall:

- a) Prokaryotae b) Protoctista c) Plantae d) Fungi

30. Amoeba belongs to which kingdom:

- a) Prokaryotae b) Plantae c) Monera d) Protista

Virus



31. The branch which deals with the study of virus is called:

- a) Biology b) Cytology c) Virology d) Taxonomy

32. Viruses are simplest organisms and:

- a) Have their own enzyme
b) Have cell membrane but not cell wall
c) Undergo cell division
d) Are only DNA or RNA particles without cellular

33. Scientist who first developed the technique of vaccination in a 1795:

- a) Louis Pasture b) Edward Jeener c) Robert Koch d) Robert Brown

34. A viron is:

- a) Virus b) Viral protein c) Viral Lysozyme d) Viral gene

35. Capsid is made up of protein sub-units known as:

- a) Sarcomere b) Capsomere c) Caosoids d) None

36. Twort in 1915 and D'Herelle in 1917 discovered:

- a) Pox virus b) Adenoirus c) Bacteriophage d) Herpes virus

37. Bacteriophage replicates only in cell:

- a) Animal b) Plant c) Bacterial d) Fungal

38. The number of capsomeres present in the capsid of Adenovirus is:

- a) 152 b) 162 c) 252 d) 262

39. Mad cow infection and mysterious brain infection in man are caused by:

- a) Bacteria b) Viroid c) Fungi d) Prions

40. The infectious proteins are:

- a) Viruses b) Viroid c) Virions d) Prions

41. Prions are made up of:

- a) Lipids b) Nucleic acids c) Proteins d) None of these

42. The word virus is derived from Latin word venome meaning:

- a) Sweet fluid b) Sore Fluid c) Poisonous Fluid d) Salty Fluid

43. DNA or RNA of viruses is enclosed in _____ coat:

- a) Protein b) Carbohydrate c) Lipid d) DNA

44. Vaccine Was discovered by:

- a) Louis Pasteur b) Edward Jenner c) Ivanowski d) Stanely

45. The size of smallest virus is:

- a) 10 nm b) 20 nm c) 30 nm d) 40 nm

46. The size of poxvirus is:

- a) 20 nm b) 200 nm c) 250 nm d) 300 nm

47. Viruses are _____ smaller than bacteria:

- a) 10 - 100 times b) 10 - 1000 times c) 100 - 1000 times d) 1000 - 10000 times

48. Which of the statement about viruses is incorrect:

- a) We cannot grow them in laboratories on artificial medias
b) They are obligate intracellular parasite
c) They can synthesize their nucleic acid
d) They are resistant to most of antibiotic treatment

49. Protein coat the capsid of adenovirus is:

- a) Surrounded by genome b) Surrounding genome c) Surrounding the envelope d) Both B and C

50. An isolated virus is not considered living since it:

- a) Separates in to two inner parts
b) Cannot metabolize
c) Rapidly loses its Genome chemical inert
d) Is coated with an air tight shield

Bacteriophage and life cycle

51. Bacteriophage are:

- a) Parasitic bacteria b) Spore forming bacteria c) Virus attacking bacteria d) None of these

52. Bacteriophage exhibit life cycle that are:

- a) Lytic b) Lysogenic c) Neither a nor b d) Both a and b

53. Lytic cycle completion occurs about:

- a) 15 min b) 25 min c) 35 min d) 05 min

54. The process in which the phage is called prophage is termed as:
a) Induction b) Lysogeny c) Deduction d) Penetration
55. Temperate phage may exist as:
a) Prophage b) Capsid c) Viroid d) Retrovirus
56. The enzyme involved in viral replication is synthesized:
a) On the viral ribosome
b) By the host cell
c) On interior side of viral coat
d) On interior of viral membrane
57. Bacteriophage that infect E. coli are called:
a) M type b) N type c) T type d) S type
58. Attachment of the bacteriophage with the receptor site on the bacterial cell wall involves:
a) Strong covalent bond between virion and the receptor site
b) Weak chemical union between them
c) Both A and B depending upon the phage
d) None of these
59. In life cycle of bacteriophage which step occur after attachment of prophage with the receptor site of the bacterial cell wall:
a) Absorption b) Multiplication c) Lysogeny d) Penetration
60. Which of the following is incorrect for the lysogenic cycle in life cycle of bacteriophage:
a) Phage when gets incorporated with the bacterial chromosome is called prophage
b) The bacterium continues to live and reproduce normally
c) Lysogenic bacteria may get infected by the related phage
d) The cycle may convert into lytic type resulting from environmental exposure
61. In lysogenic cycle the process of separation of phage DNA from the hosts chromosome and initiation of lytic cycle is called:
a) Lysis b) Lysogeny c) Induction d) Adsorption
62. In the lytic cycle of bacteriophage the host DNA is:
a) Replicated
b) Turn off by the protein coat
c) Digested into its nucleotides
d) Turned on by the removal of the protein coat
63. In the Lysogenic cycle the DNA of the bacteriophage:
a) Joins the bacterial chromosomes
b) Attaches to the inner surface of the host membrane
c) Is immediately degraded when enters the host
d) Goes directly to host ribosomes for translation
- AIDS**
64. AIDS is caused by:
a) Fungi b) Bacteria c) Virus d) Lichen
65. HIV belong to the group of viruses called:
a) Retrovirus b) Pox viruses c) DNA viruses d) Bacteriophage
66. Enzyme which converts single standard RNA genome into double standard viral DNA is called:
a) Amylase b) Lysozyme c) Lipase d) Reverse transcriptase
67. In HIV viruses, reverse transcriptase convert single standard RNA into double stranded viral DNA. This process is called:
a) Translation b) Replication c) Duplication d) Reverse transcription
68. Major cell infected by HIV are:
a) Leukocytes b) Lymphocytes c) Monocyte d) Helper T-Lymphocytes
69. Which of the following is mis-matched?
- | Disease | Types of virus |
|--------------|----------------|
| a) Small pox | DNA virus |
| b) Influenza | RNA virus |
| c) Measles | RNA virus |
| d) AIDS | DNA virus |
70. The major cell infected by HIV in the immune system is:
a) B-Lymphocytes b) Granulocytes c) T-Lymphocytes d) Granulocytes
71. Which of the following virus has special affiliations with the tumor production:
a) Hepatitis virus b) Retrovirus c) Polio virus d) Pox virus
72. Complex symptoms like severe pneumonia vascular tumor sudden weight loss swollen lymph nodes and immune deficiency are features of:
a) Polio b) Hepatitis c) AIDS d) HIV
73. Which of the following statement about AIDS is incorrect:
a) Is a host specific disease
b) An infected mother cannot pass the virus to her baby
c) Results in enlargement of lymph nodes
d) Can be prevented

Viral disease and Hepatitis



74. Small pox is caused by:
 a) Bacteria b) Fungi c) Protozoa d) Viruses
75. Small pox is:
 a) DNA virus b) DNA enveloped virus c) RNA virus d) RNA enveloped
76. Which one is not RNA virus?
 a) Small pox virus b) Influenza virus c) Mumps and measles virus d) Herpes simplex
77. Herpes simplex is caused by..... virus:
 a) DNA b) Glycogen c) RNA tumor d) Both b & c
78. Influenza viruses are:
 a) DNA enveloped b) DNA naked c) RNA naked d) RNA enveloped
79. Paramyxo viruses cause the disease:
 a) Influenza b) Mumps and measles c) Polio d) Herpes simplex
80. Measles and mumps are caused by a virus belonging to a group called:
 a) Pox virus b) Paramyxo virus c) Polio virus d) Adenovirus
81. About 60% of adults are immune to disease:
 a) Mumps b) Measles c) Influenza d) Polio
82. The smallest known viruses are of:
 a) Bacteriophage b) Small pox c) Polio d) Mumps
83. The smallest known viruses they contain RNA in spherical capsid are the:
 a) Hepatitis A virus b) Polio viruses c) Hepatitis C viruses d) Hepatitis D viruses
84. Hepatitis is an inflammation of:
 a) Liver b) Stomach c) Pancreas d) Kidney
85. Infectious Hepatitis is caused by:
 a) Hepatitis A virus b) Hepatitis B viruses c) Hepatitis C viruses d) Hepatitis D viruses
86. Hepatitis B is also called:
 a) Delta hepatitis b) infectious hepatitis c) infusion hepatitis d) Serum hepatitis
87. Genetically engineered vaccine is not available for:
 a) HAV b) HBV c) HAC d) HDV
88. Name the enveloped RNA virus that causes infusion hepatitis:
 a) HBV b) HCV c) HAV d) None of these
89. Which of these diseases is not caused by virus or viral disease?
 a) Cholera b) Hepatitis c) Influenza d) Polio
90. Which one of the following is not a viral disease?
 a) Cow pox b) Mumps c) Tetanus d) Small pox
91. A disease which is highly contagious is:
 a) Measles b) Mumps c) Influenza d) Herpes

Answer key:

1	b	2	c	3	a	4	d	5	a	6	c	7	d	8	a	9	a	10	c
11	d	12	a	13	a	14	b	15	c	16	d	17	c	18	a	19	a	20	d
21	b	22	c	23	c	24	d	25	a	26	d	27	c	28	d	29	d	30	d
31	c	32	d	33	d	34	b	35	a	36	b	37	c	38	c	39	d	40	d
41	c	42	c	43	a	44	b	45	b	46	c	47	b	48	c	49	b	50	b
51	c	52	d	53	b	54	b	55	a	56	b	57	c	58	b	59	d	60	c
61	c	62	c	63	a	64	c	65	a	66	d	67	d	68	d	69	d	70	c
71	b	72	c	73	b	74	d	75	b	76	a	77	a	78	d	79	b	80	b
81	a	82	c	83	b	84	a	85	a	86	d	87	c	88	b	89	a	90	c
91	b																		

Past MDCAT MCQ's



2008

1. Name the enveloped RNA virus that causes infusion hepatitis:

- a) HBV b) HCV c) HAV d) None of these

2009

2. Symptoms of Herpes Simplex is:

- a) Abdominal Pain
b) Vesicular lesions in the epithelial layer
c) Fever
d) Failure of immune system

3. The major cell infected by the HIV is:

- a) Leucocyte b) Helper T-lymphocyte c) Monocyte d) B-lymphocyte

2010

4. Chemically, viruses are made up of:

- a) Nucleic acid only b) Nucleic acid and protein c) Protein only d) Core and coat

5. Widespread epidemic disease, influenza is caused by:

- a) DNA virus b) DNA enveloped virus c) RNA enveloped virus d) RNA virus

2011

6. Which one of the following diseases caused by enveloped RNA virus and spread in epidemic form?

- a) Influenza b) Polio c) Herpes Simplex d) Small Pox

2012

7. In HIV viruses, reverse transcriptase converts single-stranded RNA into double stranded viral DNA. This process is called:

- a) Translation b) Replication c) Duplication d) Reverse Transcriptase

2013

8. Reverse transcription is used to make DNA copies of:

- a) Host RNA b) Host DNA c) Viral RNA d) Viral DNA

2015

9. The DNA formed by the reverse transcription is called:

- a) rDNA b) cDNA c) dDNA d) DNA

10. HIV is classified as:

- a) Bacteriophage b) Retrovirus c) Oncovirus d) Icosahedral virus

2016

11. AIDS is caused by:

- a) Bacteria b) Fungi c) Virus d) Alga

12. All viruses can reproduce within living organisms only, so they are known as:

- a) Ecto-parasites
b) Obligative Intracellular Parasites
c) Endo-parasites
d) Facultative Intracellular Parasites

Answer key:

1	b	2	b	3	b	4	b	5	c
6	a	7	d	8	d	9	b	10	b
11	b	12	b	13	b	14	c	15	b

13. Which of the following is non-cellular infectious entity:

- a) Mycoplasma b) Herpesvirus c) Escherichia coli d) Diplococcus

14. The viruses can reproduce:

- a) Without invading any cell b) By mitosis c) In bacterial cell d) By meiosis

15. The life cycle in which the phage kills the bacteria is known as:

- a) Transduction b) Lytic cycle c) Temperate phage cycle d) Lysogenic phage cycle

Important Short Answers

Q:1 Differentiate between Procariotique and Eucariotique.

Procariotique	Eucariotique
<ul style="list-style-type: none"> • Pro-cariotique derived from Greek; pro: meaning before and karyon: meaning nucleus. 	<ul style="list-style-type: none"> • Eu-cariotique derived from Greek; eu: meaning true and karyon: meaning nucleus.
<ul style="list-style-type: none"> • E.Chatton used this to describe bacteria and blue green algae. 	<ul style="list-style-type: none"> • E.Chatton used this to describe animal and plant cells.

Q:2 Differentiate between Capsid and Capsomeres.

Capsid	Capsomeres
<ul style="list-style-type: none"> • A protein coat which enclosed viral nucleic acid is called capsid. 	<ul style="list-style-type: none"> • The protein subunits which form capsid are called capsomeres.
<ul style="list-style-type: none"> • Capsid gives definite shape to virion. 	<ul style="list-style-type: none"> • The number of capsomeres is characteristics of a particular virus.
<ul style="list-style-type: none"> • Each virion is composed of single capsid. 	<ul style="list-style-type: none"> • Each virion consists of many hundred capsids.
<ul style="list-style-type: none"> • Example: Cubical or heical form of viruses is due to capsid. 	<ul style="list-style-type: none"> • Example: 162 capsomers are found in capsid of herpes virus and 22 capsomeres in adenovirus.

Q:3 Define Species.

Ans: Species: Specie is a group of natural population which can interbreed freely among themselves; produce fertile offsprings but are reproductively isolate from all other such groups in nature.

- Species are independent evolutionary units in which each unit has its own, distinct structural ecological and behavioral characteristics.

Examples of species:

- i. Onion.....Allium cepa
- ii. Amaltas.....Cassia fistula
- iii. Man.....Homo sapiens

Q:4 Differentiate between Virion and Prion.

Virion	Prion
<ul style="list-style-type: none"> • A complete mature and infectious virus is known as virion. • Viruses are fully understood. • The virions are composed of three parts: central core, capsid and envelope. • Their DNA and RNA contain information for their replication. • RNA and DNA are present in viruses. • They causes diseases like measles mumps etc. 	<ul style="list-style-type: none"> • These are infectious proteins. • They have not been fully understood. Their nature is very controversial. • They are composed of only proteins. • This protein contains information for its own replication. • Prions do not contain DNA and RNA. • They cause disease like mad cow disease and certain nervous mysterious diseases.

Q:5 What is binomial nomenclature; who introduced it?

Ans: Linnaeus's system of giving each species a scientific name comprising of two words is known as binomial nomenclature.

Rules of binomial nomenclature:

- i. Every species has only scientific name the world over.
- ii. The scientific name has two parts.
- iii. First name refers to the genus (Pl. Genera) and is called generic name and always begins with a capital letter.
- iv. Second name refers to the species i.e, specific name, is written after generic name and begins with small letter.
- v. The scientific names are taken from Latin word.

Example of scientific names:

- 1) **Onion** Allium cepa
- 2) **Amaltas** Cassia fistula

Q:6 What are symptoms of small pox?

Ans: Symptom of small pox:

- i. This disease results in the formation of raised fluid filled vesicles on the body.
- ii. These become pustules later on and form pitted scars called the pocks'.

Q:7 Give biological classification of corn.

Ans: Biological classification of Corn (Zea mays):

- | | |
|----------------------------|-------------------------------|
| • Kingdom | Plantae |
| • Division (Phylum) | Anthrophyta (Tracheophyta) |
| • Class | Angiospermae (Monocotyledons) |
| • Order | Poales |
| • Family | Poaceae |
| • Genus | Zea |
| • Species | Mays |



Q:8 What are capsids made up of; write number of capsomeres of herpes virus.

Ans. Capsid is made up of protein subunits known as capsomeres. The number of capsomeres varies in a particular virus and help in classification.

Examples:

- a) 162 capsomeres in the capsid of herpes virus.
- b) 252 capsomeres in the capsid of adenovirus which cause some common colds.

Q:9 Define obligate parasite.

Ans: Obligate Parasite: Obligate parasites are the organisms that grow only in their living host and cannot be grown on available defined growth culture medium.

- Viruses are intracellular obligate parasite parasites that only grow inside the cells of plants or animals or inside microorganisms.
- Mildew and most rust species are also obligate parasites.

Q:10 Write names of four common human viral disease.

Ans: Names of four common Human Viral Disease:

- 1) Small pox
- 2) Herpes simplex
- 3) Influenza
- 4) Mumps

Q:11 Differentiate between Provirus and Prophage.

Provirus	Prophage
<ul style="list-style-type: none">• If viral DNA is incorporated into eukaryotic chromosome is called provirus.	<ul style="list-style-type: none">• If viral DNA is incorporated into bacterial chromosome is called prophage.
<ul style="list-style-type: none">• It may convert normal cell to cancerous cell.	<ul style="list-style-type: none">• It does not harm host cell and peacefully passes to successive generations.
<ul style="list-style-type: none">• It is transcribed to form viral RNA.	<ul style="list-style-type: none">• It is induced to start lytic cycle.
<ul style="list-style-type: none">• Example: HIV is retrovirus.	<ul style="list-style-type: none">• Example: T₄ is Bacteriophage.

Q:12 Write four characteristics of viruses?

Ans: Four characteristics of viruses:

- 1) They are extremely small (10 to 1000 times smaller than bacteria) which can pass through procelian filters.
- 2) They are obligate intracellular parasites.
- 3) They are composed of protein coat and genome of DNA and RNA.
- 4) They lack metabolic machinery for synthesis of their own nucleic acid and protein.

Q:13 What are pocks?

Ans: In small pox the formation of raised fluid filled vesicles on the body which become postules later on and form pitted scars called the pocks.

Q:14 Write four symptoms of AIDS.

Ans: Four symptoms of AIDS: The patient has complex symptoms such as:

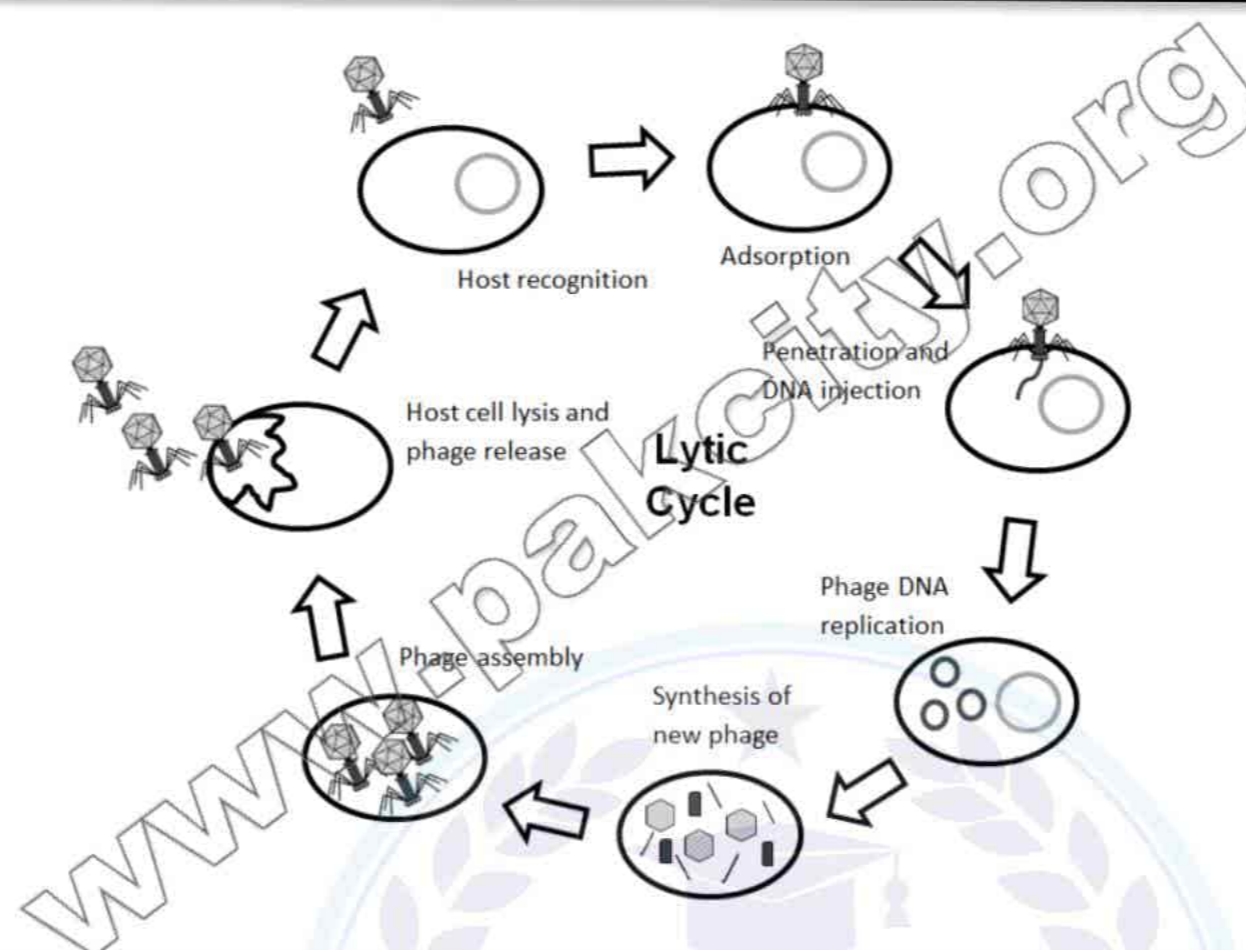
- 1) Severe Pneumonia
- 2) Rare vascular cancer
- 3) Sudden weight loss
- 4) General loss of immune system

Q:15 Differentiate between Lytic cycle and Lysogenic cycle.

Lytic cycle	Lysogenic cycle
<ul style="list-style-type: none"> • It lysis bacteria. 	<ul style="list-style-type: none"> • It does not lysis bacterium.
<ul style="list-style-type: none"> • In it bacteria killed readily. 	<ul style="list-style-type: none"> • In it bacteria survives.
<ul style="list-style-type: none"> • In it no prophage formation occurs. 	<ul style="list-style-type: none"> • In it prophage formation occurs.
<ul style="list-style-type: none"> • In it phage controls and uses metabolic machinery of bacterium completely. 	<ul style="list-style-type: none"> • In it phage does not control and use metabolic machinery of bacteria completely.
<ul style="list-style-type: none"> • In it only phage multiplies. 	<ul style="list-style-type: none"> • In it both phage genome and bacterium multiplies.
<ul style="list-style-type: none"> • It form master slave relationship with bacterium. 	<ul style="list-style-type: none"> • It forms host guest relationship with bacterium.

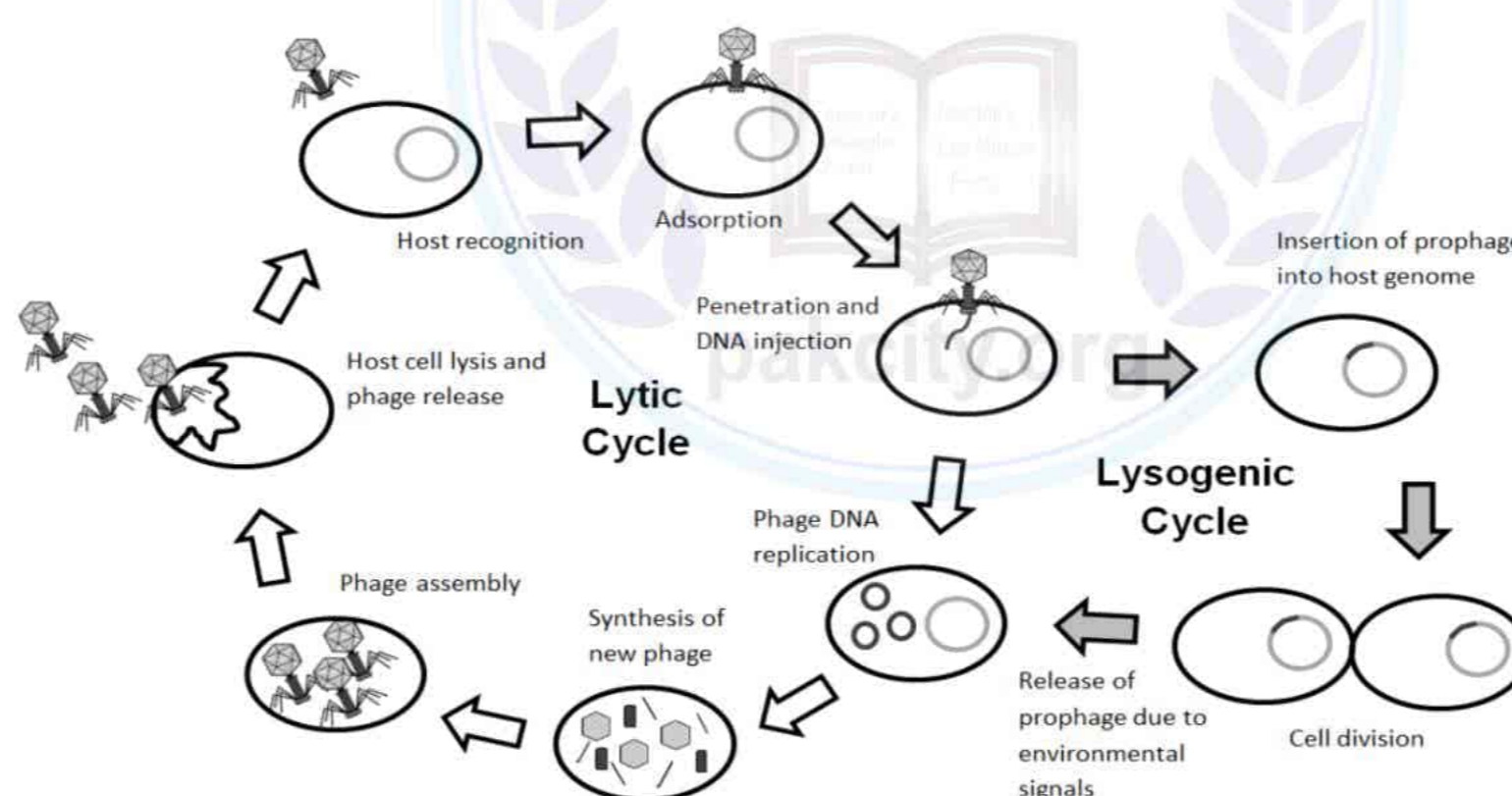
Q:16 Draw lytic cycle.

Ans: Lytic cycle:



Q:17 Draw lysogenic cycle.

Ans: Lysogenic cycle:



Q:18 Write a short notes on AIDS.

Ans: AIDS:

- AIDS is acronym for Acquired Immune Deficiency Syndrome and is caused by the human immunodeficiency viruses (HIV).
- AIDS was reported by some physician in early 1980s in young males. In 1984, the agent causing the disease was identified by research teams from Pasteur Institute in France and National Institute of Health in USA.
- HIV consists of two molecules of RNA and two molecules of reverse transcriptase. A spherical protein capsid surrounds the genome and capsid surrounds the genome and a lipid-protein envelope with spikes of protein lies outside capsid.
- The major cell infected by HIV is the Helper T-lymphocyte which is a major component of immune system. Cells of nervous system can also be infected by HIV.
- Symptoms of AIDS include are rare vascular cancer, sudden weight loss swollen lymph nodes and general loss of immune function.
- The HIV is spread by intimate sexual contact, contact with blood and breast feeding.

Q:19 Differentiate between Bacteriophage and Retrovirus.

Retrovirus	Bacteriophage
<ul style="list-style-type: none"> • Retroviruses are RNA viruses which can convert their single standard RNA into double stranded DNA with the help of a special enzyme called reverse transcriptase. 	<ul style="list-style-type: none"> • Bacteriophage or phage virus is a virus that infects bacteria.
<ul style="list-style-type: none"> • These are RNA viruses. 	<ul style="list-style-type: none"> • These are DNA viruses.
<ul style="list-style-type: none"> • Enzyme reverse transcriptase is present in them. • 	<ul style="list-style-type: none"> • It is absent in them.
<ul style="list-style-type: none"> • These attack on different animals like human 	<ul style="list-style-type: none"> • These attack on bacteria <i>E.coli</i> etc.

Q:21 Define Hepatitis. What are its types?

Ans: Hepatitis:

Hepatitis is an inflammation of the liver.

- It is usually caused by viral infection, toxic agents or drugs.
- It is characterized by jaundice, abdominal pain, liver enlargement, fatigue, and some times fever.
- It may be mild or can be acute or chronic and can lead to liver cancer.



Types of Hepatitis:

- Hepatitis A (Infectious hepatitis)
- Hepatitis B (Serum hepatitis)
- Hepatitis C (Infusion hepatitis)
- Hepatitis D
- Hepatitis E
- Hepatitis G & F

Q:22 How are viruses classified?

Ans: Classification of viruses:

Virus morphology and nucleic acid properties are most important for classifying plant, animal and bacterial viruses. The genetic material may be DNA or RNA, naked, enveloped or complex.

On the basis of morphology viruses are classified into:

1. Rod-shaped (e.g. TMV)
2. Spherical (e.g. Polio)
3. Tadpole like (e.g. Bacteriophages)

Q:23 Differentiate between Hepatitis B and Hepatitis C.

Hepatitis B	Hepatitis A
<ul style="list-style-type: none"> • It is also called "serum hepatitis". 	<ul style="list-style-type: none"> • It is also called "Infusion hepatitis".
<ul style="list-style-type: none"> • It is caused by HBV virus. 	<ul style="list-style-type: none"> • It is caused by HCV virus.
<ul style="list-style-type: none"> • HBV virus is DNA enveloped. 	<ul style="list-style-type: none"> • HCV virus is RNA enveloped.
<ul style="list-style-type: none"> • It can transmit through blood transfusion or from mother to child through milk, body fluids. 	<ul style="list-style-type: none"> • It can be transmitted by through blood, from mother to child during pregnancy and afterward and by sexual contact.
<ul style="list-style-type: none"> • Vaccine is available for it. 	<ul style="list-style-type: none"> • Vaccine is not available.

Q:24 How hepatitis A is transmitted?

Ans: Transmission of Hepatitis A:

- Hepatitis A is most commonly transmitted by the fecal-oral through contamination of food or water by the feces of an infected individual.
- An infected food handler is often involved in outbreaks have also been traced to day-care centers where contact may take place with feces.
- Saliva contact, sexual contact and arthropods have also been implicated in transmission.
- In addition disease may be transmitted by the consumption of raw shellfish such as clams and oyster, since these animals filter and concentrate viruses from contaminated sea water.

Q:25 What are reverse transcription and reverse transcriptase.

Ans: Reverse Transcription:

It is a process in retroviruses in which an enzyme known as reverse transcriptase catalyzes the production of DNA using RNA as a template.

Reverse Transcriptase:

It is an enzyme found in retroviruses which uses the viral RNA as a template to synthesize single stranded DNA (the term reverse transcriptase is derived from this reversal of usual biochemistry).

- Once formed, the single stranded DNA serves as template to form a double stranded DNA. It often makes mistakes and so introduces mutation.

Q:26 Define the term Adsorption and Induction.

Ans: Adsorption:

Adsorption is the attachment of the phage to its host cell.

- For adsorption to occur, a site on phage must match with a complementary receptor site on the cell wall of the bacterium.
- Actual attachment consists of a weak chemical union between virion and receptor site.

Induction:

Induction is a process in which viral DNA gets detached from the host's chromosomes and lytic cycle starts.

Q:27 Differentiate between Prophage and Induction.

Prophage	Induction
<ul style="list-style-type: none"> • It is the phage formed by the bacteriophage when its DNA incorporates with bacterial DNA and does not take hold of metabolic machinery (lysogeny). 	<ul style="list-style-type: none"> • Sometimes DNA of bacteriophage DNA and lytic cycle starts. This is called induction.
<ul style="list-style-type: none"> • It is a temperate phage. 	<ul style="list-style-type: none"> • It is not a temperate phage. Here a temperate phage becomes virulent.
<ul style="list-style-type: none"> • Virus does not kill the bacteria. 	<ul style="list-style-type: none"> • It kills the bacterial cell.
<ul style="list-style-type: none"> • Bacteriophage divides with bacteria. 	<ul style="list-style-type: none"> • Bacteriophage does not divide with bacteria.

Q:28 Write down symptoms and prevention of hepatitis.

Ans: Symptoms of Hepatitis:

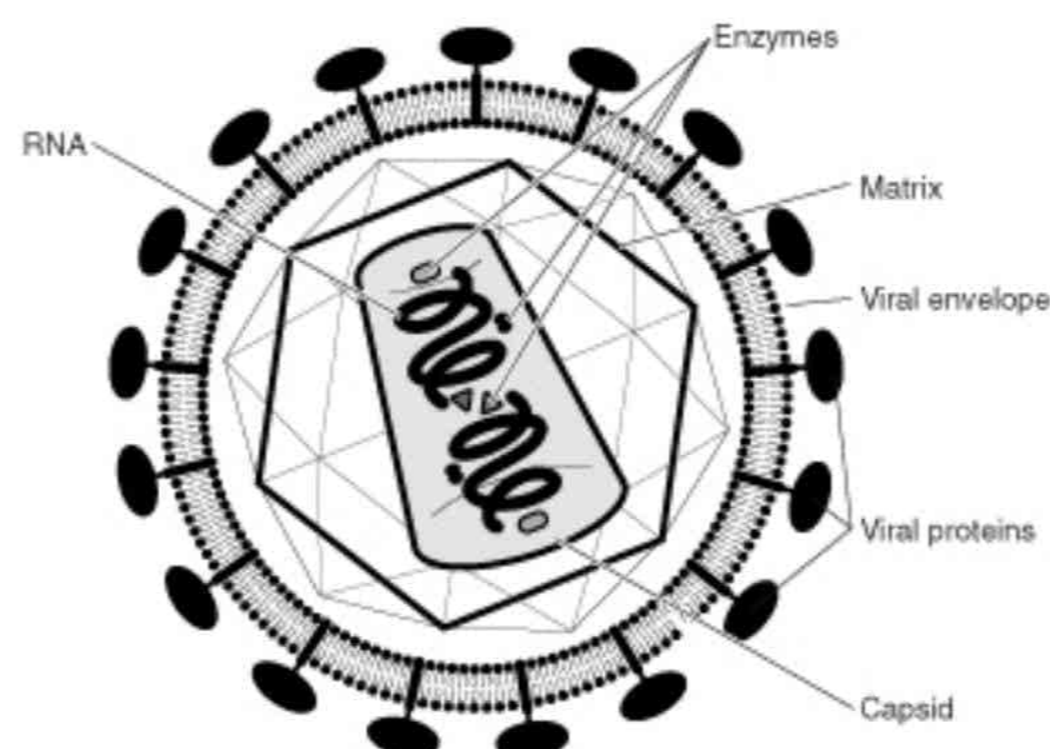
- Jaundice (Acute stage)
- Abdominal pain (Acute stage)
- Liver enlargement (Acute stage)
- Fatigue (Acute stage)
- Loss of appetite (Acute stage)
- Fever (Acute stage)
- Liver damage (Chronic stage)

Prevention of Hepatitis:

Hepatitis can be prevented by adapting hygienic measures, with routine vaccination and screening of blood/ organ/ tissue of the donor.

Q:29 Draw HIV diagram.

Ans:



Structure of Human Immunodeficiency Virus (HIV)

Q:30 Explain briefly Pox viruses.

Ans: Pox viruses:

- Pox viruses are one of the largest virions.
- They are brick-shaped particles.
- They are DNA viruses.
- The nucleocapsid is surrounded by a series of fiber like rods.
- The virion has no envelop.

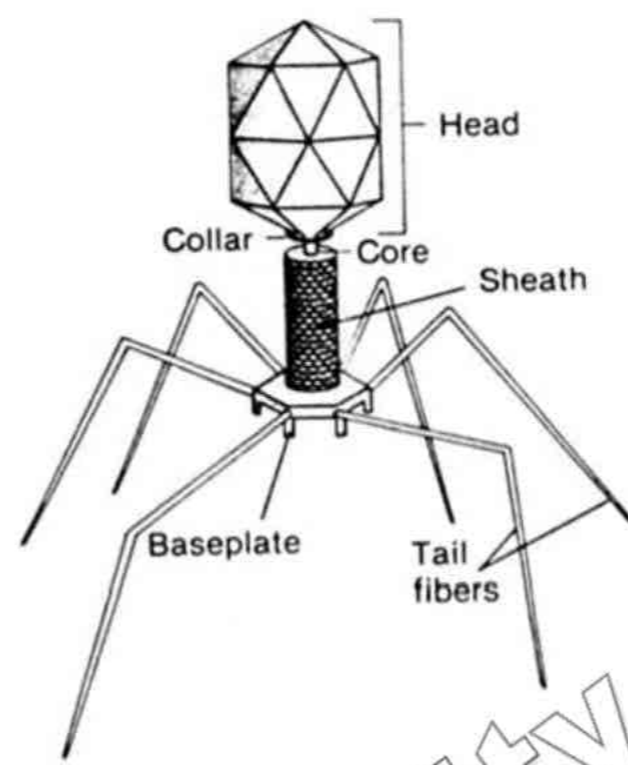
Q:31 Explain briefly Herpes simplex.

Ans: Herpes Simplex:

- It is caused by Herpes virus which is large DNA virion. Virion has envelope with spikes.
- Herpes simplex is naturally occurring disease of mankind.
- This disease is characterized by cold sores (fever blisters), the vascular lesions in the epithelial layers of ectodermal tissue, that form on lips, gums, nose and adjacent areas.

Q:32 Draw bacteriophage.

Ans: Bacteriophage:



Q:33 What is Poliomyelitis?

Ans: Poliomyelitis:

- Poliomyelitis, abbreviated as Polio is found all over the world.
- It is mostly occurs in children.
- Viruses that cause polio are among the smallest virions, measuring 27nm.
- Polio viruses are RNA viruses.
- They are transmitted by contaminated water and food.
- Polio virus infects meninges and causes paralysis of arms, legs, and body trunk. Virus may infect medulla of the brain causing difficulty in swallowing, breathing and possibly death.

Q:34 Why some biologists found two kingdom classification unworkable?

Ans: Reasons showing two kingdom classification unworkable:

Some biologists found two kingdom classification unworkable because many unicellular organisms like Euglena that have both plant like (presence of Chlorophyll) and animal like (lack of cell wall) characters and also because it ignores the difference between prokaryotic and eukaryotic cells.

Q:35 Enlist the Modified Five Kingdom Classification of Margulis and Schwartz.

Ans: List of Modified Five Kingdom Classification of Margulis and Schwartz

- 1) Prokaryotae
- 2) Fungi
- 3) Protocista
- 4) Plantae
- 5) Animalia

Q:36 What are Oncoviruses?

Ans: Oncoviruses:

Oncoviruses are cancer causing viruses that can transform normal cells to cancer cells.

- Some retroviruses are oncoviruses that may develop cancer when they enter cells and assume a lysogenic relationship with these cells. The proteins encoded by viruses may bring about profound changes associated with cancers.