



BIO-ZOOLOGY

I-MARK QUESTIONS

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Read the one mark question and answers
present in the study material.

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7. Name the mineral essential for blood clotting. 3
 a) Magnesium b) Sodium
 c) Calcium d) Potassium Ans.:
8. Name the element or mineral essential for oxygen transport
 a) calcium b) magnesium
 c) iodine d) Iron Ans.:
9. The total body water content in a new born child is
 a) 80 - 85% b) 71 - 78%
 c) 85 - 90% d) 30 - 45% Ans.:
10. Water loss happens through skin is
 a) 800 ml b) 300 ml
 c) 200 ml d) 600 ml Ans.:
11. How much of energy is yielded by 1 gm of lipid ?
 a) 10 - 15% caloire b) 20 - 25% caloire
 c) 4 - 5% caloire d) 25 - 30 caloire Ans.:
12. The body weight of a normal healthy man is
 a) 55 kg. b) 35 kg.
 c) 25 kg. d) 10 kg. Ans.:
13. The total calorie requirement for IRM doing heavy work in one day is about
 a) 2780 caloire b) 3800 calories
 c) 3880 calories d) 1100 calories Ans.:
14. The total calorie requirement for IRW doing sedentary work in one day is about
 a) 2080 caloire b) 1790 caloire
 c) 2980 caloire d) 3000 caloire Ans.:
15. What is the range of age of teenagers who suffer from obesity ?
 a) 15 - 19 b) 15 - 25
 c) 13 - 18 d) 50 - 65 Ans.:
16. What is the condition when the blood glucose level is high ?
 a) Hypoglycemia b) Hyperglycemia
 c) Glycemia d) Epilepsy Ans.:

Answers - Lesson.1 - Exercise - 2

1. Functional proteins ; 2. Lysine ; 3. Adipose tissue ; 4. PuFA; 5. Vitamin D ;
 6. Vitamin B₂ ; 7. Calcium ; 8. Iron ; 9. 85 - 90% ; 10. 600 ml ; 11. 25 - 30% ;
 12. 55 kg ; 13. 3880 calories ; 14. 1790 calories ; 15. 13 - 18 ; 16. Hyperglycemia.

Exercise - 3

1. The name 'diabetes' in Greek means
 a) running opposite b) running through
 c) running centrally d) running against Ans.:
2. The type - II diabetes is due to
 a) more insulin b) insulin dependent
 c) less insulin d) insulin resistance Ans.:

3. The enzyme that converts starch into Amylase is 4
 a) Parotid b) Lingual
 c) Ptyalin d) Sub maxillary Ans.:
4. In stomach, the HCl is secreted by
 a) Flame cells b) Oxyntic cells
 c) Gastric cells d) Alpha cells Ans.:
5. The enzyme that converts soluble cassinogen into insoluble caesin in is
 a) pepsin b) trypsin c) renin d) erepsin Ans.:
6. The length of small intestine is about
 a) 9 - 10 m b) 6 - 7 m
 c) 4 - 8 m d) 5 - 7 m Ans.:
7. The centre segment of the small intestine is
 a) Jejunum b) Ileum
 c) Duodenum d) Diaphragm Ans.:
8. Which convert the bigger fat particles into smaller fat globules ?
 a) Sodium salts b) Bile salts
 c) Calcium salts d) Potassium salts Ans.:
9. The enzyme that converts functionless trypsinogen into fucntional trypsin in duodenum is
 a) Enterokinase b) Lipase
 c) Carboxy peptidase d) Amylase Ans.:
10. The substance that helps in the lubrication of food in the mouth is
 a) HCl b) Mucin
 c) Sodium bicarbonate d) Amylase Ans.:
11. The main cause of the tooth decay is
 a) plaque b) erosion of dentine
 c) bacteria d) decayed food Ans.:
12. The living tissue within a tooth is called
 a) Enamel b) Pulp
 c) Pulp cavity d) Dentine Ans.:
13. In dental caries, decayed area is filled with
 a) cement b) antibiotic substances
 c) cement and antibiotic d) amalgam or cement Ans.:
14. The bacteria that causes ulcer is
 a) Cholera vibrio b) Solmonella
 c) Helicobacter pylori d) Acetobacter aceti Ans.:
15. The hernia that develops in babies is
 a) Femoral hernia b) Umbilical hernia
 c) Inguinal hernia d) Strangulated hernia Ans.:
16. Liver cirrhosis may be due to replacement of liver tissue by the
 a) normal tissue b) fibrous sear tissue
 c) epithelial cells d) connective tissue Ans.:

7. The chemical substance present in the neuro-muscular junction is
 a) Tryptopan b) sarcoplasm
 c) acetylcholine d) tropomyosin **Ans.:**
8. The ions released from sarcoplasmic reticulum that initiate the chemical events of contractile process are
 a) Calcium ions b) magnesium ions
 c) sodium ions d) iodine ions **Ans.:**
9. The process by which oxygen is carried by the blood from alveoli is
 a) osmosis b) diffusion
 c) active transport d) selective conduction **Ans.:**
10. The membrane that covers the lungs is
 a) Pericardium b) Myelin sheath
 c) Pleura d) Sarcolemma **Ans.:**
11. The partial pressure of O₂ in atmospheric air is
 a) 140mm Hg b) 100 mm Hg
 c) 40 mm Hg d) 46 mm Hg **Ans.:**
12. The partial pressure of venous blood is
 a) 40mm Hg b) 140 mm Hg
 c) 100 mm Hg d) 46 mm Hg **Ans.:**
13. The respiratory centre is located in
 a) lungs b) medulla oblongata
 c) mid brain d) skin **Ans.:**
14. Inflammation of the lungs due to infection is called
 a) Pneumonia b) Pleurosis
 c) Tuberculosis d) Asthma **Ans.:**
15. In man, Adenovirus causes
 a) Bronchitis b) Tuberculosis
 c) Pleurosis d) Pneumonia **Ans.:**
16. The mitral valve is
 a) semilunar valve b) tricuspid valve
 c) bicuspid valve d) lunar valve **Ans.:**

Answers - Lesson.1 - Exercise - 5

1. skeletal muscles ; 2. sarcolemma ; 3. lysosome ; 4. thymus gland ;
 5. plasmapheresis ; 6. myasthenia gravis ; 7. acetyl choline ; 8. calcium ions ;
 9. Diffusion ; 10. Pleura ; 11. 140mm - Hg ; 12. 40 mm - Hg ; 13. medula oblongata ;
 14. Pneumonia ; 15. Pneumonia ; 16. Bicuspid valve.

Exercise - 6

1. The nerve that controls the heart beat is
 a) Epiphysis b) Diencephalon
 c) Vagus nerve d) Olfactory nerve **Ans.:**

2. Which is called Pace maker ?
 a) Sinu atrial node b) Bundle of His
 c) Purkinje tissue d) Auriculo ventricular node **Ans.:**
3. The disease that is caused due to the deposition of fat on the inner lining of arteries is
 a) Heart block b) Heart attack
 c) Atherosclerosis d) Chest pain **Ans.:**
4. The sudden death of part of the heart muscle due to blockage in the coronary artery is
 a) Rheumatic heart disease b) Coronary heart disease
 c) Myocardial infarction d) Arterio sclerosis **Ans.:**
5. The metal tube used to keep the artery open after angioplasty is called
 a) stent b) catheter
 c) balloon catheter d) angina tube **Ans.:**
6. The disease that is caused due to the narrowing of the coronary arteries is
 a) RHD b) Heart block
 c) CAD d) Thrombosis **Ans.:**
7. Women are protected from Atherosclerosis by the hormone
 a) Progesterone b) Oestrogen
 c) FSH d) TSH **Ans.:**
8. Among the following which denotes high blood pressure ?
 a) 120/80 mm Hg b) 130/90 mm Hg
 c) 140/90 mm Hg d) 160/95 mm Hg **Ans.:**
9. Antibodies are produced by
 a) Erythrocytes b) Lymphocytes
 c) Thrombocytes d) Platelets **Ans.:**
10. The resting potential of an excitable nerve cell is about
 a) 70 mv b) 80 mv
 c) 60 mv d) 20 mv **Ans.:**
11. The synaptic cleft measures about
 a) 0.5 - 1 nm b) 10 - 20 nm
 c) 5 - 10 nm d) 20 - 30 nm **Ans.:**
12. The transmitter substance at the synapse is
 a) Acetyl choline b) Adrenalin
 c) Dendrite d) Gray matter **Ans.:**
13. The number of synapses present in the cerebral cortex alone is
 a) 6.023×10^{23} b) $10^{2783000}$
 c) 5×10^{2783} d) $5^{2785000}$ **Ans.:**
14. What is the weight of the cerebrum in male ?
 a) 1200 gm b) 1500 gm
 c) 1400 gm d) 1 Kg **Ans.:**
15. In human brain, sleep and respiratory centres are present in
 a) Cerebellum b) Medulla oblongata
 c) Infundibulum d) Pons **Ans.:**

6. In the normal post pubertal male, the rate of testosterone secretion ranges from
 a) 2 - 3 mg/day b) 4 - 9 mg/day
 c) 10 - 15 mg/day d) 20 - 30 mg / day **Ans.:**
7. The major mineralocorticoid hormone is
 a) Adrenalin b) Nor-Adrenalin
 c) Aldosterone d) Cortisone **Ans.:**
8. The group of cells which function as endocrine gland in testis is
 a) reproductive epithelial cells b) sertoli cells
 c) leydig cells d) seminiferous tubules **Ans.:**
9. How many steroid compounds are present in oestrogens ?
 a) C 18 b) C 19 c) C 21 d) C 22 **Ans.:**
10. The percentage mass of the skin in our body is
 a) 8% b) 10%
 c) 12% d) 15% **Ans.:**
11. The gland that secretes an oily substance sebum is
 a) sweat gland b) sebaceous gland
 c) thyroid gland d) lacrymal gland **Ans.:**
12. A form of partial albinism is
 a) Leucoderma b) Vitiligo
 c) Melanoma d) Dermatitis **Ans.:**
13. Albinism is due to
 a) Hypo pigmentation b) Hyper pigmentation
 c) Carcinoma d) Allergy **Ans.:**
14. In humans, excessive exposure to uv rays can cause
 a) vomitting b) redding of the eyes
 c) colour change d) skin cancer **Ans.:**
15. The allergic response of the plant Ragweed is
 a) Photo dermatitis b) Skin cancer
 c) Contact dermatitis d) Albinism **Ans.:**
16. Vitreous humour is made of a
 a) mucopolysaccharide b) mucopeptide
 c) glycoprotein d) nucleoprotein **Ans.:**

Answers - Lesson.1 - Exercise - 8

1. increases the rate of spermatogenesis ; 2. corpus luteum ; 3. insulin ; 4. ADH ;
 5. Testosterone ; 6. 4 - 9 mg / day ; 7. Aldosterone ; 8. Leydig cells ; 9. C 18 ;
 10. 8% ; 11. Sebaceous gland ; 12. Leucoderma ; 13. hypo pigmentation ;
 14. Skin cancer ; 15. Contact dermatitis ; 16. Mucopeptide.

Exercise - 9

1. The purplism red photosensitive pigment present in the outer surface of the rod is
 a) haemoglobin b) carotenoid
 c) rhodopsin d) photopsin **Ans.:**

2. From which distance can objects be clearly seen ?
 a) 10 cm b) 15 cm
 c) 20 cm d) 25 cm **Ans.:**
3. The reason for Astigmatism is
 a) Lens curvature is too great b) Elongation of eye ball
 c) Distorted cornea or lens d) Lens curvature is too less **Ans.:**
4. The reason for conjunctivitis infection is
 a) Bacteria b) Virus
 c) Unicellular organisms d) Fungi spores **Ans.:**
5. The unit of measurement of sound is
 a) decibel b) joule
 c) newton d) hertz **Ans.:**
6. The auditory ossicle attached to the tympanic membrane is
 a) Malleus b) Incus
 c) Stapes d) Eustachian tube **Ans.:**
7. The permissible level of noise recognised by the industrial noise survey of India is
 a) 90 db - 120 db b) 120 db - 140 db
 c) 80 db - 120 db d) 120 - 150 db **Ans.:**
8. The enzyme necessary for the synthesis of Melanin is
 a) ergosterol b) enterokinase
 c) tyrosinase d) dehydrogenase **Ans.:**
9. The surface area of skin in our body is
 a) 1.1 - 2.2 m² b) 2.2 - 3.3 m²
 c) 1 - 2 m² d) 0.5 - 1.5 m² **Ans.:**

Answers - Lesson.1 - Exercise - 9

1. Rhodopsin ; 2. 25 cm ; 3. Distorted cornea or lens ; 4. Bacteria ; 5. decibel ;
 6. malleus ; 7. 80 db - 120 db ; 8. tyrosinase ; 9. 1.1 - 2.2m².

UNIT 2. MICROBIOLOGY

Exercise - 1 - Self Evaluation

1. Who first developed vaccine for rabies in man ?
 a) Robert koch b) Joseph Lister
 c) Louis Pasteur d) Stanely **Ans.:**
2. Which one of the following fields leads way for modern microbiology ?
 a) development of vaccines b) development of new viral strains
 c) discovery of new viral strains d) development of pure culture techniques
Ans.:

- 3. Which one of the following statements is incorrect regarding the structure of viruses ?
 - a) Nucleic materials are covered by a protein coat, called capsid
 - b) The capsid is made up of capsomers.
 - c) Some animal viruses have an additional envelope
 - d) The additional envelope is made up of glycoprotein
 Ans.:
- 4. Virions contain only a single copy of nucleic acid, hence they are called
 - a) incomplete viruses
 - b) haploid viruses
 - c) ploidy viruses
 - d) complete viruses
 Ans.:
- 5. Tumour inducing viruses are called
 - a) Pathogenic viruses
 - b) Oncogenic viruses
 - c) Para viruses
 - d) Variola viruses
 Ans.:
- 6. Which one of the following is a protozoan disease
 - a) African sleeping sickness
 - b) Measles
 - c) Cholera
 - d) Taeniasis
 Ans.:
- 7. Sexual reproduction of plasmodium takes place in
 - a) Liver cells of man
 - b) RBCs of man
 - c) Plasma of man
 - d) Body of mosquitoes
 Ans.:
- 8. The pathogenic form of Entamoeba histolytica is
 - a) encysted spores
 - b) vegetative trophozoites
 - c) merozoites
 - d) schizonts
 Ans.:
- 9. Which one of the following is a trematode worm ?
 - a) Schistosomes
 - b) Wuchereria
 - c) Taenia
 - d) Ascaris
 Ans.:
- 10. The more promising chemotherapeutic agent for treating viral diseases is
 - a) Tetracycline
 - b) Ampicillin
 - c) Interferon
 - d) Anthramycin
 Ans.:

Additional Questions :

- 11. The medical microbiology had its origin in the year
 - a) 1888
 - b) 1878
 - c) 1887
 - d) 1818
 Ans.:
- 12. Who found that specific microbes may cause specific disease in man ?
 - a) Louis pasteur
 - b) Robert Koch
 - c) Joseph Lister
 - d) Flemming
 Ans.:
- 13. Robert Koch was awarded Nobel prize in the year 1905 for his work on
 - a) Rabies
 - b) Tuberculosis
 - c) Jaundice
 - d) Cholera
 Ans.:
- 14. Who was the director of Pasteur institute for infective diseases ?
 - a) Louis Pasteur
 - b) Robert Koch
 - c) Joseph Lister
 - d) Flemming
 Ans.:
- 15. In which country was Pasteur institute originated ?
 - a) Paris
 - b) France
 - c) India
 - d) America
 Ans.:

- 16. The technique of 'Pure culture' of bacteria was first adopted by
 - a) Pasteur
 - b) Robert Koch
 - c) Joseph Lister
 - d) Robert Brown
 Ans.:

Answers - Lesson.2 - Exercise - 1

1. Louis Pasteur ; 2. development of pure culture technique ; 3. The additional envelope is made up of glyco protein ; 4. haploid viruses ; 5. oncogenic virus ; 6. African sleeping sickness ; 7. body of mosquitoes ; 8. Vegetative trophozoites ; 9. Schistosomes ; 10. Interferon ; 11. 1888 ; 12. Louis Pasteur ; 13. Tuberculosis ; 14. Robert Koch ; 15. France ; 16. Joseph Lister.

Exercise - 2

- 1. The scientist who observed many microbes associated with fermentation is
 - a) Robert Koch
 - b) Louis Pasteur
 - c) Flemming
 - d) Joseph Lister
 Ans.:
- 2. Vaccine for controlling Rabies and Anthrax in man was discovered by
 - a) Louis Pasteur
 - b) Robert Koch
 - c) Joseph Lister
 - d) Robert Hook
 Ans.:
- 3. A system of antiseptic surgery was developed by
 - a) Robert Hook
 - b) Robert Koch
 - b) Joseph Lister
 - c) Louis Pasteur
 Ans.:
- 4. Fertile chicken eggs inoculated with virus particles are incubated for
 - a) 1 to 5 days at 30°C
 - b) 1 to 5 days at 36°C
 - c) 5 to 12 days at 30°C
 - d) 5 to 12 days at 36°C
 Ans.:
- 5. Phages that integrate themselves with the bacterial genome undergo
 - a) lysogeny
 - b) lytic cycle
 - c) integrated cycle
 - d) prophage cycle
 Ans.:
- 6. Viruses which are sensitive to ether and chloroform are
 - a) viruses with envelope
 - b) retroviruses
 - c) viruses without envelopd
 - d) spherical shaped viruses
 Ans.:
- 7. In animal viruses the envelope outer to the nucleocapsid is made up of
 - a) DNA
 - b) RNA
 - c) Glycoprotein
 - d) Lipoprotein
 Ans.:
- 8. The death percentage due to Rabies is
 - a) 10%
 - b) 25%
 - c) 25 - 50%
 - d) 100%
 Ans.:
- 9. Among the following the RNA viruses which causes cancer ?
 - a) Sarcoma virus
 - b) Adenovirus
 - c) Herpes virus
 - d) Polioma virus
 Ans.:
- 10. The virus that causes small pox is
 - a) Adeno virus
 - b) Simian virus
 - c) Hepatitis virus
 - d) Variola virus
 Ans.:

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- The organism which causes Gastroenteritis is
a) Salmonella choleraesuis b) Adenovirus
c) Lactobacillus d) Liver fluke **Ans.:**
 - The number of genes found in paraviruses is
a) 2 to 5 b) 4 to 6
c) 3 to 4 d) 1 to 4 **Ans.:**
 - The disease caused by Oncovirus is
a) Chiorea b) Rabies
c) Cancer d) Malaria **Ans.:**
 - Hydrophobia is a symptom of the disease
a) Tuberculosis b) Cholera
c) Rabies d) Malaria **Ans.:**
 - The most employed host of choice for the production of human vaccine is
a) haploid cells b) diploid cells
c) triploid cells d) poly ploid cells **Ans.:**
 - The year in which rabies vaccine was discovered is
a) 1880 b) 1980
c) 1989 d) 1888 **Ans.:**

Answers - Lesson.2 - Exercise - 2

1. Louis Pasteur ; 2. Louis Pasteur ; 3. Joseph Lister ; 4. 5 - 12 days at 36° c ;
5. Lysogeny ; 6. Virus with envelope ; 7. Lipoprotein ; 8. 100% ; 9. Sarcoma virus ;
10. Variola virus ; 11. Salmonella choleraesuis ; 12. 3 to 4 ; 13. Cancer ; 14. Rabies ;
15. Diploid ; 16. 1980.

Exercise - 3

- It is a small pox virus.
a) HIV b) Rabies virus
c) Variola virus d) TMV **Ans.:**
- The bacteria that causes plague in human is
a) Yersinia pestis b) Salmonella
c) Vibrio d) Neisseria gonorrhoea **Ans.:**
- From which virus the vaccine for small pox is prepared ?
a) Rabies b) Vaccinia
b) TMV c) EBV **Ans.:**
- Transformation in bacteria was discovered by
a) Robert Koch b) Louis Pasteur
c) Robert Brown d) Griffith **Ans.:**
- The protozoan parasite trypanosoma gambiens causes this disease
a) skin disease b) kala azar
c) African sleeping sickness d) leishmaniasis **Ans.:**

- 16**
- The disease caused by salmonella choleraesuis is
a) Dysentery b) Cancer
c) Gastroenteritis d) Cholera **Ans.:**
 - In the life cycle of Trematodes, which play a role of intermediate host ?
a) Dog b) Mosquitoes
c) Snail d) Pig **Ans.:**
 - The microbe that causes Malaria in man is
a) Vibrio cholerae b) Yersinia pestis
c) Leishmania donovani d) Trypanosoma gambiens **Ans.:**
 - The disease which causes the enlargement and inflammation of lymph glands is
a) Pneumonia plague b) Bubonic plague
c) Cholera d) Typhoid **Ans.:**
 - The disease caused by the protozoan plasmodium is
a) Malaria b) Typhoid
c) Dysentery d) Cholera **Ans.:**
 - The disease caused by Giardia intestinalis is
a) Cholera b) Diarrhoea
c) Malaria d) Plague **Ans.:**
 - Ovale malaria is caused by
a) P-vivax b) P-malariae
c) P-ovale d) P-falciparum **Ans.:**
 - What is the temperature of the body during Malaria fever ?
a) 106°F b) 106°C
c) 102°F d) 102°C **Ans.:**
 - Permicious malaria is caused by
a) P. falciparum b) P. ovale
c) P. Malariae d) P. vivax **Ans.:**
 - Kala azar disease is caused by
a) Leishmania donovani b) Plasmodium
c) Leishmania tropica d) Entamoeba **Ans.:**
 - Which people are said to be resistant to tubercle bacilli ?
a) Africans b) Europeans
c) Indians d) Americans **Ans.:**

Answers - Lesson.2 - Exercise - 3

1. variola virus ; 2. yersinia pestis ; 3. vaccinia ; 4. Griffith ; 5. African sleeping
sickness ; 6. Gastroenteritis ; 7. Snail ; 8. Vibrio cholerae ; 9. Bubonic plague ;
10. Malaria ; 11. diarrhoea ; 12. P.Ovale ; 13. 106°C ; 14. P. falciparum ;
15. Leishmania donovani ; 16. Europeans

7. The latin word 'immunis' means 19
- a) exempt b) light forming
c) sound producing d) sensitive Ans.:
8. Which kills the ingested micro organisms in the stomach ?
- a) Acetic acid b) HCl
c) Pepsin d) Renin Ans.:
9. WBC cells when infected with a virus, it releases a substance called
- a) Interferon b) Relaxin
c) Lysosome d) Phagosome Ans.:
10. Secretion of tears and saliva that digest the bacterial cell walls is
- a) Bacteriosome b) Lysozyme
c) Phagosome d) interferon Ans.:
11. The skin and the mucous membrane lining the respiratory and intestinal wall entraps.....
- a) micro-organisms b) food
c) water d) air Ans.:
12. Phagocytosis is performed by
- a) erythrocytes b) lymphocytes
c) platelets d) leucocytes Ans.:
13. Which cells are converted into macrophages at the site of infection ?
- a) NK cells b) monocytes
c) mast cells d) malt cells Ans.:
14. The substance created by the NK cells to kill virus - infected cells and tumour cells is
- a) Perforin b) Gastrin
c) Pepsin d) Renin Ans.:
15. The foreign molecule that activates the immune system is
- a) Antigen b) Antibody
c) Interferon d) Immunogen Ans.:
16. Vaccines provide which type of immunity ?
- a) Passive acquired b) Active acquired
c) Active natural d) Passive natural Ans.:

Answers - Lesson.3 - Exercise - 2

1. Glycoprotein ; 2. Heavy and light ; 3. Xenograft ; 4. Isograft ; 5. Immune system; 6. immunology ; 7. exempt ; 8. HCl ; 9. interferon ; 10. Lysozyme ; 11. Micro-organisms ; 12. Leucocytes ; 13. Monocytes ; 14. Perforin ; 15. Antigen ; 16. Active acquired.

Exercise - 3

1. Immunoglobulins are made up of how many number of polypeptide chains ?
- a) 3 b) 4
c) 5 d) 2 Ans.:

2. Which are called Natural killer cells ? 20
- a) T - lymphocytes b) B - lymphocytes
c) Stem cells d) Delta cells Ans.:
3. In neonatally thymectomised mice the condition of reducing of lymphocytes is
- a) Lymphophobia b) Leukemia
c) Lymphopenia d) Polycythemia Ans.:
4. The number of lymph nodes distributed in human body are
- a) 500 b) 600 c) 400 d) 300 Ans.:
5. The process of the production of lymphocytes in bone marrow is called
- a) haematopoiesis b) apoptosis
c) pathogenesis d) rejection Ans.:
6. The organ in which the pathogens in the blood are destroyed is
- a) liver b) stomach
c) spleen d) thymus Ans.:
7. At which time does the thymus develop during gestation period ?
- a) 1st week b) 12th week
c) 10th week d) 6th week Ans.:
8. The important and primary function of the thymus gland is
- a) production of phagocytes b) production of lymphocytes
c) production of T-cells d) Production of B-cells Ans.:
9. The largest lymphoid organ is
- a) Thymus b) bone marrow
c) liver d) spleen Ans.:
10. An example for Hapten antigen is
- a) Hydrogen sulphide b) Surface protein
c) Dinitrophenol d) Hydrogen peroxide Ans.:
11. The part of the antibody molecule which makes contact with the antigen is termed as
- a) epitope b) paratope
c) isotope d) mesotope Ans.:
12. The molecular weight of 'L' chain is
- a) 25,000 b) 30,000
c) 35,000 d) 50,000 Ans.:
13. The molecular weight of 'H' chain is
- a) 30,000 b) 40,000
c) 50,000 d) 25,000 Ans.:
14. How many types of immunoglobulins are present ?
- a) 4 b) 5 c) 3 d) 7 Ans.:
15. The process by which a diseased organ is replaced by a healthy organ is called
- a) Transplantation b) Transcription
c) Transaction d) Translocation Ans.:

Exercise - 1 - Self Evaluation

- 1. In which prokaryotes were voluminous genetical works made ?
 - a) TMV b) Phage
 - c) Escherichia coli d) Coliform bacteria Ans.:
 - 2. Who discovered the double helix DNA model ?
 - a) G.H. Khorans b) Mendel
 - c) T.H. Morgan d) Watson and Crick Ans.:
 - 3. About how many hereditary diseases have in human beings been indentified ?
 - a) more than 300 b) less than 300
 - b) about 400 c) about 100 Ans.:
 - 4. To obtain information about genetic characters in man which of the following helps ?
 - a) Biochemical test b) Hybridization
 - c) Pedigree analysis d) Inbreeding Ans.:
 - 5. Sickle cell anaemia is due to
 - a) autosomal gene b) sex chromosomal gene
 - c) vitamin deficiency d) hormone imbalance Ans.:
 - 6. Albinism is due to
 - a) absence of melanin b) absence of vitamins
 - c) presence of melanin d) hormone imbalance Ans.:
 - 7. Name the human disease due to autosomal dominant gene
 - a) Sickle cell anaemia b) Thalasemia
 - c) SCID d) Huntington chorea Ans.:
 - 8. Idiogram means
 - a) Diagramatic representation of gene
 - b) Diagramatic representation of chromosome
 - c) Graph showing heart defect
 - d) Electro cardio gram Ans.:
 - 9. The chromosomes 4 and 5 belong to the group classified by karyotyping is
 - a) A b) B c) C d) D Ans.:
 - 10. What is the name of mobile genetic elements
 - a) Plasmids b) Pili
 - c) Barr body d) Transposons Ans.:
- Additional Questions :**
- 11. The karyological studies are usually made during
 - a) Amitosis b) Mitosis
 - c) Meiosis d) Crossing over Ans.:
 - 12. Colchicine stops mitosis at
 - a) Prophase b) Metaphase
 - c) Anaphase d) Telophase Ans.:

- 16. The scientist who explained the nature of graft rejection is
 - a) Medawar b) Johansen
 - c) Gallo d) Montagnier Ans.:

Answers - Lesson.3 - Exercise - 3

1. 4 ; 2. T-lymphocytes ; 3. lymphopenia ; 4. 600 ; 5. haematopoiesis ; 6. spleen ; 7. 6th week ; 8. Production of T-cells ; 9. spleen ; 10. dinitrophenol ; 11. paratope ; 12. 25,000 ; 13. 50,000 ; 14. 5 ; 15. transplantation ; 16. Medawar.

Exercise - 4

- 1. The array of HLA alleles on a homologue of our chromosome 6 is known as
 - a) Diplo type b) Triplotype
 - c) Haplo type d) Tetraplo type Ans.:
- 2. The region of an antigen molecule that makes contact with the paratope is called
 - a) Haptens b) Epitope
 - c) Carrier d) Receptor Ans.:
- 3. An example of autoimmune disease is
 - a) Asthma b) Anaphylaxis
 - b) Multiple sclerosis c) SCID Ans.:
- 4. A graft taken from an individual and placed on another individual of the same genetic constitution is
 - a) Isograft b) xenograft
 - c) autograft d) allograft Ans.:
- 5. Graft between two genetically non-identical members of the same species is called
 - a) Isograft b) Xenograft
 - c) Autograft d) Allograft Ans.:
- 6. An organ or tissue taken from an individual and grafted on himself is an
 - a) Isograft b) Xenograft
 - c) Autograft d) Allograft Ans.:
- 7. Graft between members of different species is called
 - a) Autograft b) Xenograft
 - c) Allograft d) Isograft Ans.:

Answers - Lesson.3 - Exercise - 3

1. Haplo type ; 2. epitope ; 3. Multiple sclerosis ; 4. Isograft ; 5. Allo graft ; 6. Autograft ; 7. Xenograft.

- 23**
- The chemical substance which stops mitosis at one stage is
 a) acetyl choline b) tyrosine
 c) colchicine d) insulin **Ans.:**
 - The 23 pairs of chromosomes in human are classified into how many groups?
 a) 8 b) 5 c) 7 d) 10 **Ans.:**
 - In human karyotype, the chromosomes in group A are
 a) Acentric b) Metacentric
 c) Submetacentric d) Telocentric **Ans.:**
 - The 'X' chromosome in man is grouped under which group?
 a) B b) A c) F d) C **Ans.:**

Answers - Lesson.4 - Exercise - 1

1. Escherichia coli ; 2. Watson and Crick ; 3. more than 300 ; 4. Pedigree analysis;
 5. autosomal gene ; 6. absence of melanin ; 7. d) Huntington chorea ;
 8. Diagrammatic representation of chromosome ; 9. B ; 10. Transposons ; 11. Mitosis;
 12. Metaphase; 13. Colchicine ; 14. 7 ; 15. metacentric ; 16. C.

Exercise - 2

- The 'Y' chromosome in man is grouped under which group?
 a) B b) C c) F d) G **Ans.:**
- In human being, X chromosome resembles the chromosome member
 a) 5 b) 6 c) 7 d) 8 **Ans.:**
- The bacterium involved to clear up oil spill is
 a) Rhizobium b) Pseudomonas
 c) E.Coli d) Acetobacter **Ans.:**
- Which of the following is referred to as Erythroblastic anaemia?
 a) Sickle cell anaemia b) Pernicious anaemia
 c) Thalassemia d) Huntington chorea **Ans.:**
- The children who suffer from thalassemia die at the age of
 a) 6 b) 17 c) 28 d) 32 **Ans.:**
- Which substance in melanocyte cell is converted into melanin?
 a) Dihydroxy phenyl alanine b) Argenine
 c) Phenyl d) Alanine **Ans.:**
- Name the disease caused by the metabolic disorder of melanin
 a) Albinism b) Thalassemia
 c) Anaemia d) Huntington chorea **Ans.:**
- The number of mRNA in human being is about
 a) 30,000 b) 40,000
 c) 50,000 d) 60,000 **Ans.:**
- The defective gene that causes Huntington chorea is located in which chromosome?
 a) 2nd b) 4th c) X d) Y **Ans.:**

- 24**
- The disease called bubble boy syndrome is
 a) SCID b) Turner syndorme
 c) Huntington chorea d) Thalassemia **Ans.:**
 - The researcher who developed 'super bugs' a genetically engineered bacteria is
 a) Anand Chakaravathy b) T.King
 c) R. Briggs d) Dr. Ian Wilmut **Ans.:**
 - Nuclear transplantation technique was developed by
 a) R. Briggs and T.King b) Dr. Ian Wilnut
 c) Johansson d) Bayer and Stanly **Ans.:**
 - The cloned sheep Dolly was produced by
 a) Dr. Ian Wilnut b) R. Briggs
 c) John Catto d) Barbar MacIntock **Ans.:**
 - For the tranfer of whole nuclei, the cells are enucleated after treating with
 a) Liposomes b) Cytochalasin B
 c) Lytic enzyme d) Germinase **Ans.:**
 - The onset of Huntington chorea is between the age of
 a) 35 - 40 years b) 50 - 55 years
 c) 55 - 60 years d) 60 - 65 years **Ans.:**
 - In which year was nuclear transplantation developed?
 a) 1942 b) 1950
 c) 1952 d) 1960 **Ans.:**

Answers - Lesson.4 - Exercise - 2

1. G ; 2. 6 ; 3. pseudomonas ; 4. Thalassemia ; 5. 17 ; 6. Dihydroxy phenyl alanine;
 7. Albinism ; 8. 60,000 ; 9. 4th ; 10. SCID ; 11. Anand Chakaravathy ;
 12. R.Briggs and T.King ; 13. Dr. Ian Wilmut ; 14. Cytochalasin B ; 15. 35 - 40 years;
 16. 1950.

Exercise - 3

- One haemoglobin molecule contains howmany polypeptide chains?
 a) 4 b) 5 c) 2 d) 3 **Ans.:**
- One of the computer graphic models depicting the properties of amino acids in proteins and protein fuction is
 a) Graphic model b) Glowing graphic model
 c) Glowing coal model d) Computer amino model **Ans.:**

Answers - Lesson.4 - Exercise - 3

1. 4 2. Glowing coal model.

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7. National Bureau of Fish Genetic Resources is situated in
 a) Allahabad b) Bangalore
 c) Mumbai d) Calcutta Ans.:
8. Which was probably the first human energy technology?
 a) Water power b) Air
 c) Fire d) Sunlight Ans.:

Answers - Lesson.5 - Exercise - 2

1. 368 ppm ; 2. methane ; 3. nitrous oxide ; 4. CFC ; 5. Pseudomonas;
 6. burning ; 7. Allahabad ; 8. Fire.

UNIT 6. APPLIED BIOLOGY

Exercise - 1 - Self Evaluation

1. The breeds of cattle now available are
 a) 29 species b) 30 species
 c) 26 species d) 20 species Ans.:
2. One of the following is not a draught breed
 a) Kangayam b) Khillar
 c) Kankrej d) Hallikan Ans.:
3. The synonym for Sindhi is
 a) Kongu b) Nellore
 b) Red Karachi c) Decan Ans.:
4. Kangayam originated from
 a) Punjab b) Coimbatore
 c) Karnataka d) Kathlawar Ans.:
5. Which of the following is not an exotic breed.
 a) Jersey b) Gir
 c) Brown swiss d) Ayrshire Ans.:
6. One of the following is an example for contagious disease
 a) Constipation b) Milk fever
 c) Cow pox d) none of the above Ans.:
7. Feeding jaggery along with lime water is one of the first aid measure for
 a) diarrhoea b) constipation
 c) milk fever d) anthrax Ans.:
8. Mating of closely related animal is called
 a) outbreeding b) artificial insemination
 c) cross breeding d) Inbreeding Ans.:
9. The milk of the following cow is characterised by high carotene content
 a) Sindhi b) Haryana c) Gir d) Jersey Ans.:

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10. For anthrax one of the following symptoms can be seen
 a) swelling of udder b) blood discharge from natural openings
 c) loss of appetite d) lack of chewing Ans.:

Additional Questions :

11. The humped cattle is
 a) Bos indicus b) Bos taurus
 c) Bos bubalis d) Bos Jersey Ans.:
12. The organisation which do research to improve the livestock and its management is
 a) ICAR b) ISR
 c) IMMR d) NARI Ans.:
13. The breed of cows which has a majestic appearance is
 a) Sindhi b) Gir
 c) Jersey d) Malvi Ans.:
14. Among the following which is an exotic breed ?
 a) Gir b) Ongole
 c) Jersey d) Kangayam Ans.:
15. The organism that causes diarrhoea in cattle is
 a) Bacteria b) Virus
 c) Mites d) Hook worm Ans.:
16. The average in lactation season milk production in Sindhi cows is
 a) 5443 kg b) 1746 kg
 c) 3715 kg d) 4000 kg Ans.:

Answers - Lesson.6 - Exercise - 1

1. 26 species ; 2. Khillar ; 3. Red Karachi ; 4. Coimbatore ; 5. Gir ;
 6. Cow pox ; 7. Milk fever ; 8. inbreeding ; 9. Jersey ; 10. blood discharge from natural
 openings ; 11. Bos indicus ; 12. ICAR ; 13. Gir ; 14. Jersey ; 15. Hook worms ;
 16. 5,443 Kg.

Exercise - 2

1. The chickens occupy the place in the poultry enterprises about
 a) 80% b) 90%
 c) 75% d) 95% Ans.:
2. Among the following which is an American breed ?
 a) Wyandotte b) Leghom
 c) Brahma d) Aseel Ans.:
3. Chittagong breed is largely found in
 a) Chicago b) Karnataka
 c) West Bengal d) South India Ans.:
4. Among the following which is an indigenous breed ?
 a) Busra b) Brahma
 c) Plymouth d) New hampshire Ans.:

5. The care and management of young chickens for 4 to 6 weeks after hatching is called
 - a) Brooding
 - b) Incubation
 - c) Ventilation
 - d) Hatching
 Ans.:
6. The optimum temperature maintained in the Brooder for the first 3 days is
 - a) 30°C
 - b) 33°C
 - c) 35°C
 - d) 38°C
 Ans.:
7. The hatching period of the chick is
 - a) 10 - 12 days
 - b) 15 - 16 days
 - c) 21 - 22 days
 - d) 17 - 18 days
 Ans.:
8. The most popular and commercial breed in India is
 - a) Chittagong
 - b) Aseel
 - c) Karaknath
 - d) Leghorn
 Ans.:
9. Peacomb is one of the important breed characters of
 - a) Plymouth rock
 - b) Brahma
 - c) Aseel
 - d) Leghorn
 Ans.:
10. Indigenous breed of fowls noted for its pugnacity is
 - a) Brahma
 - b) Aseel
 - c) Leghorn
 - d) Karaknath
 Ans.:
11. The essential amino acid present in the fish is
 - a) Lysine
 - b) Methionine
 - c) Valine
 - d) Lysine and methonine
 Ans.:
12. The area percentage of a production pond in a fish complex is
 - a) 3%
 - b) 11%
 - c) 60%
 - d) 25%
 Ans.:
13. In a fish farm the standard combination of N, P, K recommended for fresh water pond is
 - a) 18 : 10 : 4
 - b) 10 : 18 : 4
 - c) 4 : 10 : 18
 - d) 10 : 4 : 18
 Ans.:
14. The tastiest of all the carp is
 - a) Catla Catla
 - b) Labeo rohita
 - c) Cirrhira mrigala
 - d) Channa marulius
 Ans.:
15. The fish capable of air breathing is
 - a) Mrigal
 - b) Mullet
 - c) Rohu
 - d) Cat fish
 Ans.:
16. The chemical spread over the bottom of the bond to remove the acidity and kill the soil organisms is
 - a) Calcium carbonate
 - b) Calcium hydroxide
 - c) Calcium chloride
 - d) Calcium bicarbonate
 Ans.:

Answers - Lesson.6 - Exercise - 2

1. 90% ; 2. Wyandotte ; 3. West Bengal ; 4. Busra ; 5. Brooding ; 6. 33°C ;
 7. 21 - 22 days ; 8. Leghorn ; 9. Brahma ; 10. Aseel ; 11. Lysine and methionine ;
 12. 60% ; 13. 18 : 10 : 4 ; 14. Labeo rohita ; 15. Cat fish ; 16. Calcium hydroxide.

Exercise - 3

1. The instrument used to measure blood pressure is
 - a) Stethoscope
 - b) Sphygmomanometer
 - c) Haemocytometer
 - d) ECG
 Ans.:
2. The instrument used to count the blood cells is
 - a) Sphygmomanometer
 - b) Haemocytometer
 - c) Anglogram
 - d) Electrocardiogram
 Ans.:
3. The normal blood pressure of a human is
 - a) 120/95 mm Hg
 - b) 160/80 mm Hg
 - c) 120/80 mm Hg
 - d) 130/80 mm Hg
 Ans.:
4. RBC diluting fluid is
 - a) Hayem's solution
 - b) Turk's solution
 - c) Toisson solution
 - d) Hypertonic solution
 Ans.:
5. Normal range of RBC in men is
 - a) 4.0 - 5.6 million / cumm
 - b) 10,000 - 25,000 / cu.mm
 - c) 4.1 - 5.1 million / cu.mm
 - d) 4.5 - 5.9 million/cu.mm
 Ans.:
6. The examination of urine is called
 - a) Urinalysis
 - b) Dialysis
 - c) Nephrolysis
 - d) Urology
 Ans.:
7. Qualitative test to indicate the presence or absence of sugar in urine is
 - a) Biurette test
 - b) Benedicts test
 - c) Iodine test
 - d) Saponification test
 Ans.:
8. The year in which CT became widely available is
 - a) 1975
 - b) 1985
 - c) 1958
 - d) 1980
 Ans.:
9. CT was invented in 1972 by
 - a) Godfrey Hounsfield
 - b) Allan
 - c) Cormacle
 - d) Harvey
 Ans.:
10. The electrical acitivity of the heart was first recorded by
 - a) William Harvey
 - b) Waller
 - c) Morgan
 - d) Einthovan
 Ans.:
11. The duration of 'P' wave, when ECG is taken is
 - a) 0.1 second
 - b) 0.08 second
 - c) 0.3 second
 - d) 0.4 second
 Ans.:
12. The principle on which the computed tomography is based is
 - a) x-rays
 - b) magnetic resonance
 - c) ultra sound
 - d) gamma rays
 Ans.:
13. The natural pace maker of the mammalian heart is
 - a) AV node
 - b) SA node
 - c) Myocardium
 - d) Bundle of His
 Ans.:

14. Most of the artificial pace makers run on the batteries of
 a) mercury b) Lithium
 c) carbon d) aluminium **Ans.:**
15. The weight of the battery generator used in artificial pacemaker is
 a) 10 gm b) 20 gm
 c) 30 gm d) 40 gm **Ans.:**
16. The recently used instrument which determines the blood glucose level instantaneously is called
 a) Digital meter b) Digital glucometer
 c) Haemocyto meter d) Chromatography **Ans.:**

Answers - Lesson.6 - Exercise - 2

1. Sphygmomanometer ; 2. Haemocytometer ; 3. 120/80 mm. Hg ; 4. Hayem's solution ; 5. 4.5 - 5.9 million / cu.mm ; 6. Urinalysis ; 7. Benedicts test ; 8. 1980 ; 9. Godfrey Hounsfield ; 10. Waller ; 11. 0.1 second ; 12. x-ray ; 13. S.A. node ; 14. Lithium ; 15. 30 gm ; 16. Digital glucometer.

UNIT 7. THEORIES OF EVOLUTION

Exercise - 1 - Self Evaluation

1. The book 'philosophie zoologique' was published by
 a) Charles Darwin b) August Weismann
 c) Mc Dougall d) Jean Baptist de Lamarek **Ans.:**
2. The German scientist who segregated germplasm from somatoplasm for the first time is
 a) Lamarck b) Malthus
 c) Weismann d) Hugo de Vries **Ans.:**
3. Mc. Dougall supported neo-lamarckism and proved the concept of
 a) Direct action of environment on organisms
 b) Learning is an acquired character
 c) Speed of learning increases from generation to generation
 d) All the above **Ans.:**
4. Darwin supported the following concepts for evolution.
 a) arival of the fittest b) Survival of the fittest
 c) the differentiation of somatoplasm d) genetic recombination **Ans.:**
5. The book 'Process of organic evolution' to support modern synthetic theory of evolution was provided by
 a) Dobzhansky b) Stebbins
 c) Hardy-Weinberg d) Hugo devries **Ans.:**

6. The factor that enriches the genepool with new modified genes is
 a) mutation b) somatic variation
 c) decrease in chromosomes d) increase in cytoplasm **Ans.:**

Additional Questions :

7. Who proposed the theory of natural selection ?
 a) Darwin b) Lamarck
 c) Mendal d) Hugo deVries **Ans.:**
8. The theory of inheritance of acquired character was proposed by
 a) Mendel b) Lamarck
 c) Hugo de Vries d) Darwin **Ans.:**
9. Who tried to prove that learning is an acquired character that can be inherited ?
 a) Lamarck b) Darwin
 c) Mc. Dougall d) August Weismnn **Ans.:**
10. The theory formed after the experimental study of August Weismenn in rats is
 a) Law of use and disuse b) Natural selection theory
 c) Survival of the fittest d) Germplasm theory **Ans.:**
11. The scientist who conducted experiments on white mice related to changes due to temperature is
 a) August Weismann b) Darwin
 c) F.B. Sumner d) Mc. Dougall **Ans.:**
12. The scientist who proposed the theory of relativity war is
 a) Einstein b) Newton
 c) Henslow d) Guyer **Ans.:**
13. The scientist who expressed the same idea of Natural selection as Darwin war is
 a) Hugo de Vries b) Lamarch
 c) Alfred Russel Wallace d) Henslow **Ans.:**
14. Number of eggs produced by a salmon fish in a season is
 a) 28,000 eggs b) 28,00,000 eggs
 c) 28,000,000 eggs d) 2,800 eggs **Ans.:**
15. According to Darwin's view, the production of a pair of male and female elephants is
 a) 19 million elephants in 5,000 years b) 25 million elephants in 2,000 years
 c) 19 million in 750 years d) 22 million elephants in 950 years
Ans.:
16. The raw material for evolution is
 a) variations b) chromosomal aberration
 c) polyploidy d) natural selection **Ans.:**

Answers - Lesson.7 - Exercise - 1

1. Jean Baptiste de Lamarck ; 2. Weismann ; 3. all the above ; 4. survival of the fittest ; 5. Stebbins ; 6. mutation ; 7. Darwin ; 8. Lamarck ; 9. Mc. Dougall ; 10. Germplasm theory ; 11. F.B. Sumner ; 12. Darwin ; 13. Alfred Russel Wallace ; 14. 28,000,000 ; 15. 19 million in 750 years ; 16. Variation.

