



**3. The glandular accessory organ which produces the largest proportion of semen is**

- a. Seminal vesicle
- b. Bulbourethral gland
- c. Prostate gland
- d. Mucous gland

**4. The male homologue of the female clitoris is**

- a. Scrotum
- b. Penis
- c. Urethra
- d. Testis

**5. The site of embryo implantation is the**

- a. Uterus
- b. Peritoneal cavity
- c. Vagina
- d. Fallopian tube

**6. The foetal membrane that forms the basis of the umbilical cord is**

- a. Allantois
- b. Amnion
- c. Chorion
- d. Yolk sac

**7. The most important hormone in initiating and maintaining lactation after birth is**

- a. Oestrogen
- b. FSH
- c. Prolactin
- d. Oxytocin

**8. Mammalian egg is**

- a. Mesolecithal and non cleidoic
- b. Microlecithal and non cleidoic
- c. Alecithal and non cleidoic
- d. Alecithal and cleidoic

**9. The process which the sperm under goes before penetrating the ovum is**

- a. Spermiation
- b. Cortical reaction
- c. Spermiogenesis
- d. Capacitation

### **3. Reproductive Health**

**1. Which of the following is correct regarding HIV, hepatitis B, gonorrhoea and trichomoniasis?**

- (a) Gonorrhoea is a STD whereas others are not.
- (b) Trichomoniasis is a viral disease whereas others are bacterial.
- (c) HIV is a pathogen whereas others are diseases.
- (d) Hepatitis B is eradicated completely whereas others are not.

**2. Which one of the following groups includes sexually transmitted diseases caused by bacteria only?**

- (a) Syphilis, gonorrhoea and candidiasis
- (b) Syphilis, chlamydiasis and gonorrhoea
- (c) Syphilis, gonorrhoea and trichomoniasis
- (d) Syphilis, trichomoniasis and pediculosis

**3. Identify the correct statements from the following**

- (a) Chlamydiasis is a viral disease.
- (b) Gonorrhoea is caused by a spirochaete bacterium, *Treponema palladium*.

(c) The incubation period for syphilis is 2 to 14 days in males and 7 to 21 days in females.

(d) Both syphilis and gonorrhoea are easily cured with antibiotics.

**4. A contraceptive pill prevents ovulation by**

(a) blocking fallopian tube

(b) inhibiting release of FSH and LH

(c) stimulating release of FSH and LH

(d) causing immediate degeneration of released ovum.

**5. The approach which does not give the defined action of contraceptive is**

(a) Hormonal contraceptive Prevents entry of sperms, prevent ovulation and fertilization

**(b) Vasectomy Prevents spermatogenesis**

(c) Barrier method Prevents fertilization

(d) Intra uterine device Increases phagocytosis of sperms, suppresses sperm motility and fertilizing capacity of sperms

(b) Both statements 1 and 2 are correct but statement 2 is not the correct explanation of statement 1.

(c) Statement 1 is correct but statement 2 is incorrect.

(d) Both statements 1 and 2 are incorrect.

**6. Match column I with column II and select the correct option from the codes given below.**

<b>Column I</b>	<b>Column II</b>
A. Copper releasing IUD	(i) LNG-20
B. Hormone releasing	(ii) Lippes loop IUD
C. Non medicated IUD	(iii) Saheli
D. Mini pills	(iv) Multiload-

- (a) A-(iv), B-(ii), C-(i), D-(iii)
- (b) A-(iv), B-(i), C-(iii), D-(ii)
- (c) A-(i), B-(iv), C-(ii), D-(iii)
- (d) A-(iv), B-(i), C-(ii), D-(iii)

**7. Select the incorrect action of hormonal contraceptive pills from the following**

- (a) Inhibition of spermatogenesis.
- (b) Inhibition of ovulation.
- (c) Changes in cervical mucus impairing its ability to allow passage and transport of sperms.
- (d) Alteration in uterine endometrium to make it unsuitable for implantation.

## UNIT II

### 4. Principles of Inheritance and Variation

**1. Haemophilia is more common in males because it is**

- a. Recessive character carried by Y-chromosome
- b. Dominant character carried by Y-chromosome
- c. Dominant trait carried by X-chromosome
- d. Recessive trait carried by X-chromosome

**2. ABO blood group in man is controlled by**

- a) Multiple alleles
- b) Lethal genes
- c) Sex linked genes
- d) Y-linked genes

**3. Three children of a family have blood groups A, AB and B. What could be the genotypes of their parents?**

- a) IA IB and ii
- b) IA Io and IBIo
- c) IB IB and IA IA
- d) IA IA and ii

**4. Which of the following is not correct?**

- a. Three or more alleles of a trait in the population are called multiple alleles.
- b. A normal gene undergoes mutations to form many alleles
- c. Multiple alleles map at different loci of a chromosome
- d. A diploid organism has only two alleles out of many in the population

**5. Which of the following phenotypes in the progeny are possible from the parental combination**

- a. AxB?A and B only
- b. A,B and AB only
- c. AB only
- d. A,B,AB and O

**6. Which of the following phenotypes is not possible in the progeny of the parental genotypic combination IAIO X IAIB?**

- a) AB
- b) O
- c) A
- d) B

**7. Which of the following is true about Rh factor in the offspring of a parental combination DdXDd (both Rh positive)?**

- a) All will be Rh-positive  
c) About  $\frac{3}{4}$  will be Rh negative
- b) Half will be Rh positive  
d) About one fourth will be Rh negative

**8. What can be the blood group of offspring when both parents have AB blood group?**

- a) AB only  
only
- b) A, B and AB
- c) A, B, AB and O
- d) A and B

**9. If the child's blood group is 'O' and father's blood group is 'A' and mother's blood group is 'B' the genotype of the parents will be**

- a) IA IA and IB Io  
d) IoIo and IB IB
- b) IA Io and IB Io
- c) IA Io and IoIo

**10. XO type of sex determination and XY type of sex determination are examples of**

- a) Male heterogamety  
c) Male homogamety
- b) Female heterogamety  
d) Both (b) and (c)

**11. In an accident there is great loss of blood and there is no time to analyse the blood group which blood can be safely transferred?**

- a) 'O' and Rh negative  
positive
- b) 'O' and Rh positive
- c) 'B' and Rh negative
- d) 'AB' and Rh positive

**12. Father of a child is colourblind and mother is carrier for colourblindness, the probability of the child being colourblind is**

- a. 25%  
100%  
d) 75%
- b) 50%
- c)

**13. A marriage between a colourblind man and a normal woman produces**

- A. All carrier daughters and normal sons  
C. 50% colourblind sons, 50% normal sons
- B. 50% carrier daughters, 50% normal daughters  
D. All carrier offsprings

**14. Mangelism is a genetic disorder which is caused by the presence of an extra chromosome number**

- A. 20  
b) 21  
c) 4  
d) 23

**15. Klinefelters' syndrome is characterized by a karyotype Of**

- a.XYY  
b) XO  
c) XXX  
d) XXY

**16. Females with Turners' syndrome have**

- a.Small uterus  
All of these
- b) Rudimentary ovaries
- c) Underdeveloped breasts
- d)

**17. Pataus' syndrome is also referred to as**

- a.13-Trisomy  
these
- b) 18-Trisormy
- c) 21-Trisormy
- d) None of

**18. Who is the founder of Modern Eugenics movement?**

- a) Mendel                      b) Darwin                      c) Fransis Galton                      d) Karl pearson

**19. Improvement of human race by encouraging the healthy persons to marry early and produce large number of children is called**

- a) Positive eugenics                      b) Negative eugenics                      c) Positive euthenics                      d) Positive euphenics

**20. The \_\_\_\_\_deals with the control of several inherited human diseases especially inborn errors of metabolism**

- A. Euphenics                      b) Eugenics                      c) Euthenics                      d) All of these

**21. "Universal Donor" and "Universal Recipients" blood group are \_\_\_\_\_and\_\_\_\_\_respectively**

- a.AB, O                      b) O, AB                      c) A, B                      d) B, A

**22. ZW-ZZ system of sex determination occurs in**

- a.Fishes                      b) Reptiles                      c) Birds                      d) All of these

**23. Co-dominant blood group is**

- a.A                      b) AB                      c) B                      d) O

**24. Which of the following is incorrect regarding ZW-ZZ type of sex determination?**

- A .It occurs in birds and some reptiles                      b .Females are homogametic and males are heterogametic  
c. Male produce two types of gametes                      d .It occurs in gypsy moth

### 5. Molecular Genetics

**1. Hershey and Chase experiment with bacteriophage showed that**

- a) Protein gets into the bacterial cells                      b) DNA is the genetic material  
c) DNA contains radioactive sulphur                      d) Viruses undergo transformation

**2. DNA and RNA are similar with respect to**

- a) Thymine as a nitrogen base                      b) A single-stranded helix shape  
c) Nucleotide containing sugars, nitrogen bases and phosphates  
d) The same sequence of nucleotides for the amino acid phenyl alanine

**3. A mRNA molecule is produced by**

- a) Replication                      b) Transcription                      c) Duplication                      d) Translation

**4. The total number of nitrogenous bases in human genome is estimated to be about**

- a) 3.5 million                      b) 35000                      c) 35 million                      d) 3.1 billion

**5. *E. coli* cell grown on  $^{15}\text{N}$  medium are transferred to  $^{14}\text{N}$  medium and allowed to grow for two generations. DNA extracted from these cells is ultracentrifuged in a cesium chloride density gradient. What density distribution of DNA would you expect in this experiment?**

- (a) One high and one low density band.                      (b) One intermediate density band.  
(c) One high and one intermediate density band.                      (d) One low and one intermediate density band.

**6. What is the basis for the difference in the synthesis of the leading and lagging strand of DNA molecules?**

- (a) Origin of replication occurs only at the 5' end of the molecules.
- (b) DNA ligase works only in the 3' → 5' direction. (c) DNA polymerase can join new nucleotides only to the 3' end of the growing stand. (d) Helicases and single-strand binding proteins that work at the 5' end.

**7. Which of the following is the correct sequence of event with reference to the central dogma?**

- (a) Transcription, Translation, Replication (b) Transcription, Replication, Translation
- (c) Duplication, Translation, Transcription (d) Replication, Transcription, Translation

**8. Which of the following statements about DNA replication is not correct?**

- (a) Unwinding of DNA molecule occurs as hydrogen bonds break.
- (b) Replication occurs as each base is paired with another exactly like it.
- (c) Process is known as semi conservative replication because one old strand is conserved in the new molecule.
- (d) Complementary base pairs are held together with hydrogen bonds.

**9. Which of the following statements is not true about DNA replication in eukaryotes?**

- (a) Replication begins at a single origin of replication.
- (b) Replication is bidirectional from the origins.
- (c) Replication occurs at about 1 million base pairs per minute. (d) There are numerous different bacterial chromosomes, with replication occurring in each at the same time.

**10. The first codon to be deciphered was \_\_\_\_\_ which codes for \_\_\_\_\_.**

- (a) AAA, proline (b) GGG, alanine (c) UUU, Phenylalanine (d) TTT, arginine

**11. Meselson and Stahl's experiment proved**

- (a) Transduction (b) Transformation (c) DNA is the genetic material
- (d) Semi-conservative nature of DNA replication

**12. Ribosomes are composed of two subunits; the smaller subunit of a ribosome has a binding site for \_\_\_\_\_ and the larger subunit has two binding sites for two -----**

-----

**13. An operon is a:**

- (a) Protein that suppresses gene expression (b) Protein that accelerates gene expression
- (c) Cluster of structural genes with related function (d) Gene that switched other genes on or off

**14. When lactose is present in the culture medium:**

- (a) Transcription of *lac y*, *lac z*, *lac a* genes occurs. (b) Repressor is unable to bind to the operator.
- (c) Repressor is able to bind to the operator. (d) Both (a) and (b) are correct.

**6. Evolution**

**1. The first life on earth originated**

- a) in air      b) on land      c) in water      d) on mountain

**2) Who published the book "Origin of species by Natural Selection" in 1859?**

- a) Charles Darwin      b) Lamarck      c) Weismann      d) Hugo de Vries

**3) Which of the following was the contribution of Hugo de Vries?**

- a) Theory of mutation      b) Theory of natural Selection  
c) Theory of inheritance of acquired characters      d) Germplasm theory

**4) The wings of birds and butterflies is an example of**

- a) Adaptive radiation      b) convergent evolution      c) divergent evolution      d) variation

**5) The phenomenon of "Industrial Melanism" demonstrates**

- a) Natural selection      b) induced mutation      c) reproductive isolation      d) geographical isolation

**6) Darwin's finches are an excellent example of**

- a) connecting links      b) seasonal migration      c) adaptive radiation      d) parasitism

**7. Who proposed the Germplasm theory?**

- a) Darwin      b) August Weismann      c) Lamarck      d) Alfred Wallace

**8) The age of fossils can be determined by**

- a) electron microscope      b) weighing the fossils      c) carbon dating      d) analysis of bones

**9) Fossils are generally found in**

- a) igneous rocks      b) metamorphic rocks      c) volcanic rocks      d) sedimentary rocks

**10) Evolutionary history of an organism is called**

- a) ancestry      b) ontogeny  
c) phylogeny      d) paleontology

**11) The golden age of reptiles was**

- a) Mesozoic era      b) Cenozoic era  
c) Paleozoic era      d) Proterozoic era

**12) Which period was called "Age of fishes"?**

- a) Permian      b) Triassic  
c) Devonian      d) Ordovician

**13) Modern man belongs to which period?**

- a) Quaternary      b) Cretaceous      c) Silurian      d) Cambrian

**14) The Neanderthal man had the brain capacity of**

- a) 650 - 800cc      b) 1200cc      c) 900cc      d) 1400cc

**7. Human Health and Diseases**

**1. A 30 year old woman has bleedy diarrhoea for the past 14 hours, which one of the following organisms is likely to cause this illness?**

A. *Streptococcus pyogenes*      B. *Clostridium difficile*      C *Shigella dysenteriae*      D. *Salmonella enteritidis*

**2. Exo-erythrocytic schizogony of *Plasmodium* takes place in -----**

- a.RBC      b) Leucocytes      c) Stomach      d) Liver

3. The sporozoites of *Plasmodium vivax* are formed from -----

- a. Gametocytes    b) Sporoblasts    c) Oocysts    d) Spores

4. Amphetamines are stimulants of the CNS, whereas barbiturates are ----

- a. CNS stimulant    b) both a and b    c) hallucinogenic d) CNS depressants

5. . Choose the correctly match pair.

- a) Amphetamines - Stimulant    b) LSD - Narcotic    c) Heroin - Psychotropic    d) Benzodiazepine - Pain killer

6. The Athlete's foot disease in human is caused by-----

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

7. Cirrhosis of liver is caused by chronic intake of -----

- a. Opium    b) Alcohol    c) Tobacco    d) Cocaine

8.. The sporozoite of the malarial parasite is present in ----

a.saliva of infected female *Anopheles* mosquito.    B. RBC of human suffering from malaria.

C. Spleen of infected humans.    D. Gut of female *Anopheles* mosquito.

9. Where do the following events in the life cycle of *Plasmodium* takes place?

- A.Fertilization - \_\_\_\_\_    b. Development of gametocytes - \_\_\_\_  
c. Release of sporozoites - \_\_\_\_\_    d. Schizogony - \_\_\_\_\_

10 . Paratope is an

- a) Antibody binding site on variable regions    b) Antibody binding site on heavy regions  
c) Antigen binding site on variable regions    d) Antigen binding site on heavy regions

11. Allergy involves

- a) IgE    b) IgG    c) IgA    d) IgM

12. Spread of cancerous cells to distant sites is termed as

- a) Metastasis    b) Oncogenes    c) Proto-oncogenes    d) Malignant neoplasm

13. AIDS virus has

- a) Single stranded RNA    b) Double stranded RNA    c) Single stranded DNA    d) Double stranded DNA

14. B cells that produce and release large amounts of antibody are called

- a) Memory cells    b) Basophils    c) Plasma cells    d) killer cells

### 8. Microbes in Human Welfare

1. Which of the following microorganism is used for production of citric acid in industries?

- a) *Lactobacillus bulgaris*    b) *Penicillium citrinum*    c) *Aspergillus niger*    d) *Rhizopus nigricans*

2. Which of the following pair is correctly matched for the product produced by them?

- a) *Acetobacter aceti* - Antibiotics    b) *Methanobacterium* - Lactic acid  
c) *Penicilium notatum* - Acetic acid    d) *Saccharomyces cerevisiae* - Ethanol



- a) Denaturation, Annealing, Synthesis    b) Synthesis, Annealing, Denaturation  
c) Annealing, Synthesis, Denaturation    d) Denaturation, Synthesis, Annealing

**6. Which one of the following statements is true regarding DNA polymerase used in PCR?**

- a) It is used to ligate introduced DNA in recipient cells    b) It serves as a selectable marker  
c) It is isolated from a Virus    d) It remains active at a high temperature.

**7. ELISA is mainly used for**

- a) Detection of mutations    b) Detection of pathogens    c) Selecting animals having desired traits  
d) Selecting plants having desired traits

**8. Transgenic animals are those which have**

- a) Foreign DNA in some of their cells    b) Foreign DNA in all their cells  
c) Foreign RNA in some of their cells    d) Foreign RNA in all their cells

**9. Recombinant Factor VIII is produced in the ----- cells of the Chinese Hamster**

- a) Liver cells    b) blood cells    c) ovarian cells    d) brain cells.

**10. Vaccines that use components of a pathogenic organism rather than the whole organism are called**

- a) Subunit recombinant vaccines    b) attenuated recombinant vaccines    c) DNA vaccines    d) conventional vaccines.

### **10. Organisms and Population**

**1. All populations in a given physical area are defined as**

- a) Biome    b) Ecosystem    c) Territory    d) Biotic factors

**2. Organisms which can survive a wide range of temperature are called**

- a) Ectotherms    b) Eurytherms    c) Endotherms    d) Stenotherms

**3. The interaction in nature, where one gets benefit on the expense of other is...**

- a) Predation    b) Mutualism    c) Amensalism    d) Commensalism

**4. Predation and parasitism are which type of interactions?**

- a) (+,+)    b) (+, 0)    c) (--, --)    d) (+, --)

**5. Competition between species leads to**

- a) Extinction    b) Mutation    c) Amensalism    d) Symbiosis

**6. Which of the following is an r-species**

- a) Human    b) Insects    c) Rhinoceros    d) Whale

**7. Match the following and choose the correct combination from the options given below.**

Column I    Column II

A. Mutualism    1. Lion and deer

B. Commensalism    2. Round worm and man

C. Parasitism    3. Birds compete with squirrels for nuts



- 1. Right to Clean Water is a fundamental right, under the Indian Constitution**  
a) Article 12    b) Article 21    c) Article 31    d) Article 41
- 2. With which of the following, the Agenda 21' of Rio Summit, 1992 is related to?**  
a. Sustainable development            b. Combating the consequences of population  
c. Mitigation norms of Green House Gases (GHGs) emission.  
D. Technology transfer mechanism to developing countries for 'clean-energy' production.
- 3. Which among the following awards instituted by the Government of India for individuals or communities from rural areas that have shown extraordinary courage and dedication in protecting Wildlife?**  
A. Indira Gandhi Paryavaran Puraskar            B. Medini Puruskar Yojana  
C. Amrita Devi Bishnoi Award                    D. Pitambar Pant National Award
- 4. The 'thickness' of Stratospheric Ozone layer is measured in/on:**  
a) Sieverts units                                    b) Dobson units  
c) Melson units                                      d) Beaufort Scale
- 5. Which among the following is the most abundant Green-House-Gas (GHG) in the earth's atmosphere?**  
a) Carbon dioxide                                b) Water Vapour  
c) Sulphur Dioxide                                d) Tropospheric Ozone
- 6. As per 2017 statistics, the highest per capita emitter of Carbon dioxide in the world is**  
a) USA                    b) China    c) Qatar                    d) Saudi Arabia
- 7. The use of microorganism metabolism to remove pollutants such as oil spills in the water bodies is known as**  
a) Biomagnification    b) Bioremediation    c) Biomethanation    d) Bioreduction
- 8. The Ozone Day is observed every year on September 16 as on this day in 1987 the \_\_\_\_\_ was signed for launching efforts to arrest the depletion of the fragile ozone layer in the stratosphere that prevents the harmful ultra-violet rays of the sun from reaching the earth. Fill the correct word in blank.**  
a) Montreal Protocol    b) Geneva Protocol    c) Kyoto Protocol                    d) Nagoya Protocol
- 9. Which among the following always decreases in a Food chain across tropic levels?**  
a) Number                    b) Accumulated chemicals    c) Energy    d) Force
- 10. In the E-waste generated by the Mobile Phones, which among the following metal is most abundant?**  
a) Copper    b) Silver    c) Palladium                    d) Gold
- 11. The Hydrochlorofluorocarbons (HCFCs) are the compounds which have the following molecules:**  
a) Hydrogen    b) Carbon    c) Chlorine                    d) Fluorine
- 12. SMOG is derived from :** a) Smoke    b) Fog    c) Both A and B                    d) Only A
- 13. Excess of fluoride in drinking water causes:**  
a) Lung disease    b) Intestinal infection    c) Fluorosis    d) None of the above