

HUMAN PHYSIOLOGY

NUTRITION

1. Of the following which is pentose sugar? Ribose
2. The polysaccharide present in liver and muscles? Glycogen
3. 25 - 30% of calories are obtained from which food content? Fats
4. Of the following which is disaccharide? Maltose
5. The vitamin helps in blood clotting? Vitamin K
6. Which vitamin deficiency causes wrinkled corneal epithelium of eye?
Vitamin A
7. The vitamin responsible for maturation of erythrocytes? Vitamin B12
8. The mineral useful in oxygen transport? Iron
9. The enzyme present in saliva? Ptyalin
10. HCl is secreted in stomach by? Oxyntic cells
11. The bacteria causes peptic ulcer? Helicobacter pylori
12. The type of hernia which affects the women with several pregnancies?
Femoral hernia
13. The disease caused by over drinking of alcohol? Liver cirrhosis
14. The bones present in adult human skeleton is? 206
15. Pathological fracture is due to? Hyper parathyroidism (June 2011)
16. The blood clot at the site of fracture? Haematoma
17. Metabolic arthritis is due to? Purine Metabolic disorder
18. Vitamin D deficiency in adults? Osteomalacia
19. Percentage of skeletal muscle in total body weight? 40%



20. Each muscle fibre is made up of thread like structure called? Myofibrils
21. The Protein present in A band? Myosin
22. The energy for muscle action is provided by? ATP molecules
23. Several hours after death all the muscles of the body attain a state of contracture called? Rigor mortis
24. Of the following which is auto immune disease? Myasthenia gravis
25. The nerve which controls respiration? Vagus nerve
26. Herring Breuer reflex controls? Respiration
27. Pneumonia is controlled by a drug? Paracetamol
28. The artery which starts systemic circulation? Aorta
29. Sinu atrial node is present at? Right atrium
30. The size of sinu atrial node? 1.5cm x 3mm
31. The blood flow between the right atrium and right ventricle is regulated by? Tricuspid valve
32. The increase in RBC count causes? Polycythemia
33. A block in blood supply to the brain causes? Stroke
34. The normal blood pressure of human? 120/80mm Hg
35. RBC destroyed at? Liver and Spleen
36. Which is the smallest WBC? Lymphocyte
37. Heart sound dubb is caused due to Closure of? Semilunar valve
38. Duration of REM sleep? 5 to 30 minutes
39. The skin disease caused due to exposure to U.V. rays? Skin Cancer
40. During glomerular filtration the malphigian capsule acts as? Biological filter

41. The normal BMI range for adults? 19 - 25 (March 2009)
42. Which is exopeptidase? Carboxypeptidase (Sep 2010)
43. Teratological disorder of dislocation of joints is due to? Congenital
44. During muscle contraction the calcium ions are released from?
Sarcoplasmic reticulum (March 2011 - Oct 2011)
45. Thyroxine deficiency by birth causes? Cretinism
46. Which is called artificial kidney? Dialyser
47. Partial albinism causes? Leucoderma
48. The volume of glomerular filtrate in 24 hrs? 170 to 180 liters
49. Polyurea and polydipsia are the symptoms of which disease? Diabetes mellitus
50. The inflammation in lungs due to infections - Pneumonia
51. Sebum is secreted by? sebaceous gland
52. Protein deficiency causes? kwashiorkor
53. The type of hernia occurs at the lower abdomen near thigh - Femoral hernia
54. During root canal treatment the cavity is filled with a sealing paste? Gutta-percha
55. A fracture can be caused by? impact of the force (Sep 2007)
56. The floor of the thoracic cavity is completely closed by? Diaphragm
57. Purkinje system conducts the stimulus to the? Ventricles
58. The weight of cerebrum in women? 1200 grams
59. Gonadotrophic hormone? FSH
60. Urea biosynthesis takes place in? Liver
61. The energy liberated through glycolytic processes is stored in the form of?
ATP molecules



62. Marasmus is caused due to the deficiency of? Protein
63. The Process of digestion happens with the help of? Enzymes
64. Fertilization takes place at? Fallopian tube (mar 2008)
65. The inability to recall memories from the past? Amnesia
66. The hormone which stimulates the smooth muscles of the uterus and helps in the delivery of the foetus? Oxytocin
67. The hormone which increases rate, amplitude and frequency of the heart beat?
Adrenalin
68. The unit used to measure sound? Decibel
69. Normal Fasting blood glucose level? 70 to 110mg/decilitre (Mar 2011)
70. 1 gram of carbohydrate yields? 4.1 calorie
71. Sliding filament theory was proposed by? Huxley and Hanson
72. The fragment of thrombus enters into streaming blood? Embolus
73. The first line treatment which disintegrates stones by focusing shock waves?
Lithotripsy
74. Vitamin D deficiency causes? Osteomalacia (June 2008)
75. Pepsinogen is converted into pepsin by the action of? HCl
76. Which disease causes dislocation of acetabulum? Tuberculosis
77. During muscular contraction ATP molecules bind at? Actin filament (July 2011)
78. The disease together with emphysema? Chronic bronchitis
79. The first sound of the heart 'dub' is due to the closure of? Atrioventricular valve
80. The inner part of the brain in between the cortex and the nuclei has white matter named as? Cerebral medulla
81. Albinism is due to? Defect in melanin production

82. Percentage of plasma in blood? 55%
83. 2 or 3 genes in 21st chromosome are linked to this disease? Alzheimer's disease
84. The hormone of flight, fright and fight? Adrenalin
85. The opacity in the lens of the eye causes? Cataract
86. The area of the skin? 1.1 to 2.2 m² (July 2009)
87. The mineral responsible for hormone synthesis? Iodine
88. Vitamin C deficiency Causes ? Scurvy
89. Gall stones are formed of? Cholesterol
90. The inflammation in synovial membrane? Rheumatic Arthritis
91. The enzyme which destroys the protein during rigor mortis?
Lysosome enzymes (July 2009)
92. During in vitro fertilization at which stage the embryo is put inside the uterine
endometrium? 8 celled stage (Mar 2009)
93. The store house of the sperm? Epididymis
94. The substance released in neuromuscular junction? Acetylcholine
95. The important mineralocorticoid? Aldosterone
96. The chronic brain syndrome? Alzheimer's disease
97. Stone in the urinary bladder can be crushed and removed by? Cystoscopy
98. The vitamin responsible for immunity? Vitamin C
99. Deposition of sodium urate crystals leads to? GOUT
100. The Po₂ in alveolus? 100 mm Hg (June 2009)
101. Which vitamin deficiency causes bitot's spot in the cornea? Vitamin A
102. Protein deficiency disease? Marasmus

103. In Which type of fracture infectious germs may enter into the body? Open Fracture
104. Rheumatic heart disease is due to? Streptococcus bacteria
105. Alzheimer's disease is associated with? Atrophy of cerebral cortex
106. The number of amino acids present in insulin? 51
107. In people with Gout. the urinary stones consist of? Uric Acid
108. In pregnant women corpus luteum secretes another hormone? Relaxin (Sep. 2009)
109. The type of fracture occur in children? Green stick fracture
110. The amount of CSF? 150ml
111. Nyctalopia is due to the deficiency of? Vitamin A
112. Tyrosinase converts tyrosine into? Melanin
113. The number of rods in human? 120 million (March 2010)
114. Example for Trioses? Glyceraldehyde
115. Which of the following does not digest protein? Sucrase
116. Which ion is responsible for muscle contraction? Calcium
117. The centre for sleep and respiration in brain? Rhombencephalon
118. Organ of corti is in? Basilar membrane
119. During hypertension the pressure is? 160/95 mm Hg
120. Transmission of stimulus happens through transmitter substances? Acetylcholine
121. C 18 type of steroid hormone? Oestrogen
122. According to the industrial noise survey of india the recognized noise level?
81db to 120db
123. A method of permanent birth control technique in male? Vasectomy (Sep 2010)

124. Leydig cells produce a hormone? Testosterone
125. Loss of appetite and gastrointestinal symptom is due to the deficiency of? Vitamin B₂
126. The inner lining of the stomach is protected by which secretion from the action of HCl? Mucous
127. Water, Glucose, Sodium, Phosphate are absorbed in? proximal convoluted tubule
128. Melanocytes consist of an enzyme? Tyrosinase
129. An acute infection of the glands located at the eyelid margin? Styne
130. Niacin deficiency causes? Pellagra
131. Photosensitive pigment present in the outer segment of the rods? Rhodopsin
132. Grave's disease is otherwise called? Thyrotoxicosis or exophthalmic goiter
133. Control centre of respiration in brain? Medulla oblongata
134. Which blood vessel starts the systemic blood circulation? Aorta (June 2011)
135. Which vitamin plays a role in the rejuvenation of tissues? Vitamin E
136. In human, polyspermy is prevented by? Fertilization membrane
137. The fovea region in retina has? Cones
138. Aldosterone hormone is secreted by? Zona glomerulosa
139. Large amount of urine excretion is called? Polyurea
140. Insufficient supply of oxygen to the heart muscle causes? Angina pectoris
141. The placenta formation is due to the hormone? Progesterone
142. The ear bone attached to eardrum - Malleus
143. The cones has a protein - Photopsin
144. The amount of blood supplied to the kidney of cardiac output? 20 - 25%
145. The type of diabetes due to viral infection of Pancreas? Insulin Dependent Diabetes

Very Short Answer

1. Name the steps involved in the process of nutrition.
The process of nutrition involves ingestion, digestion, absorption and assimilation of food materials.
2. Name the essential Amino acids.
The essential amino acids are arginine, valine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, Threonine and tryptophan.
3. Write the names of protein deficiency diseases.
Marasmus, Kwashiorkor.
4. Write the symptoms of marasmus.
Loss of weight, Severe diarrhoea, body muscles get wasted, appear as bones are covered by skin.
5. Write the symptoms of kwashiorkor.
Wasting of muscles, face & feet will have oedema, belly appear enlarged.
6. Define PUFA.
Poly Unsaturated Fatty Acids are capable of easier oxidative breakdown, hence they are favoured for B.P. Patients. They are abundant in sunflower oil & safflower oil.
7. What is sunshine vitamin? Why is it named so?
Vit-D is known as sunshine vitamin. It is so called because when our skin is exposed to sunlight the lipid compound ergosterol in the skin is converted into Vit-D.
8. Mention the major mineral constituents of our body?
Sodium, Calcium, Potassium, Magnesium, phosphorus, Sulphur, Chlorine.
9. What is a balanced diet?
A balanced diet must have all food supplements in needed proportion for normal growth.
10. Define a Calorie.
A calorie means the amount of heat required to raise 1Kg water by 1°C

11. Define IRM & IRW.

IRM (Indian Reference Man) : 25 yrs of age, 1.62 sq.mt. of body surface, 55kg body weight & remains health.

IRW (Indian Reference Woman) : 25 yrs of age, 1.4 sq.mt. of body surface, 45kg body weight & remains health.

12. What is BMI?

Body Mass Index is calculated as weight in kg divided by the square of height meters.

13. Name the factors that cause obesity.

Obesity may be due to genetic reasons, increased appetite excessive intake food than needed by body, endocrine causes and other metabolic disorders.

14. Name the enzymes of stomach.

Pepsin, Renin

15. What are the symptoms of tooth decay?

Tooth ache-aggravated by eating very sweet, hot or cold food. Decay may also causes bad breath.

16. What is appendicitis?

It is the inflammation of the appendix, leading to severe abdominal pain. This disorder is common among adolescents.

17. What is open fracture?

In the type of fracture the wound is seen openly through which infections germs may enter into the body.

18. Define the term physiotherapy?

Physiotherapy is the therapeutic exercise to make the limbs work normally.

19. What is Gout?

The inborn error or purine metabolism is commonly called gout.

20. What is Rigor Mortis?

Several hours after death all the muscles of the body attain a state of contractive called Rigor Mortis. This is due to complete depletion of ATP in muscle fibres.

21. What is called plasmaphoresis?

Myasthenia Gravis disease can be cured by removal of thymus and by a blood cleansing process called plasmapheresis, that removing the destroying antibodies.

22.What is Herring Breuer Reflex?

When the alveoli are stretched at the height of inspiration, the receptors send stimuli to the expiratory center of the medulla through the vagus nerve which inhibits further inspiration. This sequence of events is called Herring - Breuer reflex.

23.What is cardiac cycle?

The sequential events occurring from the initiation of one heart beat to the commencement of the next is called as one cardiac cycle.

24.What is Myocardial Infarction?

It is a coronary artery disease which involves sudden death of part of the heart muscle due to blockage in the coronary artery.

25.What is Heart block?

Complete failure of the system that conducts electrical impulses from the upper to the lower heart chamber is called the heart block.

26.What is ICCU?

People in a critical or unstable conditions of the heart problem or disease who require continuous monitoring are admitted to this unit. Advanced techniques and equipments were there in the unit.

27.What is cardio-Pulmonary resuscitation?

It is the administration of the life saving measures of external cardiac compression massage and mouth to mouth resuscitation to some one collapsing with cardiac arrest.

28.What is peptic ulcer?

An eroded area of the tissue lining in the stomach or duodenum

29.What are the types of hernia?

1. Inguinal Hernia
2. Femoral Hernia
3. Umbilical Hernia

30.What is arthritis?

It is the inflammation of all the components and structures of the joints.

31. What are the types of muscle contraction?

1. Isotonic muscle contraction
2. Isometric muscle contraction

32. What is bronchitis? Give its Types?

It is the inflammation of the bronchi, resulting in cough types

1. Chronic bronchitis
2. Acute bronchitis

33. What is Angiogram?

It is a special contrast X ray and can be used to detect an abnormality in a blood vessel such as a narrowing of a large diseased artery.

34. What is Rheumatic heart disease?

Rheumatic fever develops due to an infection caused by streptococcal bacteria. This condition is caused by the immune system attacking the body's own tissues.

35. What are the types of lymphocytes? write its function.

B - lymphocytes - It produces proteins against bacteria and destroy them

T - lymphocytes - It protects us against viruses by attacking and destroying cells in which viruses are reproducing

36. Differentiate thrombus and embolus

The blood clot within an intact blood vessel is called thrombus

when a portion of a thrombus clot becomes fragmented and enters the circulating blood, it is called embolus

37. What is REM Sleep?

Rapid eye movement sleep is a normal night sleep lasting 5-30 minutes usually appear on an average every 90 minutes. Associated active dreaming.

38. What are the functions of cerebrospinal fluid?

1. Cushions the brain against mechanical shock
2. It acts as a protective covering for the CNS and confer's buoyancy to brain.
3. It provides a reservoir of hormones and nutrition for the brain and spinal cord.

39. Write the role of vasopressin?

The retention of water inside the body by acting on the renal tubules.

Promotes the reabsorption of water from the renal filtrate.

It causes the constriction of all blood vessels and increases the blood pressure.

40. Write the types of hearing loss?

Conductive hearing loss, Sensory hearing loss

Neural hearing loss, Senso-neural hearing loss

41. What is cataract? Write its types?

Cataract is the opacity in the lens of the eye. It is due to changes in the delicate protein fibres within the lens

1. Dense nuclear cataract
2. Peripheral cataract

42. What do you mean by kidney failure? Write its types?

The reduction in the ability of the kidneys to filter waste products from the blood and excrete them in the urine is called as kidney failure

Types:

- Acute failure
- Chronic failure

43. List the monosaccharides?

Based on carbon atoms, monosaccharides are classified as

Trioses (e.g. Glyceraldehydes)

Pentoses (e.g. RNA and DNA molecules)

Hexoses (e.g. Glucose, Fructose and Galactose)

44. Write the role of lipids?

Lipids form the most important storage food in the body.

It serves as an insulating material.

Steroidal hormones are produced from certain lipids.

45. Write the symptoms of pellagra?

Mental changes (Dementia), dermatitis, Stomatitis

The tongue becomes smooth, red and painful

46. Write the reasons for obesity?

Genetic reasons

Increased appetite

Endocrine causes

Metabolic disorders

47. What are the enzymes present in saliva? Write its function?

The salivary amylase or ptyalin. Ptyalin acts on starch. It converts cooked starch into (disaccharide,) Maltose

48. What are the reasons for peptic ulcer?

Uncontrolled usages of aspirin or certain anti-inflammatory drugs such as Ibuprofen

Due to smoking, alcohol, caffeine

Psychological stress

49. What is peritonitis?

If a treatment is delayed the appendix may rupture and result in infection in the abdomen. The serious infection is called as peritonitis.

50. What is Rheumatic arthritis?

It is a generalized disease affecting the connective tissues of the whole body. It is due to immunological disorder against an unknown antigen.

51. What are the symptoms of osteomalacia?

Bone pain and tenderness
Brittleness in the bones

52. What are the respiratory muscles?

Internal intercostal muscle, External intercostal muscle, diaphragm

53. What are the symptoms of pneumonia?

Fever, chills, shortness of breath and a cough that produces yellow - green sputum and occasionally blood

54. What is coronary angiograph?

It is used to image the arteries that supply the heart muscle with blood. Angiography can image narrowed or blocked coronary arteries, which are not visible on a normal X - ray.

55. What is lateralization?

In brain the two cerebral hemisphere's have their own specific functions and this division of functions or labour between the two hemisphere is called lateralization.

56. Define BMR?

The Basal Metabolic Rate is defined as the amount of heat produced in the body in a given time in complete state of physical and mental rest at 20°C room temperature.

57. What are the reasons for cataract?

Aging	eye trauma
Sunlight exposure	diabetes mellitus
smoking	infections and injuries
poor nutrition	

58. What are ear bones? What is its function?

Malleus, Stapes and incus are three ear ossicles. Malleus is attached to the tympanic membrane, stapes to the oval window and incus articulates with those two bones. It helps to conduct sound waves into the inner ear.

59. What are the phases in menstrual cycle?

The follicular phase or proliferative phase (5th - 14th day)

The luteal phase or premenstrual phase (15th - 28th day)

The menstrual phase (1st - 5th day)

Part - C (5 Marks Questions)

1. Write short notes on carbohydrates.
2. Why is water necessary for man?
3. Explain the mode of digestion in the stomach.
4. Describe the structure of sarcomere.
5. Give an account of root-canal therapy.
6. Explain different types of bone fractures
7. Write a short notes on cardiac cycle.
8. Explain the process of blood clotting.

Part - D (10 Marks Questions)

1. Explain about vitamins
2. Explain the digestive process taking place in small intestine:-
3. Write an essay on any two disorders connected with the digestive system.
4. Write an essay on composition of Blood.
5. Explain the functions of the hormone, secreted by pancreas.
6. Explain the mechanism of muscle contraction.
7. Describe the mechanism of breathing with proper illustration.
8. Explain the origin and conduction of heart-beat.

NERVOUS CO - ORDINATION

1. Basic units of nervous system - Neurons
2. The diameter of the synaptic cleft - 10-20 nanometer
3. The place where the un myelinated axons are seen - Grey matter
4. Which ions are involved in nervous conduction (impulse) - Na and K
5. The substance that transmits the impulse at synaptic cleft is - Acetylcholine
6. In the nervous system, the bundle of parallel axons having myelin sheath constitute the - White matter
7. A gap between the junctions of the two neurons is named as - Synaptic cleft

8. The weight of the male cerebrum - 1400gm
9. The grey matter on the outer surface of the human brain - Cortex
10. The cortical areas adjacent to the primary sensory centers are called - Association areas
11. The roof of the mid brain or mesencephalon contains - (Four nuclei) Corpora quadrigemina
12. The memory is specific function of - The brain
13. In the slow wave sleep, the brain waves are - Very slow
14. A clot in cerebral vessel is called - Stroke (or) Cerebral thrombosis
15. A device to record electrical activity of the brain - E.E.G.
16. CSF is secreted by a group of cells called - The Choroid plexus

CHEMICAL CO - ORDINATION

17. Hormones are considered as - Chemical messengers
18. Which part connects the nervous system and endocrine system - Hypothalamus
19. The chondrogenesis, is the process of the formation of - Cartilage
20. The premature arrest of skeletal development causes - Dwarfism
21. Deficiency of growth hormone or hyposecretion in children results in - Retarded growth
22. Excessive secretion of GH results in overgrowth of skeletal structure and the person may reach a height of 7 to 9 feet - Gigantism
23. The molecular weight of thyroid stimulating hormone (TSH) is - 28,000 dalton
24. Which hormone is called by several names such as luteotropin, lactogenic, Mammatropin - Prolactin
25. Vasopressin is otherwise called as - ADH
26. ADH deficiency leads to - Diabetes insipidus
27. Deficiency of iodine in thyroxine is called - Simple goiter
28. In which hormone, the amino acid residue tyrosine is seen - Thyroxine
29. The hypothyroidism causes cretinism in - Children
30. The reason for the deposition of calcium in the renal artery, stomach and lungs is - Hyperthyroidism
31. Which hormone stimulates the storage of glucose fat in adipose tissues - Insulin
32. Which hormone stimulates the mental alertness - Adrenalin
33. Which hormone causes relaxation of the bronchi - Adrenalin / Epinephrine
34. Progesterone is secreted by - Corpus luteum

35. At the time of pregnancy, the corpus luteum secretes another hormone called - Relaxin
 36. A Syndrome which caused by hypothyroidism in adults - Myxoedema

RECEPTOR ORGANS

37. The function of rods - Scotopic vision
 38. The purplish red photosensitive pigment present in the outer segment of the rods is - Rhodopsin
 39. Cone cells are responsible for - Photopic vision
 40. At the fovea region of the retina, we can find - only cone cells
 41. The ideal refractive state is called - Emmetropia
 42. Presbiopia begins at the age of - 40 years onwards
 43. Infection in the conjunctiva is called - Conjunctivitis
 44. The human ear is most sensitive to - 50-500 Hz, range
 45. The site of auditory receptors is located on - Organ of Corti
 46. This happens when there is a problem with the connection from the cochlea to the brain - Neural hearing loss
 47. A hearing aid is an - Electronic, Battery operated device
 48. Cardiovascular problems could have been contributed (raised) due to - Noise pollution
 49. The skin involves in the production of - Melanin

50. Tyrosine (Amino acid) $\xrightarrow[\text{enzyme}]{\text{tyrosinase}}$ Melanin Pigment

Excretion

51. The level of urea in human blood - 0.04g/100ml
 52. The level of urea in the urine - 0.2g/100ml
 53. Which is the principal organ of urea biosynthesis - Liver
 54. The structural and functional unit of kidney is - The nephron
 55. Which act as a biological filter - Malpighian body
 56. The kidneys normally receive an abundant blood supply of about 1200ml/min
 57. In the ornithine cycle - Ammonia converts into urea

58. In nephrons the reabsorption takes place in - The uriniferous tubules
59. The amount of urine, excreted in each day 1-2 liters
60. In 24hrs in the glomerular filtrate, the amount of urea is - 53g
61. In each day the amount of uric acid is filtered about - 1g
62. The substance which is present in the kidney stone Calcium oxalate/phosphate
63. The first line treatment in which the kidney stones get disintegrated by focusing shock waves - Lithotripsy
64. Excessive appetite leads to increased intake of food is called Polyphagia
65. Excretion of increased quantity of urine - Polyurea
66. Excessive thirst leading to increased consumption of water is called - Polydipsia

Reproduction

67. Secondary sexual characters in male, is influenced by - Androgen (Male sex hormone)
68. The temperature of testes, for an effective production of spermatozoa - 32°C
69. Human ovum belongs to the type - Alecithal egg
70. The principal hormone secreted by the corpus luteum is - Progesterone
71. Secondary egg membrane of the human ovum is Corona radiata
72. In human the fertilization takes place at - Fallopian tube
73. If the ovum is not fertilized in the fallopian tube it dies in - 12-24 hours
74. The secretion of FSH ceases at the end of - follicular phase
75. At the termination of menstruation, the corpus luteum is converted into - Corpus albicans
76. In gift method the fertilized ovum is introduced into - The Fallopian tube
77. Which protects against sexually transmitting diseases - Condoms
78. The contraceptive pills (hormonal) stop/prevents the thickening of - Endometrium
79. The permanent birth control in female is - Tubectomy
80. Which structure is needed at the time of pregnancy - Corpus luteum

Short Answers (3 Marks)

1. Memory engram or a memory trace:

All the synapses are facilitated in a thought circuit.

This circuit can be re-excited by any one of many diverse signals at later dates there by causing memory.

The overall facilitated circuit is called a memory engram or a memory trace.

2. What is Alzheimer's Disease:

i) It is a chronic brain syndrome

ii) It is characterized by progressive loss of memory

iii) It is associated with the atrophy of cerebral cortex (degeneration of neurons)

iv) This disease becomes more prevalent among aged persons

3. What are the symptoms of meningitis?

Meningitis may be caused by bacterial infection, or viral infection or fungal infection.

The clinical symptoms of meningitis include headache, photo phobia, irritability, Stiffness of the neck, fever and other neurological symptoms.

4. What is reflex action?

Reflex action is the spontaneous involuntary response caused due to stimulation of receptor organ.

(e.g) The quick closure of eye lid when some object touches the eyelashes.

5. What is reflex arc?

The anatomical basis of reflex action is the reflex arc. It is a nerve chain between receptor organ and effector organ.

The reflex arc has the following route:

Sensory organ - sensory neuron - grey matter of the spinal cord - intermediary or relay neuron - effector organ.

6. What is cerebrospinal fluid (CSF)?

The ventricle of the brain and the central canal of the spinal cord contain, a clear fluid similar to plasma called the cerebrospinal fluid, secreted by anterior choroid plexus.

7. What is acromegaly?

The excessive GH in adults also results in the increase in thickness of lower jaw and disproportionate over growth of bones of the face, hand and feet. The above condition is known as acromegaly.

8. What is simple goiter (or) endemic goiter?

When the dietary intake of iodine becomes inadequate the synthesis of thyroxine is impaired. As a result, the thyroxine level falls in circulation and secretions of TSH increases, causing the hypertrophy of thyroid gland as a consequence. The thyroid enlarges to enormous proportions. This is called simple goiter (or) endemic goiter.

9. What are the symptoms of cretinism disease?

Cretinism is found in children who are deficient of thyroxine hormone from the time of birth. The characteristics of cretinism are, (i) retardation of mental growth to extreme degree (ii) dwarf stature (iii) low basal metabolic rate (iv) subnormal body temperature (v) arrest of pubertal sexual maturity.

10. What are the symptoms of myxoedema disease?

myxoedema in adults is a syndrome with the following characteristics :

(i) Low BMR (ii) Dry, coarse, scaly skin, puffy and bloated face, coarse and sparse hair (iii) Hoarse voice, slow speech, slow thought processes, poor memory, (iv) low blood pressure, anaemia with increased serum cholesterol etc.

11. What are the symptoms of grave's disease or exophthalmic goiter?

The hyper function of thyroid gland results in grave's disease. The symptoms are, (i) increased BMR with increased pulmonary ventilation (ii) Protrusion of eye balls from the sockets, increased heart beat rate, nervousness, emotional instability, (iii) weight loss, increased blood glucose and decreased serum cholesterol, derangement of sexual function etc.,

12. What is the function of calcitonin?

It is a calcium - lowering hormone secreted by the parafollicular cells of parathyroid gland . Its physiological effects are antagonistic to that of parathormone.

It inhibits bone reabsorption. In kidney, it inhibits the reabsorption of calcium, phosphorus, magnesium and other ions.

It decreases gastric HCL secretion. It also decreases the insulin and glucagon secretion.

13. What are the symptoms of tetany disease?

Removal of parathyroids causes the blood calcium levels to fall and results in tetany. Tetany is characterised by low serum calcium and phosphate, neuromuscular hyper excitability, spasms of muscles and cramps etc.

14. What are the symptoms of diabetic disease?

- i) Polyurea - Excretes large amount of urine
- ii) Polydipsia - Consumes excessive fluid
- iii) Polyphagia - He always feels hungry and eats excessively

15. What is ketosis?

When insulin levels are low, fat catabolism is increased and fats are converted into glucose. This further increases blood glucose levels and results in the accumulation of ketone bodies is called ketosis.

16. Function of Testosterone.

- i) It controls male reproductive function
- ii) It maintains the male secondary sexual characters. Such as enlargement of larynx, deepening of voice, growth of hair and other adolescent changes.

17. EEG - Define.

EEG is a device to record electrical activity of the brain via electrodes attached to the scalp.

18. What is meant by unconditioned response?

The bell sound, initially called the neutral stimulus which after a number of trials pairing with the unconditioned stimulus (UCS) viz., the meat piece, become the conditioned stimulus. Similarly the salivation of the dog during the initial trials of pairing (NS+UCS) is called unconditioned response (UR).

19. State the function of progesterone?

Progesterone is the principal hormone secreted by the corpus luteum. It prepares the uterus for implantation of the fertilized ovum. It helps in the formation of placenta and for maintaining pregnancy. Further, during pregnancy it inhibits contraction of uterus. It also suppresses ovulation and menstruation in pregnancy.

20.State the function of Relaxin?

The corpus luteum of the pregnant women secretes another hormone, relaxin in addition to progesterone. Relaxin helps in relaxing the muscles and ligaments of pelvic organs during childbirth (parturition).

21.Name the fluids in the chambers of the eye?

The cornea and the lens is a colourless, watery fluid called aqueous humour. At the Between ' back of the eye between the lens and the retina is the vitreous humour.

22.What is meant by accommodation of the eye?

Human eye has a lens apparatus whose convexity can be adjusted for focusing near and distance objects. This ability of the eyes to focus objects at varying distances is called accommodation. The accommodation is achieved by suspensory ligament, ciliary muscle and ciliary body.

23.What is meant by scotopic vision and photopic vision?

Scotopic vision : The rods are extremely sensitive to light and are responsible for vision in dimlight. This is called scotopic vision.

Photopic vision : Cones function in bright light and the system has more acuity and can perceive colors. This is called photopic vision.

24.What is Optic disc or blind spot.

The axons of ganglion cells pass through the eyeball at the posterior end and form the optic nerve which enters the cranial cavity. There fore this region of the retina lacks receptors and unable to perceive images which fall on it. This region is called optic disc' and when charting the field of vision it is referred to as the blind spot.

25.What is meant by optometry?

The practice of assessing vision and establishing whether glasses or contact lenses are needed to correct any visual defect is known as optometry.

26.What is meant by CLR?

For individuals who are over 40 years of age, considering refractive surgery to decrease dependence on glasses and contact lenses, Clear Lens Replacement (CLR) is an exciting option. In essence, this procedure entails removing the natural lens of the eye and replacing it with an Intraocular Lens (IOL) implant.

27. Give two reasons for loss of hearing?

- i) The cochlea is not working correctly because the tiny hair cells are damaged or destroyed
- ii) Another cause of conductive hearing loss, is a perforated eardrum. Perforation can be caused by infection in the middle ear or by mechanical injury resulting from a nearby explosion or a sudden blow to the head.

28. What is meant by Ureotelism?

Ureotelism is an adaptation for a semi terrestrial habitat. Urea requires only a small quantity of water; Further, urea is much less toxic than ammonia and it can be retained in blood for sometime before it is transported and eliminated through the excretory organs.

29. Write down the three functions of adrenalin?

- i) It increases the rate, amplitude and frequency of the heart beat.
- ii) it causes relaxation of the smooth muscles of the digestive tract and brings peristalsis to a halt.
- iii) It accelerates respiration and stimulates mental alertness.

30. What is meant by malpighian body?

Ultra filtration of blood takes place in the malpighian body which acts as a biological filter. A malpighian body comprises Bowman's capsule and glomerulus.

31. Composition of urine:

- i) Water - 96%
- ii) Urea - 2% & other metabolic wastages. 2%

32. What is renal failure?

The reduction in the ability of the kidneys to filter waste products from the blood and excrete them in the urine is called as renal failure.



33. What is meant by dialysis?

Dialysis involves a technique used for removing waste products from the blood and excess fluids from the body as a treatment for kidney failure.

34. What are the planning of the national family welfare programme:

- i) Maternal and Child Health care (MCH)
- ii) Immunization of mothers, infants and children.
- iii) Nutritional supplement to pregnant women and to children.
- iv) Contraception with health education, to motivate and to adopt small family norms.

35. What is vasectomy, Tubectomy?

Vasectomy is the method of permanent birth control in male in which the removal of a part of the vas deferens and ligations are performed.

Tubectomy is the method of permanent birth control in female, here a portion of fallopian tube is cut off and the cut ends are ligated to prevent fertilization.

36. Define Dermatitis.

It is inflammation of the skin, sometimes due to an allergy but in many cases it occurs without any known cause. Many types of dermatitis such as eczema are known.

37. What is corpus luteum?

The corpus luteum is an important structure needed at the time of pregnancy.

It is derived from the empty graafian follicle after ovulation. The corpus luteum secretes a hormone called progesterone.

It is a steroid hormone, secreted in significant amount by the corpus luteum and placenta.

Five Mark Questions

1. What is cerebrospinal fluid? state its functions:
2. Write any five actions of thyroxine?
3. Write the physiological effects of insulin?
4. Explain the photochemistry of retinal visual pigments?
5. Write the functions of skin?
6. Explain the causes for diabetes?
7. Draw and mark the parts of spermatozoa.
8. Explain the contraceptive barriers.
9. What is memory? Explain its types?

10. What is sleep? Explain the types?
11. What is Dialysis & its significance.
12. Explain the functions of Endocrine glands.

Ten Mark Questions

1. Explain the hormones of adenohypophysis and its function.
2. Write an essay on hearing loss and the correcting measures adopted.
3. Write an essay on menstrual cycle.
4. Comment on various schemes suggested by the national family welfare programmes and their importance.
5. Enumerate various eye defects. comment on corrective measures.
6. Explain the mechanism of urine formation with suitable diagrams.

2. Micro Biology

1. The virus infect the bacteria and multiply inside the bacterial body and inhibit its growth is called Lytic cycle
2. When the virus integrate themselves with the bacterial genome - Lysogeny
3. The disease that is deadliest and more infective than AIDS Hepatitis - B
4. The release of bloody sputum symptoms for Pneumonia fever
5. The enzyme which change the RNA genome to DNA - Reverse transcriptase
6. Who invented the vaccine for rabies - Louis pasteur
7. "Tubercle bacillus" was discovered by - Robert koch
8. The technique of 'pure culture' of bacteria was discovered by - Joseph lister
9. Complex or uncertain symmetry viruses are - Pox viruses, T-bacteriophages
10. The number of genes present in the para viruses - 3 to 4 genes
11. The technique of cultivating animal viruses - Chicken embryo technique

12. The eggs incubated for the growth of viruses at the temperature of 36°C
13. A general ideal medium for the growth of viruses is The Yolk sac
14. The most employed host of choice for the production of human vaccine virus is Diploid cell strains
15. The largest of all viruses and are brick shaped Pox viruses
16. Virus used for smallpox vaccine - Vaccinia virus
17. The virus which causes jaundice and hepatic carcinoma Hepatitis B Virus
18. Bacterial transformation is discovered by Griffith in 1928
19. In bacteria the transforming principle was identified as DNA by Avery, MacLeod and McCarty
20. Typhoid fever is caused by Salmonella typhi
21. Gastroenteritis is caused by Salmonella choleraesuis
22. Cholera is caused by Vibrio cholerae
23. Gonorrhea is caused by Neisseria gonorrhoea
24. Diarrhoea in children is caused by Giardia intestinalis
25. Gingivitis gum disease in mouth is caused by Trichomonads
26. Malaria is caused by Plasmodium
27. The toxin released during the destruction of erythrocytes by Plasmodium is Hemozoin

- 28.The malignant and fatal type malaria - *P.falciparum*
- 29.Amoebiasis in man is caused by - *Entamoeba histolytica*
- 30.The pathogenic form of *entamoeba histolytica* - Trophozoite
- 31.African sleeping sickness is caused by - *Trypanasoma gambiens*
- 32.Kala azar is caused by - *leishmania donovani*
- 33.The disease caused by adult *taenia* is known as - Taeniasis
- 34.The disease caused by bladder worm infection - Cysticercosis
- 35.Larva of *ascaris* - Rhabditiform larva
- 36.Infection with *ascaris* worm is called - Ascariasis
- 37.The first antibiotic discovered in the world - Penicillin
- 38.HIV was discovered by - Luc montagnier and gallo
- 39.The fungal infection in mouth and throat of aids patients - Candidiasis
- 40.The cancer usually affects the aids patients - Kaposi sarcoma
- 41.The confirmatory test for AIDS- Western Blot
- 42.The antiviral drugs for AIDS- AZT, Zidovudine
- 43.The disease which easily infects the AIDS patients- Tuberculosis (Mar, 2009)
- 44.Tumour causing viruses - Oncogenic viruses (June, 2007 & 2011)
- 45.Rabies virus belongs to - Rhabdovirus family (Sept, 2007)
- 46.Obligate intracellular parasites - Viruses (Mar,2008)
- 47.Which disease is caused by protozoan parasite - African sleeping sickness
- 48.The most promising chemotherapeutic agents for treating viral disease - Interferon (Mar, 2009)

49. The sexual life cycle of plasmodium takes place in
Body of female anopheles mosquito (June 2009)
50. Syphilis is caused by *Treponema pallidum*
51. Who discovered a system for antiseptic surgery Joseph lister (March, 2010)
52. The incubation period for rabies 3 to 8 weeks (Sep, 2010)
53. RNA oncogenic virus Rous sarcoma
54. Plague is caused by *Yersinia pestis* (Sep, 2011)

Part - II

1. What are the types of proglottids of tapeworm?
Immature proglottids, mature proglottids and Ripe Proglottids.
2. What is called anthroponoses?
The term means infection with parasitic species that are maintained in man alone.
Ex. Malaria and filaria
3. Differentiate : Bactericidal, Bacteriostatic
Bactericidal : destroys microbial cells
Bacteriostatic : Inhibits the growth of microbes
4. Define microbiology.
This study deals with the form, structure, reproduction, physiology, metabolism and classification of micro organisms like bacteria, viruses and fungi.
5. What is called pure culture?
The growth of a mass of cells of the same species in a lab vessel / test tube using serial dilutions in the liquid media is called pure culture.
6. What is called diploid cell strain.
Diploid cell strains are derived by primary cell culture from a specific tissues like lung or kidney which is of embryonic origin. These diploid cells are the most employed host of choice for the production of human vaccine virus.
7. Types of Malaria.
 - i) Tertian or vivax malaria caused by *Plasmodium vivax*.
 - ii) Quartan malaria caused by *Plasmodium malaria*.
 - iii) Ovale malaria caused by *Plasmodium ovale*.
 - iv) Malignant tertian caused by *Plasmodium falciparum*.

8. What is known as Amoebiasis?

Amoebiasis in man is due to the infection by *Entamoeba histolytica*. The vegetative trophozoite form is pathogenic. They enter the intestine by eating through the intestinal mucosa. The blood and the ulcer contents pour into the human of the intestine and pass out as blood stool. which is called amoebic dysentery or amoebiasis.

9. What is called Zoonoses?

Parasitic infection which man acquires from animals are known as zoonotic infections. In the zoonoses human infections are only accidental events and the parasite is not benefited since the chain of transmission is usually broken with human infection.

10. What is called antibiotic?

The word antibiotic refers to a metabolic product of one micro organism that in very small amounts is inhibitory to other micro organisms.

11. Write some important antibiotics.

Ampicillin, streptomycin, Tetracycline, erythromycin and cycloguanosine.

12. Methods of diagnosis of AIDS.

- i) Eliza is a sensitive preliminary blood test used to detect HIV antibodies
- ii) Western Blot is the confirmatory test for Aids which is highly specific.

13. Symptoms of ascariasis.

- i) Common symptoms are loss of appetite, intestinal pain, abdominal discomfort with indigestion.
- ii) It also causes disturbed sleep in children.
- iii) Appendicitis may also be caused by the worms blocking the appendix.

14. What is called chicken embryo technique.

The most economical and convenient method of cultivating a wide variety of animal viruses is the chicken embryo technique. In this technique, fertile chicken eggs incubated for 5 to 12 days are selected. Eggs incubated at 36°C are ideal sources for the viral growth.

15. What are oncogenic viruses? Give example.

Tumour inducing viruses are called oncogenic viruses.
Ex. Adeno viruses, SV40, EBV.

16. What is called Bacterial Transformation?

It is a process in which cell free or naked DNA containing the genetic information is transferred from one bacterial cell to another.

17. What is called Transduction?

In transduction a bacteriophage acts as a vector, transferring a portion of DNA from one bacterium (donor) to another (recipient)

18. Define pathogenicity.

Pathogenicity refers to the ability of micro organism to cause the disease in animals and humans. Infectious disease more often result due to the interactions between the disease producing pathogenic micro organisms and host organisms.

19. What is called chemotherapy?

The control and treatment of infectious diseases with a chemical compound or drug is called chemotherapy.

20. How is Aids formed?

HIV causes profound immunosuppression in humans. It is due to the depletion of one type of WBC, which is involved in the formation of antibodies called CD4 plus T-helper cells.

21. What are proglottids?

The body segments of tape worm are known as proglottids. They proliferate from the neck by fission.

22. What is called strobilization?

The process of formation of new proglottids is known as strobilization.

23. What is called cysticercus or bladder worm?

In the life cycle of tape worm the oncosphere settles in the skeletal muscles of the pig and develops into a bladder like structure called cysticercus or bladder worm.

24. Write the pathogenicity of tapeworm.

The disease caused by adult taenia is known as taeniasis. The disease caused by bladder worm infection is called cysticercosis. Taeniasis is characterised by abdominal pain, indigestion, vomiting, loss of appetite and nervous disorders.

25. Differentiate male and female ascaris worm .

Male Ascaris

1. Male worm is shorter
2. The posterior end of the male is curved ventrally like a hook.
3. Common cloacal aperture is present. Two curved chitinous spicules are projecting from the aperture.

Female Ascaris

- Female worm is longer
- Posterior end of the female is straight
- In the female the genital aperture is distinct from the anus.

26. What are the controlling measures of ascaris.

- i) Measures against indiscriminate defecation.
- ii) Protection of water against contamination by embryonated eggs.
- iii) Proper disposal of night - soil.
- iv) Fruits, vegetables etc. should be washed before use.
- v) Covering of sweets and other edibles from getting contaminated by embryonated eggs.

27. What are the inventions of the following microbiologist?

- i) Louis Pasteur ii) Alexander Flemming
- i) Louis Pasteur - He developed vaccines for the control of cholera, anthrax and rabies in man
- ii) Alexander Flemming - Penicillin, (Antibiotic).

28. What are the contributions of Joseph lister?

- i) He discovered the technique of "Pure culture of " bacteria.
- ii) He also discovered a system for ' antiseptic surgery' This system prevents surgical wound infections and other lethal complications.

29. What are the symptoms of cholera?

- i) Vomiting, Profuse diarrhoeal stool
- ii) Which results in severe dehydration, loss of minerals, increased blood acidity

30. Differentiate Generalized and specialized transduction.

Generalized Transduction - All fragments of bacterial DNA have a chance to enter a transduction phage.

Specialized Transduction - Only a few restricted genes of the bacterial chromosomes are transduced by bacteriophage.

31. What are the crowning achievements of Louis Pasteur?

- i) Pasteurisation of milk.
- ii) The development of techniques to reduce the virulence of infectious organisms without eliminating their capacity to produce immunity.
- iii) He developed vaccines for the control of cholera, anthrax and rabies.

32. What are the symptoms of rabies disease?

Severe head ache, high fever, alternating, excitement and depression, muscular spasms in throat and chest, hydrophobia etc.,

Part - III

1. Describe the structure of virus.
2. Describe the structure of HIV virus with diagram.
3. Enumerate the adaptations of pathogenic microbes.
4. What are the symptoms of AIDS?
5. Write a note on control and preventive measures of AIDS.
6. Write short notes on cholera and plague.
7. Give an account on cultivation of animal viruses.
8. Describe the types of proglottids in Tapeworm.
9. What are the characteristics of chemotherapeutic agent?

Part - IV

1. Write notes on viral diseases in man?
2. Write an account of various bacterial diseases.
3. Describe the life cycle of Tapeworm
4. Write an essay on the various cultures of animal viruses.
5. What is called chemotherapy? What are the characteristics of chemotherapeutic agent?
6. Describe the life cycle of Ascaris.

3. IMMUNOLOGY

One Mark Questions

1. Immunity is induced by - Bacteria, Virus and Microorganisms
2. Antibacterial factor present in saliva and tear - Lysozyme
3. Antiviral proteins are called - Interferons
4. Most important phagocytes are - Macrophages and the Neutrophils
5. Skin graft practised in plastic surgery - Autograft

6. Which chromosome in mouse contains the MHC gene - 6th chromosome
7. Which is called autoimmune disease - Multiple sclerosis
8. Antibody associated with allergy - IgE (Epsilon)
9. AIDS is caused by- HIV Retro virus
10. Immunoglobulins are secreted by - B Lymphocytes
11. The areas of high variability - Hot spots
12. The first formed lymphoid organ in animals - Thymus
13. The natural killer cells (NK cells) which kill virus infected cells of the body secrete
- Perforin
14. Haptens are small well defined chemical groups which are not immunogenic on their
own DNP Dinitrophenol
15. The part of the antibody molecule which makes contact with the antigen - Paratope
16. The genes which determine the compatibility between donor and recipient tissues in
transplants - HLA genes
17. The part of the antigen molecule that makes contact with the paratope - Epitope
18. The allergen which cause a sudden, violent and fatal reaction in a sensitive individual
is - Anaphylaxis
19. Antibodies forming a coating over bacteria to facilitate phagocytosis is - Opsonisation

- 20.Primary lymphoid organs - Thymus, bone marrow, bursa of fabricius
- 21.Among the lymphocytes produced in thymus only 1% leave the thymus. The rest are destroyed locally by cell death called-Apoptosis
- 22.Hormones secreted by thymus-Thymulin, Thymosin and thymopoietin
- 23.The replacement of a diseased organ by a transplant is called-Transplantation
- 24.Antibodies deposited on the myelin sheath of nerve cells is-Multiple sclerosis
- 25.The viral RNA genome is converted into DNA copy by the viral enzyme Reverse Transcriptase
- 26.The epithelial cells in the medulla of thymus are Hassall's corpuscles
- 27.The reduction in lymphocytes in thymectomised mice-Lymphopenia
- 28.The No. of lymph nodes in human body 600
- 29.The largest lymphoid organ Spleen
- 30.The epitope clusters on the antigen are known as Antigenic determinant
31. A common manifestation of allergy is - Asthma
- 32.The latin term immunis meaning exempt or freedom
- 33.The immunity involved in killing of cancer cells is -cell mediated immunity
- 34.Reduction in the no. of lymphocytes - Lymphopenia
- 35.The nature of graft rejection was first explained by Medawar (1940)
- 36.Which WBC are liberated at the site of infection - Monocytes (Mar 2007)
- 37.SCID results from the defect of adenosine deaminase deficiency (Sep, 2009)
- 38.Insulin dependent diabetes is an example for Autoimmune disease (June 2007)
- 39.The cells which secrete histamine Mast cells (Mar 2008, June 2008)

40. The growth period of thymus 12 Years (Sep 2007)
41. Graft between identical twins Isograft
42. Phagocytosis is mainly performed by Leucocytes
43. Thymus functions best only in early life
44. Immunoglobulins are Glycoproteins (Mar 2008)
45. The molecular wt of H chain of immunoglobulin 50,000 daltons (June 2011)
46. Small well defined chemical groups which are not immunogenic on their own Haptens (June 2008)
47. Multiple sclerosis is an example for Autoimmune disease
48. Which organ acts as a reserve tank and setting bed for blood Spleen
49. Graft between the individuals of the same species Allograft (Mar 2009)
50. Cell mediated immunity is performed by Cytotoxic T Lymphocytes
51. Which one of the following is a primary lymphoid organ? Thymus (June 2009)
52. The molecular wt of the light chain in the Immunoglobulin 25,000 daltons
53. The action of skin as a barrier is Anatomical Barrier
54. Which one of the following plays a role in the development of cell mediated immunity? Thymus
55. Which cells are accumulated at the site of inflammation? Phagocytes
56. Which one of the following involves in humoral immunity? Immunoglobulin molecules
57. Which one of the following is not a lymphoid organ? Liver

58. Organ transplanted from pig to human Xenograft (Sep 2011, Mar 2011)
59. Which one of the following is an Anatomical barrier? Mucous membrane (June 2011)
60. The most important phagocytes are Macrophages and neutrophils (Sep 2011)
61. Which one of the following is anti viral protein? Interferon

3 Mark Questions

1. What is immunology?

The system of animal body which protects it from various infectious agent and cancer is called immune system. A study of the immune system is known as immunology.

2. What are the types of immunity?

(i) Innate immunity (ii) Acquired immunity

3. What is called innate immunity?

Innate immunity comprises all the natural defense mechanisms with which an organism is protected from infection.

It consists of 4 types of barriers.

- | | |
|---------------------------|-----------------------------|
| (i) Anatomical barriers | (ii) Physiological barriers |
| (iii) Phagocytic barriers | (iv) Inflammatory barriers |

4. What is called Lysozyme?

Lysozyme present in secretions such as tears and saliva, digest bacterial cell walls.

5. What is called phagocytosis?

In response to pathogenic infections, the total count of important phagocytes like macrophages and neutrophils will increase sharply that engulf microbes, viruses and cellular debris. This is known as phagocytosis.

6. What is called Acquired Immunity?

Acquired immunity also known as adaptive or specific immunity is capable of recognizing and selectively eliminating specific micro organisms. Specific defence mechanisms require several days to be activated, following the failure of non-specific defence mechanisms.

7. Differentiate Cell - mediated immunity and Humoral Immunity:**Cell - mediated Immunity (CMI)**

- i) Cell mediated immunity is the responsibility of cytotoxic T Lymphocytes (CTLs)
- ii) It kills the infected cells and prevents the completion of life cycle of the pathogen and its growth
- iii) It is also involved in killing of cancer cells.

Antibody - Mediated Immunity / Humoral Immunity

The free antibodies (Immunoglobulins) produced by B-lymphocytes have 3 main functions

- i) Agglutination of particulate matter like bacteria and viruses.
- ii) Opsonisation over bacteria to facilitate phagocytosis
- iii) Neutralization of toxins released by bacteria.

8. Differentiate active and passive adaptive immunity

Active immunity is due to the immune response generated in the individual by a pathogen or a vaccine.

Passive immunity is conferred by transfer of immune products like antibodies from an individual into a non - immune individual.

9. What are the types of immunoglobulin?

- | | | |
|------------------|-------------------|---------------|
| (i) IgG (gamma) | (ii) IgA (alpha) | (iii) IgM(mu) |
| (iv) IgD (delta) | (v) IgE (epsilon) | |

10. What is an immunogen?

A molecule that provokes an immune response is called an immunogen.

11. What are the three main functions of antibodies?

- i) Agglutination of particulate matter like bacteria and viruses
- ii) Opsonisation or coating over bacteria to facilitate phagocytosis by the phagocytes
- iii) Neutralization of toxins released by bacteria.

12. State the functions of spleen.

- i) The spleen serves as the graveyard for aged red blood cells.
- ii) It acts as a reserve tank and settling bed for blood.
- iii) It acts as a systemic filter for trapping circulating blood borne foreign bodies.

13. Define the term antigen?

Antigen is a molecule which reacts with the antibody produced or with the activated cellular constituents of cell-mediated immunity.

14. What are haptens?

Haptens are small well defined chemical groups which are not immunogenic on their own but will react with preformed antibodies.

15. Distinguish paratope and epitope.

The part of the antibody molecule which makes contact with the antigen is Paratope.

The part of the antigen molecule that makes contact with the paratope is called Epitope.

16. What are the two types of light chain or L-polypeptide chain?

Kappa (κ) & Lambda (λ)

17. Distinguish Autograft and allograft.

Autograft : The tissue of the original donor is grafted back into the same donor.

Ex. Skin graft from thigh to face in severely burnt individuals (Plastic Surgery)

Allograft : Graft between members of the same species but of different genetic constitution

Ex. Kidney transplanted from one human to another.

18. Distinguish Isograft and Xenograft.

Isograft : Graft between syngeneic individuals.

ex. graft between clones or identical twins

Xenograft : Graft between xenogenic individuals.

ex. Organ transplanted from pig to human, baboon to human.

19. What are immuno suppressant drugs?

Cyclosporin and Steroids

20. Write short notes on mast cells.

Mast cells are present in tissues which resemble basophils in structure. When the mast cells get damaged chemical alarm signals histamine, serotonin and prostaglandins are released which cause inflammation.

21. Write notes on Interferons.

When WBC get infected with a virus, they respond by releasing anti viral proteins called Interferons. Interferons in turn make the cells in the vicinity resistant to viral infections.

22. What are the primary lymphoid organs? Give example?

The central or primary lymphoid organs are lymphoepithelial structures in which the precursor lymphocytes proliferate, develop and acquire immunological capability.

ex. Thymus, bone marrow and bursa of fabricius in birds.

23. What are peripheral / secondary lymphoid organs? Give examples.

The spleen, lymph nodes and mucosa - associated lymphoid tissue (MALT), appendix, tonsils, salivary glands, tear glands etc. are peripheral or secondary lymphoid organs.

24. What is called haematopoiesis?

T-lymphocytes, B-lymphocytes and the other cells of the immune response, are produced in the bone - marrow. The process of their production is called haematopoiesis.

25. What is called proliferation of clones?

The activated B and cytotoxic lymphocytes proliferate to produce clones. All the cells of a clone can recognize the same antigen and eliminate it.

26. What are antigenic determinant?

More than one (a series of epitopes) epitopes form clusters on the antigen are known as an antigenic determinant.

27. What are the Immunoglobulins?

The specific antibody molecules called immunoglobulins are synthesized by B-lymphocytes. They are glycoproteins in nature.

28. What is known as immune sera / anti sera?

Sera having high antibody levels following infection or immunization are called immune sera or antisera.

29. What are the four types of infectious agents?

Bacteria, Viruses, Fungi and Protozoan parasites.

30. Write the methods of prevention of graft rejection.

- i) Blood groups estimation in the host.
- ii) Testing the presence of cytotoxic antibodies in the host serum.
- iii) Cross matching of tissues (Host vs Graft) prior to transplantation.
- iv) Giving immunosuppressive drugs like cyclosporin and steroids to the host.

31. Expand the following acronym.

MALT, BALT, GALT

- MALT - Mucosa Associated Lymphoid Tissue
BALT - Bronchus Associated Lymphoid Tissue
GALT - Gut Associated Lymphoid Tissue

32. What are immunodeficiency diseases? Give example.

Immunodeficiency diseases result from a defect in one or more components of the innate or adaptive immunity. It may result from gene mutations, infections, malnutrition or accidents. eg. SCID, AIDS.

33. How do the natural killer cells (NK Cells) perform the function of immunity?

The natural killer cells kill virus infected cells of the body by creating perforin - lined pores in the plasma membrane of the target cells. These pores allow entry of water into the cell which then swells and bursts.

5 Mark Questions

1. Give an account of the structure of immunoglobulin with diagram.
2. Briefly describe the genetic basis of tissue transplantation.
3. Describe the types of grafts?
4. What are the symptoms of allograft rejection?
5. Illustrate the methods to prevent graft rejection.
6. Give an account of immunodeficiency diseases.
7. Write notes on Thymus gland.
8. Describe the secondary lymphoid organs.
9. What are the unique features of adaptive immunity?
10. Describe the types of innate immunity.
11. Write short notes on lymph nodes.
12. What are the effects of immune system disorders?
13. How do the Acquired / Adaptive immunity get activated?

4.MODERN GENETICS

1. It helps to understand the genetic characters in man - pedigree analysis
2. Albinism is due to - absence of melanin.
3. What is the name of mobile genetic elements Transposons.
4. The process in which all the chromosomes in a cell are isolated and arranged - karyogram (or) Idiogram
5. No of chromosomal pairs present in man - 23 pairs.
6. How is the human chromosome classified in to 7 group - A,B,C,D,E,F,G
7. Karyotyping which helps to identify the sex of the individual - Amniocentesis.
8. The antiviral substance produced by genetic engineering - Interferon
9. The human growth hormone produced by genetic engineering - somatostatin
10. Superbugs are - genetically engineered bacteria.
11. Name the superbug produced by Anand chakravarthy - Pseudomonas.
12. The causes of genetic disorder - gene mutation, chromosomal abberations.
13. Name the diagram that indicates the genetic character of a family - pedigree chart (or) family tree
14. Congenital diseases are - genetic diseases by birth
15. The disease that caused by gene mutation of somatic cell - sickle cell anaemia.
16. Severe anaemia in children - thalassemia major.
17. The hereditary disease caused by the metabolic disorder of melanin - albinism.

18. The bubble boy syndrome is also called as - SCID
19. Groups of DNA molecules of human constitute - Human genome
20. The different forms of protein - Enzymes, hormones and antigens.
21. Identifying respective genes of protein - proteomics.
22. The technique which produces identical organisms - cloning
23. The person who developed cloned sheep Dolly - Dr. Ian wilmut.
24. Name the new forms that are developed in Bio - Technology - Transgenic organism.
25. Name the method that involves the replacement of correct genes in the place of defective genes in human - gene therapy.
26. Name the vectors in transgenic technique - retrovirus.
27. Name the therapy that prevents the transfer of genetic diseases from parent to offspring - gene Therapy.
28. What is the study of Bio technology and information technology - Bio informatics.
29. In proteomics, the amino acid sequences are read by - sequenators.
30. Name the chemical that stops the mitotic division - colchicine
31. Name the group that contains the 'x' chromosome - 'c'
32. Name the enzyme that cuts the DNA molecule - restriction endonuclease.
33. Who has discovered the mobile genetic elements (transposons) in maize - Barбора Meclintock.
34. The efficient gene exchanging vehicle which the nature has produced is - plasmid DNA
35. The persons suffering from sickle cell anaemia but survive have the genotype - $Hb^A Hb^S$

36. The recessive gene causing albinism - aa
37. The melanocyte cells in human skin containing DOPA is converted into melanin by an enzyme - tyrosinase.
38. Name the process by which it cannot produce children like the children born to genetic mothers - cloning.
39. The protein configuration is made primarily by the - amino acid side chains.
40. Name the enzyme which cuts the DNA molecule into fragments with staggered cut ends - ECOR1
41. C DNA Library consists of - mRNA.
42. Secondary data bases are - GDB (human)
43. Computer graphic model depicts - protein.
44. In human chromosomes the 'x' chromosome resembles - chromosome '6'
45. Name the largest group containing chromosomes - group c
46. Name the bacterial strain that can clear up oil spills - pseudomonas.
47. What is erythroblastic anaemia ? - Thalassemia
48. No of mRNA discovered in man - 60,000
49. The first gene was cloned by - Hebert bayer and stanely cohen.
50. The severe combined Immuno deficiency (SCID) is caused due to - adenine deaminase defect.
51. About how many hereditary diseases in human beings were identified - more than 300.
52. Name the group which comprises very short acrocentric chromosomes - group G

53. Name the language which do not help in Bio informatics - E commerce.
54. Albinism is an inherited disorder characterized by - Absence of melanin.
55. Idiogram refers to - diagrammatic representation of chromosomes.
56. The scrutiny of established matings to obtain information about the genetic traits - pedigree analysis.
57. The use of super bug - To degrade oil spills.
58. In which stage the whole chromosome can be changed - metaphase.
59. A DNA library is a collection of - DNA fragments.
60. No of genes identified in human genome - 30,000.
61. The sequential and linear arrangement of amino acids in a polypeptide represents - primary structure.
62. The discovery of double helical DNA was by - watson & crick.
63. The medium sized chromosomes with terminal centromeres are seen in - group D.
64. Sickle cell anaemia is caused by - Autosomal mutant allele Hbs.
65. Name the group which includes chromosomes 1,2,3 - group A.
66. Name the disease caused by autosomal dominant gene in human - huntington's chorea.

67. Name the type of chromosome present in group G - Acrocentric.
68. The CDNA libraries contains - only DNA molecules for genes.
69. Super bug is the genetically engineered - Bacteria.
70. The disease which shows the total absence of plasma cells - Agammaglobulinemia.
71. 'y' chromosome belong to the category - group G.
72. The characteristic of human cell to take in foreign genes - Transfection
73. The affected gene for Huntington's chorea is located in - chromosome 4.
74. The chromosomes 16,17 and 18 is seen in - Group E
75. Name the protein form which is stored in protein Data bank - three dimensional forms.

3 MARK QUESTIONS

1. What is meant by differentiation?

During the embryological development multitudes of cells arise from mitotic division of the fertilized cell and attaining different form and function is called differentiation.

2. What is meant by gene bank?

It is the collection of sequenced genes and cataloging them for future use They represent the fundamental data
eg: SWISS - PROT Protein 3d structure.

3. What is meant by pedigree analysis?

The scrutinisation of established matings to obtain information about the genetic characters is called pedigree analysis.

4. What are the symptoms of thalassemia?

- * Decreases in the bone marrow activity
- * peripheral haemolysis
- * Enlarged spleen (splenomegaly)
- * Enlarged liver (Hepatomegaly)

5. State the uses of karyotyping?

- * It helps in identifying the sex through amniocentesis.
- * Genetic diseases in human can be detected
- * By detecting deletion, duplication the defects can be found out.

6. What is meant by foreign DNA?

It is a fragment of DNA molecule which is to be isolated and cloned.

7. What is meant by cloning vector?

- * A DNA that can carry a foreign DNA fragment inserted into it.
- * Eg; Bacterial plasmid, Bacteriophages.

8. Name three bacteria involved in genetic engineering.

- * E.coli
- * Bacillus subtilis
- * Saccharomyces Cerevisiae

9. What is meant by DNA fragmenting?
It is the fragmenting of DNA and mapping the DNA in terms of its nucleotide sequences.
It is used to identify the genic and non genic compartments of DNA.
10. What is meant by gene therapy?
It involves the replacement of corrective genes in place of defective genes in human.
Types;
1. somatic cell gene therapy
2. germ line cell gene therapy.
11. What is meant by database in Bio informatics?
Coherent collection of data related to Biology used for future application.
It is a record of information.
12. What is meant by karyogram?
It is the diagrammatic representation of chromosomes. The chromosomes are separated and they are lined up in the karyogram.
13. What is meant by plasmid?
Plasmid is present in the cytoplasm of bacteria and it can replicate independently of the main DNA. It contains 200-300 nucleotides.
14. What is meant by recombinant DNA or rDNA ?
The foreign DNA is isolated and made to recombine with the plasmid DNA.
The product formed is called recombinant DNA.
15. What is meant by super bugs? What is its significance?
They are genetically engineered bacteria used to clean up oil spills.
It destroys octanes and Xylenes of oil.
16. What is meant by sickle cell anaemia?
It is caused due to an autosomal mutant allele (Hb^s)
It causes abnormal haemoglobin and as a result causes fatal haemolytic anaemia.

17. What is meant by Albinism?

It is an inherited disorder of melanin metabolism characterised by the absence of melanin in the skin, hairs and eyes.

18. What are the symptoms of Huntington's Chorea?

- * Un Controlled Jerking of the body.
- * Deterioration of intelligence.
- * Depression, delusion, psychological problems.

19. What is meant by proteomics?

It involves the analysis of different proteins and locating them in cells and identifying their respective genes.

20. What is meant by transgenic organisms?

A gene is transferred from one organism to another to form a transgenic organism.

21. What is meant by DNA library and protein Data bank?

It is a collection of DNA fragments which contains all the sequences of a single organism.

Protein Data Bank have the information of three dimensional form to define protein structure.

22. What is meant by cloning ?

It is a technique to develop genetically identical organisms.

23. Give the Nucleic acid sequence data base?

EMBL
NCBI
DDBJ

24. Give the significance of protein model.

- * Protein structure helps to know the bio molecular arrangement in tissue or cell.
- * Protein structure, protein models and graphics models helps to understand biological reactions.
- * Graphic models help to design drugs and vaccines.

25. What is SCID or Bubble boy syndrome? Mention its symptoms.

- * It is an inherited disease affecting children.
- * They lack immune defence mechanism.
- * Destruction of white blood cells.

26. What is transfection?

The uptake of genes by the cells in animals is called transfection.

27. State the uses of transfection

- * The production of chemicals and pharmaceutical drugs.
- * Study of structure and functions of genes.
- * Production of transgenic animals of commercial value such as livestock animals and fishes.

28. What are the languages used in Bio informatics?

C, C++. JAVA, FORTRAN, LINUX, UNIX, ORACLE, Sybase.

29. What is meant by genetic engineering?

Isolation of a gene segment from the whole genome, cloning of gene into multiple copies and their expression is a genetic engineering.

5 MARK QUESTIONS

1. Explain the karyotyping of Human chromosomes. Explain the type of chromosome present in each group.
2. What are the significance of DNA recombination technology?
3. List out the ethical issues of cloning.
4. List out the scope of Bio - Informatics.
5. Explain pedigree analysis and pedigree chart.
6. List out the significance and benefits of Human genome project
7. Write an essay on protein structure.

10 Mark Questions

1. Write an essay on DNA recombinant technology.
2. Describe the process of cloning with an example.
3. Write an essay on Bio - Informatics.
4. Explain any four genetic diseases.
5. Describe the process of gene therapy.

5.ENVIRONMENTAL SCIENCE

1. The study of organisms in relation to their surroundings - Environmental science.
2. What is the rate of growth of human population - 90 billion per year.
3. What is the reason for population explosion for the past 300 years - Decrease in death rate.
4. What is the average temperature of earth - 59°F (15°C)
5. What is the common green house gas - CO₂
6. Name the green house gas which absorbs the heat more - Trifluoromethyl sulphur penta fluoride.
7. Name the green house gas which is prevalent in 2000 - Trifluoromethyl sulphur penta fluoride.
8. Name the green house gas evolved during the melting of aluminium - Perfluorinate compound substances.
9. Manufacture of foams releases - Hydrocarbons.
10. Name the green house gas used in refrigerator - chlorofluoro carbon.
11. Name the green house gas emitted from rotting organic waste in sand fills, by the cows as a by product of digestion - Methane.
12. Name the gases deplete the ozone layer rapidly
 1. Chlorofluoro carbon
 2. Bromine compounds
 3. Methyl bromide
13. The flammable and poisonous hydro carbons are - Butane and Propane.
14. Name the gas which takes 20 times more heat than CO₂ - Methane.
15. Name the gas which absorbs 300 times more heat than CO₂ - Nitrous Oxide.

16. What is the reason for global warming - Human activities against nature.
17. The number of births by which people are just replacing themselves - Zero population Growth Rate (ZPG)
18. Ozone loss was first detected in the stratosphere over - Antartic.
19. Cyanide is reduced to non - toxic form by - Gibbrella fusarium.
20. Name the pseudomonas bacteria capable of degrading oil spills - super bug.
- Materials % of Reuse
21. waste paper - 54% reuse
 glass - 20% reuse
 metals - 39% reuse
 plastics - 2.2% reuse
22. The number of hot spots identified in all over the world is - 25
23. Name the energy which will run out by 2020 - 1.Petroleum 2.Natural gas
24. Name the non - renewable sources of energy - coal, timber, petroleum, electricity.
25. Renewable energy sources that are being made available continuously - Eg.
 Geothermal energy, wind energy, tidal energy
26. The consumption of fuels in house for heating 18% and for transport 25%
27. Proper insulation of buildings using less plate glass saves about - 33% of energy.
28. Vizhinjam power plant generating electricity from ocean energy can produce -
 150mw in a year
29. The amount of energy received by our earth from the sun every year is -
 5×10^{20} K .cal

30. The method used to dispose large amounts of water carrying small amounts of chemical wastes - surface impoundments.
31. Name the bee which helps in the pollination of trees in tropical forests - orchid bees
32. What is the good source of energy for future - hydrogen.
33. What is the total percentage of fresh water in the whole world - 3%
34. Name the countries which desalinates the ocean water - Dubai, Oman and Bahrain
35. The hazardous biomedical wastes are disposed off by means of - Incineration.
36. Man and biosphere program has been introduced in the year - 1971
37. Where is national bureau of fish genetic resources situated - Allahabad
38. National Bureau of Animal genetic resources is located in - kamal
39. National Bureau of plant Genetic resources is in - New Delhi
40. Name the economically feasible energy for the world - Nuclear energy
41. Name the chemical that causes rain from clouds - Potassium iodide.
42. The rate of population in the year 2050 - 12.5 billion.
43. The nature of population growth was studied by - Thomas Malthus
44. Population grows geometrically by - 1,2,4,8.
45. What is the rate of increase of world population for the past 100 years - 4 times
46. What is the average rise in temperature of earth for the past 100 years - 1°f
47. By the year 2100 the rise in earths temperature - 2.5 to 10.4°F

48. Which is essential for earth's stability - green house effect.
49. Name the gas removed by plants through photosynthesis - CO_2
50. How many molecules of CO_2 present in per million molecules of air - 281ppm.
51. Name the gas released by burning fossil fuels and by ploughing farm soils - nitrous oxide
52. In 21st century sea level will rise from - 9to 88cm
53. Which part of living things will be damaged by UV rays - DNA
54. The gases which cause ozone hole - chlorine, Bromine
55. Name the type of UV radiations which reaches the earth due to ozone depletion - UV B
56. To prevent ozone depletion CFC should be replaced by - HCFC
57. Antarctic ozone hole was first detected during the year - 1980.
58. In 1991-1992 scientists revealed that ozone layer was reduced to 15-20%
59. Disposal of military related liquid and radio active waste material is by - land fills
60. Name the percentage of solid waste reduced by incineration - 80 to 90%
61. Name the micro organism involved in secondary treatment of organic wastes - Bacteria
62. The International convention on biological diversity was started in the year - May 1994.

63. 'Biosphere Reserve' is an international designation made by - UNESCO
64. How many world network of Biosphere Reserves seen at the end of Nov.2002 - 495
65. The marine biosphere reserve seen in T.N - Gulf of Mannar Biosphere Reserve,
66. Name the reserve considered as 'Biologists Paradise' with 3600 species of plants and animals - Gulf of Mannar
67. In which year project Tiger is started - 1973
68. Our major source of energy in the 19th century - coal
79. Name the fossil fuels providing about 95% of all commercial energy in the world - petroleum, natural gas and coal
70. What is the cost of generating one unit power through wind power - 40 paise
71. Tidal power plants in India is seen in - kutch
72. The heating efficiency of cow dung based on anaerobic fermentation of organic wastes is increased by - 20%
73. Estimation of 10m^3 of bio gas has energy equivalent
of = 6.0m^3 of natural gas
3.6 liters of butane
7.0 liters of gasoline
6.1 liters of diesel fuel
74. In thermodynamic conversion of energy hydrogen energy conversion efficiency is greater than that of gasoline by = 30 - 35%
75. In which place of soviet union the nuclear power reactor has under gone accident - chernobyl

76. The metal used in fabricating thin film solar cells is poisonous and carcinogenic - cadmium.
77. Name the gas evolved during the production of silicon from silica - Co_2
78. Name the gases which produce acid rain - $\text{No}_2, \text{So}_2, \text{Co}_2$
79. Having insufficient resources or income is a condition called - Poverty
80. Extreme Poverty which threatens peoples health - absolute poverty
81. The collecting of rain water directly into ground to improve ground water is called - rain water harvesting
82. Name the state which stands first in implementing rain water harvesting - Tamil nadu
83. No of islands present in the Gulf of Mannar - 21
84. Name the substance which is not decomposed by microbes - plastic
85. The biosphere reserve rich in plant diversity - Nilgiri Biosphere reserve
86. The genetically engineered bacteria is called - Super bug
87. Name the organism which are capable of degrading toxic substances and degrades oil - Pseudomonas
88. In reuse and recycling techniques, the melting of metals can be recovered by - 39%

3 Mark Questions

1. What is meant by Demography?

The field of collecting, compiling and presenting information about population is called demography.

2. Differentiate the rate of population growth with the rate of food production.

a) The rate of population growth will be more than the food production

b) Population grows geometrically (1, 2, 4, 8) rather than the food production which grows arithmetically (1, 2, 3, 4)

3. Define the birth and death rate.

Birth rate is the number of birth in a year per thousand people.

Death rate or mortality is the number of death per thousand person in any given year.

4. What is meant by zero population Growth?

Zero population Growth rate is the number of births by which people are replacing themselves.

5. What is meant by Population Explosion ?

The size of the population is nearly quadrupled in the span of 100 years. This sudden acceleration of population is called as Population Explosion

6. What is meant by Total Fertility Rate?

Total fertility rate is the number of children born to an average woman during her entire reproductive life.

7. What is Global Warming?

Global warming refers to an average increase in the earth's temperature, which in turn causes changes in climate. The average temperature of earth is about 59°F (15°C). During the last century this average has risen by about 1°F.

8. What is meant by green house effect?
The trapping of energy from sun by certain gases in the atmosphere leading to rise in earth's temperature is known as green house effect. Eg : Water vapour, CO₂, CH₄, Nitrous oxide
9. What is meant by Ozone hole?
The part of the atmosphere where Ozone is most depleted is referred as Ozone hole.
10. List out the basic substances for the cause of Ozone depletion.
* The Chloroflouro Carbons, Nitrogen Oxides, Methyl bromide released due to human activities.
* Chlorine and bromine compounds formed in the atmosphere.
11. What are the effects of Ozone depletion ?
Effect on Plants - will affect crop yield and forest productivity.
Effect on animals - will cause damage to fish larvae and other small animals.
Effect on human health - Melanoma, acute Erythema, cataract, poor immune responses.
12. What is Bio diversity ?
Biological diversity means the variability in living organisms from terrestrial, marine and other aquatic ecosystems and the ecological Complexes of which they are parts.
13. What is Bioremediation?
Cleaning the environment with biological options such as microbes and plants is called Bioremediation.
Eg : 1. Certain plants such as *Gibberella fusarium* break down cyanide to a non - toxic form.
2. Bacteria (*Pseudomonas*) - Super bug degrades oil spills & variety of toxic compounds.
14. What is meant by recycling?
The separating out of materials such as rubber, glass, paper and scrap metal from refuse and reprocessing them for reuse is named as recycling.
Eg : Paper can be reprocessed to form card board. Plastics can be remelted to form plastic sheet etc.

15. List out the Bioreserves in India.

1. Gulf of Mannar Biosphere Reserve - Tamilnadu.
2. Nilgiri Biosphere Reserve - Tamilnadu
3. Nokrck - Meghalaya
4. Namdapha - Arunachal Pradesh
5. Nanda Devi - Uttar Pradesh
6. Sundarbans - West Bengal.

16. What is a Bioserve?

A biosphere reserve is a unique concept which includes one or more protected areas and surrounding lands that are managed to combine both conservation and sustainable use of natural resources.

17. What is Geothermal energy?

Geothermal energy gives a significant source of electricity in the Indian ocean and the Pacific regions. Geothermal plants make use of naturally heated steam drawn to the surface through a series of bore holes.

18. What is relative poverty?

A condition of having fewer resources or less income than others within a society on country when compared to world wide averages is known as the relative poverty.

19. What is meant by seeding clouds?

Dry ice or potassium iodide is seeded on water laden clouds. It can initiate rain sometimes.

20. What is Nuclear energy?

The evolution of huge amount of energy through nuclear fission and nuclear fusion is called Nuclear energy. It is considered to be economically feasible for the present and the near future.

21. Define reverse Osmosis.

Forcing water under pressure through a semi permeable membrane whose tiny pores allow water to pass but exclude most salts and minerals.

22. Name the wastes degraded by biological action.
Agricultural products, animal wastes, leather, fibre, paper, wood etc.
23. Name the wastes which is not decomposed by microbes.
Mineral waste, mining waste, industrial waste, non - degradable metallic and plastic substances.
24. List out the hazardous wastes?
Radioactive refuse, metallic, compounds, organic solvents, acid asbestos, organic cyanides, pathological hospital waste, disposable medical equipments and tools.
25. What are super bugs?
The bacteria, pseudomonas, nick named as 'Super - bug' are capable of degrading variety of toxic compounds and also degrade oil. These are genetically engineered micro organism.
26. Define MAB
The MAB (Man and Biosphere) was launched in 1971 to catalyse a greater understanding and provision of knowledge and skills to support sustainable relationship between people and their environment.
27. Define Energy crisis
Energy crisis is due to the increase in population rapid urbanization and industrialization.
It appears that we will run out of petroleum and natural gas by 2020.
28. What are the advantages of wind power?
 - i) Power generation is cheaper.
 - ii) Free from pollution and environmental degradation
 - iii) Since generation is continuous unlike in diesel power, investment is never idle.
29. What is carbon sequestration?
 - # Trees, take up CO_2 break it down in photosynthesis and store carbon in new wood.
 - # CO_2 can also be sequestered directly into deep ocean water or into oil wells from which it cannot escape.
30. Why hydrogen is called the source of power for future?
 - # It is a good choice among all the alternative fuel options. It is more efficient than petrol fuels.

- # It can be produced in unlimited quantities and it is cheapest.
- # Hydrogen is nontoxic, safe to handle and easier to distribute.

31. What are the advantages of solar energy?

- # It is a kind of universal, decentralized and non - polluting energy.
- # It helps in maintaining the ecological balance through photosynthesis and green house effect.
- # It has none of the disadvantages found in the combustion of fossil fuels such as coal, oil or gas.

5 MARK QUESTIONS

1. Write short notes on growing population and its impact on environment.
2. List out the effects of global warming
3. "Ozone is a natural sun block" - Discuss.
4. Write short notes on waste water treatment and management
5. Explain the reasons for freshwater shortages
6. Briefly describe the reasons for decline of bio diversity.
7. What are the measures to eradicate poverty?

10 MARK QUESTIONS

1. Write an essay on green house gases and their impact on the environment.
2. How will you manage hazardous wastes?
3. What is known as Energy Crisis? What steps to be taken to solve energy crisis?
4. "Conservation of Fresh water" - Discuss.
5. Give an account of poverty.

6. APPLIED BIOLOGY

1. Name one excellent fighter among hens - Aseel
2. What is the instrument used to count blood cells - Haemocytometer
3. What is the instrument used to measure blood pressure? - Sphygmomanometer.
4. Name the breeds that are thriving well in dry areas - Leghorn
5. Name the instrument used to hear sounds of heart and lungs - Stethoscope.
6. RBC diluting fluid - Hayem's Solution.
7. WBC diluting fluid - Turk's or Toisson solution.
8. ICAR - Indian council for Agricultural Research.
9. Cattles belong to the genus - Bos
10. Example for Dual purpose - Ongole
11. Example for Draught purpose - Kangayam
12. The origin of Sindhi - Hyderabad
13. The origin of Hallikar - Karnataka
14. The cattle disease which are of bacterial origin - Anthrax
15. The First aid given for milk fever feeding Jaggery along with lime water
16. Evacuating the rectum by giving warm soap water - Constipation
17. Plymouth rock is a American breed
18. The most popular and commercial breed in India - Leghorn
19. The common country hen of India which is the best mother for hatching - Desi
20. Aseel breed is abundant in which state - Andhra Pradesh
21. What is the incubation period of chickens - 21-22 days

22. Which vitamin has been used for growing Hen Chicks - Vitamin D
23. Pisciculture Means - Aquaculture
24. In Pond, how many percentage of fish production takes place - 60%
25. Cat fish other name - Keluthi
26. Striped snake head - Channa Striatus
27. Stethoscope was first invented in the year - 1855
28. The word sphygmus derived from which language - Greek
29. The pressure that occurs in heart relaxation - Diastolic pressure
30. The Normal blood pressure value of human - 120 / 80 mm Hg
31. Hypotension means - Low blood pressure
32. Normal range of RBC in Men - 4.5 - 5.9 Million / mm³
33. Which device used to measure blood glucose level - Digital Glucometer
34. A Normal 5 wave designated of ECG form left to right - P,Q,R,S,T
35. CT Combines the use of - X ray and digital computer
36. Which cow's ears are look like a long leaf - Gir
37. Which cow have high carotene content in milk - Jersey

38. Which disease followed by blood discharge from natural opening of animal
- Anthrax
39. The disease which cured by high content of Jaggery or salt - Constipation
40. The Breeds are single combed and produces large size egg - Plymouth rock
41. The breed which have pea comb - Brahma
42. Which hen have black flesh - Karaknath
43. The standard combination of NPK in fresh water pond - 18 : 10 : 4
44. Of all the carps, this is the tastiest fish - Rohu
45. The order name of cat fish - Siluriformes
46. Exotic fish introduced from Africa - Tilapia
47. The fish keeps the fertilized eggs guarded in its mouth - Tilapia
48. Milk fish - Chanos Chanos
49. Decreased RBC - anaemia
50. Increased RBC - Polycythemia
51. Increased WBC - Leukemia
52. Which are Brackish water fish - Madavai, Koduva
53. How many worker bees are located in the nest of the honey bee 10,000 to 30,000
54. The surplus glucose appears in urine and this condition is Glycosuria
55. In diabetes mellitus, the level of glucose in urine is 280 Milli Moles / L

56. Which method is used for identification of urine sugars Chromatography
57. Who was awarded the nobel prize for ECG ; Einthovan
58. The duration of P - Wave in ECG 0.1 sec
59. The duration of T - Wave in ECG 0.27 sec
60. The Artificial pacemaker is made up of Lithium Batteries
61. The Stomach, Lungs and abdominal organs are analyzed by a technique called Laproscopy
62. Which honey bee nest method does not introduced in India ! Newbar
63. What is used to hear the foetal sound in mother's womb? electronic stethoscopes
64. This cattle breed head is usually long with bulging forehead and a prominent furrow in the middle . Hallikar
65. Which of these does not belonging to exotic breeds of cattle? Gir
66. Honey extractor is used to extract honey in the nest of honey bee
67. The Rearing of silk worm is called sericulture
68. The origin of sindhi Karachi Hyderabad
69. Viral diseases attacking cows foot and mouth disease
70. Bee Venom is useful to cure Rheumatism
71. The Heart pacemaker SA Node
72. Brooding is the care of young chicks and it takes hatching for four to six weeks

73. Venous blood used for counting blood cells
74. Endoscopy is a method of examining the interior cavity or hollow organs
75. Nosema diseases is caused by a protozoan
76. Mulberry silk is superior in quality
77. Which belong to exotic breeds_cornish
78. The breeds originated from european mediterranean sea_minorca
79. Catfish have no scales
80. Sugars are generally known as reducing substance
81. These breeds are most economical milk producer and low cost of breed in India
Red Karachi or sindhi
82. The other name of sindhi, Red Sindhi, Red Karachi
83. The diseases haemorrhagic septicemia - Bacterial disease
84. Bee wax used in pharamaceutical and perfume industries.
85. The female silkmooths lay about 300 - 400 egg.
86. Apitherapy of products from the bees promote health and healing.
87. Aseel is the birds breed noted for pungnacity
88. Antheraea mylitta produces Tasar silk
89. Tilapia breeds nearly eight times in a year
90. In ECG positive waves are P, R, T

91. The duration of Q R S wave in E C G is 0.08 sec
92. Sindhi cows are hard and have high degree of resistant to heat and ticks
93. The muscardine disease in silk worm caused by fungal infection
94. The optimum temperature f0r maintaining larvae is 70-75° F
95. The hatched chicks of first three days have an optimum temperature of 33° C
96. Accessory Respiratory organ in channa marulius
97. Which cow does not used for both purpose karan swiss
98. Fishes contain more vitamin A and D
99. Royal jelly is a salivary secretion of the worker bees
100. Bee bread contain pollen and royal jelly
101. Bee venom can be used as medicines for subcutaneous infection
102. Acarine diseases attack respiratory system trachea of the bee
103. Pebrine diseases caused by protozoan
104. High blood pressure level 160/95mm/Hg
105. Lot of diaganstic information can be gained from alteranation in Q R S wave
106. Sindhi have intelligent facial expression
107. Karaknath, the comb, wattles, and tongue are purple in colour

Three mark

1. What are the control and preventive measures of cow-pox disease ?
 - * Segregation of affected animal
 - * Giving sloppy food of swallowing and digestion
 - * Giving saline laxative and diuretics
2. What are the nutrients found in the fishes ?
 - * Easily digested
 - * Calcium, phosphorus, iron, sodium, potassium, magnesium and Iodine salt
 - * Vitamin A and vitamin D
3. What are the advantages of artificial insemination in cattle ?
 - * It permits long distance transport of semen
 - * It avoids spreading of genetical disease
 - * It increase the rate of conception
4. Name any four brackish water fishes ?
 - * Chanos chanos
 - * Grey mullets
 - * Pearl spots
 - * seabass
5. Write the symptoms of milk fever?
 - * Staggering
 - * Loss of appetite
 - * Pulse rate become high
6. Define cross breeding ?

Cross breeding is mating of animals of different breeds
It is a valuable means of introducing desirable characters
Into new breeds they have not existed formerly



7. Mention any 4 breeds of indigenous fowls in India?
Chitragong
Aseel
Karaknath &
Busra
8. What is Brooding?
Brooding is the care and management of young chickens for 4 to 6 weeks.
Immediately after hatching brooding. These are of two types
* Artificial
* Natural
9. What are the cultivable common carps?
* Catla,
* Rohu
* Mrigal
10. Uses of stethoscope :-
* Stethoscope helps to find (lub - dub) versus abnormal heart sounds
* Stethoscope are also used to compare movements in normal versus overactive or underactive intestinal tract
* Stethoscope can indicate fluid in lungs in case of pneumonia and pulmonary edema.
11. What is computed Tomography (CT) scan
* "(CAT)" Scanning combines the use of a Digital computer together with rotating x-ray device to create detailed cross sectional images (or) slices of the Different organs
12. Define urine analysis?
* The examination of the urine is called urine analysis. It Provides the valuable picture of general health pattern of a patient
13. How are the fish ponds categorised?
* Nursery pond,
* Rearing Pond,
* Production Pond,
* Breeding pond

14. Define dual purpose breeds?

Breed of cattle are meant for both milk yielding and draught work.

The cows are fairly good milkers and are useful in draught like. transport, cart pulling etc.,

15. What are the points to be considered during selection of eggs?

The egg should be fertile over sized and small sized eggs should not be selected. Medium sized egg should be selected. Eggs should be freshly laid

16. What are the uses of sphygmomanometer?

- * It helps to estimate state of blood circulation
- * It helps to diagnose hypertension
- * It help to diagnose hypotension

5 Marks :

1. Write short notes on poultry by - products ?
2. Write notes on Artificial insemination?
3. Write a brief account on incubations & hatching of hen?
4. What are the characters of cultivable fish?
5. Write any five uses of CT Scan?
6. Advantages & Disadvantages of auto analyzer?
7. Write short notes on Natural & Artificial Pacemaker?
8. Symptoms & prevention of cow pox?

10 Marks :

1. Write an essay on edible fishes in Tamilnadu?

2. Write an essay on contagious and Non contagious diseases of cattle?
3. What are the factors to be considered while brooding the hatched chicks?
4. Explain the waves in ECG?
5. Based on their origin classify and describe the four major exotic breeds of fowls?
6. Give an account of Indigenous breeds of fowl?
7. Explain the Poultry farming method?
8. Write a detailed account on the preparation of fish pond? Explain its types?

7.THEORIES OF EVOLUTION

One Marks

1. The book "philosophic zoologique" was published by
Ans : Jean Baptiste de Lamarck
2. The ancestors of modern giraffe were small they lived in the grassland of
Ans : Africa
3. Learning is an acquired character that can be inherited was proposed by
Ans : MC Dougall
4. Temperature related changes in the body of mice was noted by...
Ans : F.B.Sumner
5. The ship travelled by darwin was
Ans : H.M.S. Beagle
6. The collection of gene in a population is referred to as
Ans : Gene pool
7. A Population is defined as assemblage living beings showing
Ans : Closely interacting system
8. Founder of new population phenomenon is termed as.....
Ans : Founder principle

9. Environment operates in response to gradual changes in the
Ans : Directional selection
10. The natural biological unit is
Ans : Species
11. The closely related species living together is known as
Ans : Sympatric Species
12. Species occupying different geographical area are.....
Ans : Allopatric species
13. Process of organic evolution suggest five basic process was proposed by
Ans : G.L.Stebbins
14. The small population evolved into new species. This type of genetic drift
Ans : Bottle Neck effect
15. Mutation enrich the gene pool with a new.....
Ans : Modified Genes
16. This, disorder is inherited as mendelian recessive. It is more frequent in
Ans : American black
17. MC. Dougall supported neo - Lamarckism and proved the concept of
Ans : Speed of learning increased from generation to generation
18. Through which of the following concept darwin explain his theory of evolution
Ans : Survival of the fittest
19. Lamarck proposed - Inheritance of acquired characters
20. Mutation are considered as the raw materials for help to create variation in population
21. The process of evolution operates at the species level only

22. Allison was shown that in Africa the same allalic gene protected the inheritors of such gene from Malaria
23. Concept of Neodarwinism was supported by - Haxley
24. Germ Plasm theory was proposed by - August weismann

3 Marks

1. Slate the Theory of lamarckism :
The theory of inheritance of acquired characters states that modification or changes acquired during the life time of an organism can automatically be transmitted to succeeding generations.
2. Process of Evolution factors :
Process of organic evolution (1971) suggests five basic processes essential for evolution. They are 1. Gene Mutations 2.Chromosomal aberrations 3.Genetic recombination 4.Natural selection and 5.Reproductive isolation. Contributions made by other provided additional factors such as 6.Hardy - weinberg equilibrium, 7. Genetic Drift 8.Polymorphism
3. Define the law of use and disuse.
 - i) Constant use of an organ changes its efficiency and makes that organ to increase in size with better development.
 - ii) Similarly if an organ is not used for a long time, it might lead to reduction in efficiency & size of that organ.
4. Define Hardy - Weinberg's law.
According to this law the relative frequencies of various kinds of genes in large and randomly mating sexual population tend to remain constant from generation to generation in the absence of mutation, selection and gene flow or migration.
5. What is bottle Neck effect?
 - i) Sometime genotypic frequencies may get changed in a small population separated temporarily due to Natural calamities.
 - ii) The small population might have evolved into a new species. This kind of genetic drift is referred to as bottle neck effect.

6. What are the types of natural selection in operation?

There are three types of selection processes in operation. They are,

- i) Stabilizing
- ii) Directional &
- iii) Disruptive selection.

7. Define Polymorphism?

When a disruptive selection produces more than one phenotype within a population the phenomenon is called polymorphism.

8. What is speciation?

A species is a Natural, biological unit, among the various taxa, a species is not man made. It is a Natural reality.

9. Define Germ plasm theory?

According to 'Germ Plasm theory' any change in the somatoplasm will not have an influence over the Germ plasm.

10. What is meant by chromosomal aberration?

During the process of meiosis one or more chromosomes may break and such broken fragment of chromosomes may be subjected to several modified organizations.

11. State law of Genetic Drift?

- i) In a small population not all alleles which are representatives of that species may be present
- ii) A chance event may increase the frequency of a character
- iii) Thus genetic drift is a factor in the origin of new species on island. that has little adaptive value.

12. What is meant by gene pool?

A gene pool comprises diverse forms of a gene. Combining & recombining by the process of sexual reproduction

13. Define law of inheritance of acquired characters?

Bodily changes obtained by an organism during life time will automatically get inherited to next generation.

14. What is meant by survival of the fittest?

While all living organisms face the struggle for existence
Certain organism possessing adequate modification are able to escape or survive.
Such modification are due to inherent variations.

5 Marks

1. Explain Germ plasm theory
2. Explain two experiments conducted to support neo lamarckian concept.
3. Mention various objections to Darwinism.
4. Explain Chromosomal aberrations.
5. Describe Hardy - Weinberg equilibrium
6. Sewal wright (or) Genetic drift Explain.
7. Write notes on polymorphism.
8. Describe various methods of isolating mechanism.
9. Define speciation and mention the types.
10. Describe the modern concept of natural selection?

8.Lesson : AQUACULTURE

1. China was first practiced in aquaculture
2. Salinity of fresh water $< 0.5\%$
3. Culture of different species of fishes together is called composite fish culture
4. Sport fish culture - cold water fish
5. Ducks are known as living manuring machines
6. The giant fresh water prawn *macrobrachium rosenbergii*
7. Harvesting pit is used to capture the cultured fish.
8. The hatched tiny fish less than 2.5cm in total length - fry
9. The suitable temperature for different fishes varies from 10°C to 37°C
10. Ideal p^{H} range for pond water is 6.5 to 9.0
11. The suitable hardness for the growth of fish in pond water is 15ppm
12. Indian major carp another name catla catla
13. Tastiest fish labeo rohita

14. Tilapia is an exotic fish.
15. Tilapia exhibit buccal incubation
16. Macrobrachium the species can be identified by 1 to 8 horizontal lines on carapace
17. Injection to breeder, male fish for the first dose of 2.3 mg / kg of body weight of recipient fish
18. Dropsy is caused by bacterium
19. Costiasis caused by a protozoan parasite
20. Guppy is an exotic variety originating from central America.
21. Siamese fighting fish native Thailand
22. Gold fish are the earliest domesticated ornamental fish.
23. The optimum salinity range for mariculture is 30-35‰
24. Crossostrea madrasensis is the common edible oyster of India.
25. The optimum salinity range for edible oyster is 10-32‰
26. The scientific name of pearl oyster is Pinctada fucata
27. In India cultured pearls were produced for the first time at Tuticorin
28. Optimum salinity range of pearl oyster is 30‰
29. Seaweeds are called medicinal food of 21st century
30. Large scale seaweed culture in China
31. The optimum salinity range of brackish water culture is 0.5 - 30‰
32. Scientific name of sea bass Lates calcarifer
33. The popular name of seabass in Tamil Nadu Koduva
34. Brine shrimp are cultured in Metahaline
35. Brine shrimps scientific name Artemiasalina

- 36. Sapro legniasis symptoms _ulceration or exfoliation of skin, blindness and hamorrhage
- 37. In the absence of natural food macrobrachium rosenbergii ate their own young one.
- 38. Hypophyostation process of stimulating the breeding activity of fish of reproduction.
- 39. Siamese fish are adapted to live in low oxygen levels.
- 40. The seed of oysters cultured method is spat
- 41. The prawns cultured by installing bamboo or nylon enclosure called pens
- 42. The preserved pituitary glands softened in an instrument called homogenizer
- 43. Gill rot disease symptoms are small red spot on gill filament
- 44. Marine ornamental fishes culture more than 300 species
- 45. Sapro legniasis common water mould disease.
- 46. Raft culture usually culture oyster
- 47. Chinese in 3500 BC raised carps in ponds

3 Marks

1. Define Brackish water culture?
 Brackish water is saltier than fresh water but not as salty as sea water.
 The culture of aquatic organisms in saline water having salinity range 0.5 - 30‰ is known as brackish water culture.
2. Significance of edible oyster?
 Oyster meat is Nutritious and consist of 52% Protein, 14% Glycogen and 11% fat
 Good for skin care numerous heart ailments blood pressure, liver problem arthritis.
3. What is aquaculture?
 It is a branch of science. It deals with the forming of economically important aquatic organism and plants under controlled and in a confined environment.
4. What are the major kinds of aquaculture?
 Fresh water culture
 Marine culture
 Brackish culture
 Metahaline culture
5. What is mono sex culture?
 In mono sex culture male and female fishes of individual species are cultured separately to enhance growth and yield.
6. What is composite fish culture?
 Culture of different species of fishes together is called composite fish culture. It is also known as poly culture.
7. What is integrated fish culture?
 Culture of fish along with agricultural crops such as paddy, Banana and coconut live stock such as poultry stock, cattle and pigs is known integrated fish farming.
8. What are the bunds? Mention the types?
 Bunds are the protective structure of the pond
 Main bunds
 Bunds holding water on one side
 Bunds dividing two adjacent ponds
9. What are the component of typical pond?
 Bunds, Harvesting, Inlet and outlet

10. What is berm or Benchline?

If the production pond more than 0.5 ha. A platform like space between bounds and water area should be made available. This area is known as berm or Benchline.

11. What are the types of ponds based on utilization?

Hatching pit
Nursery pond
Rearing pond
Stocking pond

12. What is called happa?

In hatching pit fine mesh net is called happa. It is rectangular in shape. It is held on four bamboo poles.

It prevents the escape of laid eggs and protect egg from the predators.

13. What is aquarium?

Established of glass tanks in which living colourful ornamental fish and plants are kept for exhibition is known as aquarium.

14. What are bouchots?

In pole culture wooden poles are placed up right in the intertidal zone in this method rope with spat attached would around large verticle poles are called bouchots.

15. Expand the abbreviations?

CMFRI - Central Marine Fisheries Research Institute
CIBA - Central Institute of Brackish water Aquaculture
CIFA - Central Institute of Fresh water Aquaculture

16. What is hypophyostation?

The hypophyostation is the process of stimulate the breeding activity of fish through the injection of pituitary extract resulting in the release of eggs and sperms from the ripe gonads. It is performed by a technique called hypophyostation.

17. Define costiasis?

It is caused by a protozoan parasite bluish mucous coating on the skin, fin and gills are the symptoms of the disease.

18. Write the symptoms of viral haemorrhage septicaemia

General anaemia
Discolouration of Gills
Swelling of Eyes

5 Marks

1. What are the prospects of Aqua culture?
2. Write short notes on integrated fish culture
3. Write short notes about catla catla
4. Give an account of fish diseases
5. Give an account of bionomics of fresh water prawn
6. Write short notes on sea bass
7. What are the main environmental and public health concern regarding aqua culture.

10 Marks

1. Give an account of types of fresh water culture.
2. Explain the physio - chemical and biological factors for pond fish culture.
3. Describe the techniques of induced breeding in fish culture.
4. Write an essay on fresh water ornamental fishes.
5. Describe mariculture in detail.

Model Question Paper

Part - A

- I. Choose the best answer 16 x 1 = 16
1. The wall of stomach is protected from HCL by

a) Pepsin	b) Renin	c) Mucous	d) lipase
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 2. Who first developed vaccine for rabies in man?

a) Robert koch	b) Joseph lister	c) Louis pasteur	d) stanley
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 3. Which one of the following is a protozoan disease

a) African sleeping sickness	b) Measles	c) Cholera	d) Taeniasis
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 4. Y chromosome belongs to the group

a) A	b) D	c) E	d) G
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 5. which one of the following play an important role in pollination of trees in tropical forest?

a) Mimic moths	b) Orchid bees	c) Rhinocerou sheettles	d) Humming birds
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 6. The number of hot spots identified from all over world in

a) 25	b) 26	c) 24	d) 30
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 7. Which is the fastest growing species among the indian major carps

a) Rohu	b) catla	c) Murrels	d) Mirgal
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 8. The book philosophic zoologie was published by

a) charles darwin	b) August weismann	c) MC Dougall	d) Jean baptiste de lamarick
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9. Group of tissue formed around the site of fracture is
 a) Nodes b) Papilla c) rudiments d) callus
10. An oily substance called sebum is secreted by
 a) Sweat gland b) sebaceous gland c) thyroid gland d) tear gland
11. The hyperglycemic hormone is
 a) Insulin b) Adrenalin c) Glucagon d) Thyroxine
12. In chicken embryo techniques of virus culture the eggs are incubated at the temperature of
 a) 32°C b) 36°C c) 30°C d) 34°C
13. Histamine is secreted by
 a) Epithelial cells b) Pathological cells c) mast cells d) Immunoglobulin molecules
14. Albinism is due
 a) Absence of melanin b) Absence of vitamins
 c) Presence of melanin d) Absence of hormones
15. Which one of the following is noted for its pugnacity?
 a) chittagong b) Busra c) Aseel d) Karak nath
16. The viral disease which affects cattle in
 a) anthrax b) Mastitis c) Tuber culosis d) rin derpest

SECTION - B

Note : Answer any eight questions

8 x 3 = 24

17. What are the essential amino acids.
18. What are the types of cataract affect human eye?
19. What are the types of diagnosis of AIDS.
20. Mention the names of secondary lymphoidal organs.
21. Differentiate epitope from paratopes.
22. Mention any two uses of karyotyping
23. Define DNA library.
24. write down any three genetical diseases
25. what are the advantages of solar energy?
26. Mention the precaution and first aids of milk fever.
27. list out the advantages of an auto analyser
28. what is meant by "survival of the fittest"?

SECTION - C

Note : Answer any three questions including Q.no:31 which is compulsory 3 x 5 = 15

- 29. Give an account of root-canal treatment.
- 30. write short notes on viral diseases in man
- 31. what are the symptoms of graft rejections?
- 32. what are the uses of recombinant DNA technology.
- 33. Give an account of different types of species.

SECTION - D

Note : Answer any two questions

2 x 10 = 20

- 34. Describe the mechanism of breathing
- 35. Explain the mechanism of urine formation.
- 36. Discuss ozone a natural sun-block
- 37. Explain the stages involved in the rearing of poultry.

ZOOLOGY

Time Allowed : 3 Hours

Maximum marks : 150

Instruction : Check the question paper for fairness of printing if there is any lack of fairness inform the hall supervisor immediately.

Part - I

Note : (i) Answer all the questions

(ii) Choose and write the correct answers.

$$30 \times 1 = 30$$

- Concentration of oxygen and carbon di oxide in the atmosphere are respectively in
a) 20-25% and 0.04% b) 25-30% and 0.05%
c) 25-30% and 0.04% d) 15 - 200% and 0.05%
- The artery which supply oxygenated blood to the muscles of heart is
a) aorta b) pulmonary artery c) coronary artery d) coronary sinus
- Bio synthesis of urea occur in
a) Blood b) Liver c) cerebrospinal d) Kidney
- The enzyme required for the synthesis of melanin in
a) Tyrosinase b) Amylase c) lipase d) carboxy peptidase
- Defect in cornea or lens cause
a) presbiopia b) Myopia c) Astigmatism d) Hypermetropia
- Genetically engineered super bug is
a) bacillus subtilis b) escherechia coli c) Pseudomonas d) Mycobacterium
- The killer disease caused by dominant gene is
a) Albinism b) Huntington chorea c) sickle cell anaemia d) Thalassemia
- Dolly the cloned sheep was produced by
a) dr.Ian wilmut b) R.Briggs and T.King c) Bayer and king d) J.Gurdon
- The carcinogenic substance used in the production of solar cell is
a) Pollonium b) uranium c) radium d) cadmium
- The european breed first introduced in india is
a) Hallikar b) Ongole c) Jersey d) gir
- The german scientist who segregated germ plasm from tomato plasm for the first time was
a) Lamarck b) malthus c) weismann d) hugo de vries
- The factor which enrich gene pool is
a) Gene mutation b) somatic variations c) Tilapia mosambica d) Labeo bata
- which of the following in fresh water prawn.
a) Tilapia mosambica b) Labeo rohita c) Macrobrachium rosenbergii d) Labeo bata

14. Aquaculture is stated by
a) Japanese b) Chinese c) Russian d) Indian
15. The pearl producing species are
a) Chauna striatus b) Cirrhina mrigala c) Labeo rohita d) Pinctada fucata
16. Which one of the following is an anti-oxidant
a) Vitamin A1 b) Vitamin D1 c) Vitamin E1 d) Vitamin C
17. The normal fasting blood glucose level is
a) 70 to 110 mg/dl b) 80 to 200 mg/dl c) 100 to 150 mg/dl d) 200 to 250 mg/dl
18. Bacterium which causes ulcer is
a) salmonella typhi b) Helicobacter
c) mycobacterium tuberculosis d) pneumococcal
19. The treatment of fracture and limp was first described by
a) william harvey b) hanson and huxley c) Hippo crates d) christian bernard
20. The neuro transmitting substance present at neural function is
a) acetyl choline b) ptyalin c) adrenalin d) nor- adrenalin
21. The first success with test tube babies was achieved by
a) England b) India c) Srilanka d) Italy
22. A system of anti septic surgery was discovered by
a) Louis pasteur b) joseph lister c) Robert koch d) Charles darwin
23. Inflammation of tissue is caused by
a) Destruction of mast cells b) Phago cytolysis
c) mal nutrition d) Gene mutation
24. SCID persons lack one of the following blood cells,
a) Lymphocytes b) Erythrocytes c) Thymocytes d) Thrombocytes
25. The first lymphoidal organ developing in animal is
a) Spleen b) Thymus c) Thyroid d) Liver
26. The famous commercial fowl in India is
a) Busra b) chittagong c) plymouth rock d) leg hora
27. Variety which keeps the fertilized eggs in its mouth is
a) Murrels b) cat fishes c) mrigal d) Tilapia
28. Solution used to dilute for counting RBCs is
a) Turk's solution b) Benedict's solution c) Toisson solution d) Hayem's solution
29. protozoan disease of honey bee is
a) chalk brood b) see brood c) american foul brood d) Nosema
30. Superior quality of silk is produced by
a) bombyx mori b) antheraea c) Attacus ricini d) antheraea assama

PART - II**Note : Answer any 15 questions****15 x 3 = 45**

- 31.State the functions of lipids.
- 32.What is herring - breuer reflex?
- 33.Differentiate embolus from thrombus?
- 34.Enumerate the functions of parts of cerebellum.
- 35.what is corpus luteum?
- 36.what is optometry?
- 37.what is pure culture technique?
- 38.Differentiate epitope from paratope.
- 39.what is pedigree analysis?
- 40.what is gene therapy and what are its type.
- 41.Mention steps to prevent global warming.
- 42.How will you identify a healthy cattle.
- 43.What is incubation mention its type.
- 44.What is royal jelly.
- 45.Name the types silk.
- 46.What are the uses of sphygmomanometer?
- 47.What is founder principle?
- 48.define integrated fish culture.
- 49.what is hypostation?

PART - III**Note : Answer any seven questions, 56 is compulsory****7 x 5 = 35**

- 50.Describe the different types of arthritis.
- 51.Describe the Mechanism of reflex action with diagrams.
- 52.Describe the various types of animal viral culture.
- 53.write short note on strobila of tapeworm.
- 54.Describe the types of graft.
- 55.Ozone is a natural sun block - Discuss.
- 56.Discuss the reason for the depletion of Bio-diversity.
- 57.write about various techniques adopted in cattle breeding
- 58.what are the uses of CT scan
- 59.Describe three types of natural selections.
- 60.write note on diseases in fishes.
- 61.Describe the method of sea weed culture.

PART - IV

Note : Answer any four questions

$$4 \times 10 = 40$$

63. Describe the mechanism of breathing
64. Write an essay on hearing loss and the correcting measures adopted.
65. write an essay on composition of blood.
66. Give an account on bacterial disease in man.
67. write about preparation of karyotyping types of chromosome and its uses.
68. Conservation of water - Discuss
69. Describe the life cycle of silk worm
70. Give an account on any five fresh water ornamental fishes.

பகுதி - II (விலங்கியல்) / PART - II (ZOOLOGY)

(மதிப்பெண்கள் : 75) / (Marks : 75)

பிரிவு - அ / SECTION - A

குறிப்பு : (i) அனைத்து வினாக்களுக்கும் விடையளிக்கவும்.

16x1=16

(ii) சரியான விடையைத் தேர்ந்தெடுத்து எழுதவும்.

Note : (i) Answer all the questions.

(ii) Choose and write the correct answer.

1. இரைப்பையில் HCl அமிலத்தை சுரக்கும் செல்கள்

(அ) செர்டோலி செல்கள்

(ஆ) சுவர் செல்கள்

(இ) ஆல்ஃபா செல்கள்

(ஈ) லியூகோசைட்டுகள்

In stomach, HCl is secreted by :

(a) Sertoli cells

(b) Parietal cells

(c) Alpha cells

(d) Leucocytes

2. புற்றுநோய் எதிர்ப்பு எதிர் நுண்ணுயிரி மருந்துகள் எந்தத் தொகுதியைச் சார்ந்தவை ?

(அ) கரைசியோஃபல்வின்

(ஆ) இமிடசோல்

(இ) ஆந்த்ரோமைசின்

(ஈ) டெட்ராசைக்ளின்

Antitumour antibiotics belongs to the group :

(a) Griseofulvin

(b) Imidazole

(c) Anthromycin

(d) Tetracyclin

3. எந்த வகை ஆண்டிபாடிகள் எப்சிலான் என்று அழைக்கப்படுகிறது ?

- (அ) Ig G (ஆ) Ig M (இ) Ig E (ஈ) Ig A

Which antibody among the following is called Epsilon ?

- (a) Ig G (b) Ig M (c) Ig E (d) Ig A

4. கீழ் உள்ளவற்றுள் எது இன்ஹிபிசன் எனும் ஹார்மோனை சுரக்கிறது ?

- (அ) லீடிக் செல்கள் (ஆ) செர்டோலி செல்கள்
(இ) கிராபியன் பாலிக்கிள் (ஈ) கார்பஸ் லூட்டியம்

The hormone inhibition is produced by :

- (a) Leydig cell (b) Sertolli cells
(c) Graffian follicle (d) Corpous luteum

5. வைரியானில் ஒரே ஒரு நியூக்ளிக் அமிலம் மட்டும் காணப்படுவதால் அது இவ்வாறு அழைக்கப்படுகிறது.

- (அ) டிப்ளாய்டு வைரஸ் (ஆ) வேரியோலா வைரஸ்
(இ) ஹேப்ளாய்டு வைரஸ் (ஈ) ரெட்ரோ வைரஸ்

Virion containing only a single copy of Nucleic acid is called :

- (a) Diploid virus (b) Variola virus
(c) Haploid virus (d) Retro virus

6. கீழ்க்காணும் கோழி இனங்களில் எந்த வகை கோழி இனத்தில் பெட்டைக் கோழிகள் அதிகம் முட்டையிடுபவையாக இல்லை யெனினும், அடைக்காப்பதற்கு மிகவும் உகந்தது ?

- (அ) அசில் (ஆ) லெக்ஹார்ன் (இ) காரகநாத் (ஈ) சிட்டகாங்

Which among the following breeds of fowls, the hens are not good egg layers but are excellent sitters ?

- (a) Aseel (b) Leghorn (c) Karaknath (d) Chittagong

7. கீழ்வருவனவற்றுள் எது புதுப்பிக்கக்கூடிய ஆற்றல் வளம் ?

- (அ) இயற்கை எரிவாயு (ஆ) புவி வெப்ப ஆற்றல்
(இ) டீசல் (ஈ) விறகு

Which one of the following is a renewable source of energy ?

- (a) Natural gas (b) Geothermal energy
(c) Diesel (d) Timber

8. கீழ்க்காணும் பாக்டீரியாக்களால் உண்டாகும் நோய்களில் எந்த நோயினால் இரத்தத்தின் அமிலத் தன்மையும் அடர்த்தியும் அதிகரிக்கின்றது ?

- (அ) பிளேக் (ஆ) காலரா (இ) டைப்பாய்டு (ஈ) செப்டிமியா

Among the following bacterial diseases, which one results into increase in blood acidity and increase in Haemo Concentration ?

- (a) Plague (b) Cholera (c) Typhoid (d) Septicemia

9. எந்த உணவு செரிமான அமிலம் "ஸ்டீபைஸின்" என்று அழைக்கப்படுகிறது ?

- (அ) நியூக்ளியேஸ் (ஆ) டிரிபஸின்
(இ) லைப்பேஸ் (ஈ) என்டெரோகினைஸ்

Which digestive enzyme is called "Steapsin" ?

- (a) Nuclease (b) Trypsin
(c) Lipase (d) Enterokinase

10. காங்கேயம் இன மாடுகள் தோன்றிய இடம் :

- (அ) பஞ்சாப் (ஆ) கோயம்புத்தூர் (இ) கர்நாடகம் (ஈ) கத்தியவார்

Kangayam breed of cattle are originated from :

- (a) Punjab (b) Coimbatore (c) Karnataka (d) Kathiawar

11. நவம்பர் 2002 முடிவில், உலகம் முழுவதும் உள்ள உயிரிய மிகு வளங்கள் :

- (அ) 12 நாடுகளைச் சார்ந்த 25 இடங்கள்
- (ஆ) 25 நாடுகளைச் சார்ந்த 500 இடங்கள்
- (இ) 45 நாடுகளைச் சார்ந்த 295 இடங்கள்
- (ஈ) 95 நாடுகளைச் சார்ந்த 495 இடங்கள்

At the end of November 2002, the world network of Biosphere Reserves included :

- (a) 25 sites in 12 countries
- (b) 500 sites in 25 countries
- (c) 295 sites in 45 countries
- (d) 495 sites in 95 countries

12. தைராக்ஸின் உற்பத்தியில் குறைவு ஏற்படுவது, தினமும் நாம் உண்ணும் உணவில் எந்த அளவுக்கு கீழ் அயோடின் குறைவு ஏற்பட்டால் ?

- (அ) 10 மில்லி கிராம்
- (ஆ) 10 மைக்ரோ கிராம்
- (இ) 50 மில்லி கிராம்
- (ஈ) 50 மைக்ரோ கிராம்

The synthesis of Thyroxine is impaired, when the dietary intake of Iodine is below :

- (a) 10 milligram
- (b) 10 microgram
- (c) 50 milligram
- (d) 50 microgram

13. கீழ்வரும் நோய்களில் எந்த நோயின் சந்ததி வழித் தொடரினை வரைபடம் மூலம் அறியலாம் ?

- (அ) ஃபைப்ரோசிஸ்
- (ஆ) மல்டிபிள் ஸ்கிளிர்ரோசிஸ்
- (இ) அனாஃபைலாக்சிஸ்
- (ஈ) டீனியாசிஸ்

Which one of the following diseases, history can be drawn by using Pedegree Chart ?

- (a) Fibrosis
- (b) Multiple Sclerosis
- (c) Anaphylaxis
- (d) Taeniasis

14. எந்த வகை புரோகேரியாட்டில் நடத்தப்பட்ட ஆய்வுகள் நவீன மற்றும் மூலக்கூறு மரபியல் தோன்றுவதற்கான வழியை வகுத்தன ?

(அ) பழப்பூச்சிகள் (Drosophila) (ஆ) எஸ்செரிச்சியா கோவை

(இ) TMV (ஈ) வீட்டு ஈ

In which of the following Prokaryote organism the voluminous genetical works been done ?

(a) Drosophila (b) Escherichia coli

(c) TMV (d) House fly

15. சுண்ணாம்பு நீருடன் வெல்லம் கலந்து கொடுப்பது எந்த வகை கால்நடை நோய்க்கான முதலுதவி.

(அ) வயிற்றுப் போக்கு (ஆ) பால் காய்ச்சல்

(இ) மலச்சிக்கல் (ஈ) ஆன்திராக்ஸ்

Feeding jaggery along with lime water is the first aid given for the cattle affected by :

(a) Diarrhoea (b) Milk fever

(c) Constipation (d) Anthrax

16. கற்றலின் தன்மை தலைமுறைக்கு தலைமுறை அதிகரிக்கின்றது என்ற கோட்பாட்டினை கூறியவர் :

(அ) மெக் டூகல் (ஆ) சார்லஸ் டார்வின்

(இ) சம்னர் (ஈ) லாமார்க்

According to whom, the learning is an acquired character :

(a) Mc Dougall (b) Charles Darwin

(c) Sumner (d) Lamarck

பிரிவு - ஆ / SECTION - B

குறிப்பு : எவையேனும் எட்டு வினாக்களுக்கு மட்டும் விடையளிக்கவும்.

8x3=24

Note : Answer any eight questions.

17. பிஸியோதெரபி - வரையறு.

Define the term physiotherapy.

18. விழியின் ஏற்பமைவு (Accommodation) என்றால் என்ன ?

What is meant by Accommodation of eye ?

19. மேல் உறைகள் கொண்ட வைரஸ் மற்றும் மேல் உறைகள் இல்லாத வைரஸ் என்ற இரண்டிற்கும் உள்ள வேறுபாடுகள் யாவை ?

List out the differences between Enveloped virus and Naked virus.

20. செயலாக்க (Active) மற்றும் மந்தமான (Passive) நோய் தடைக் காப்புகளுக்கான வித்தியாசங்களை எழுதுக.

Differentiate Active Immunity and Passive Immunity.

21. நிறைவுறுப்பு DNA (cDNA) என்பது என்ன ?

What is complementary DNA (cDNA) ?

22. செல் விழுங்குதல் என்றால் என்ன ?

What is Phagocytosis ?

23. தலாசீமியாவின் மருத்துவக்கூட அறிகுறிகள் யாவை ?

What are the clinical manifestation of Thalassemia ?

24. ஜீன் சிகிச்சை (மரபணு) என்றால் என்ன? இரண்டு வகை ஜீன் சிகிச்சைகளைக் கூறு.
What is gene therapy ? Mention the two types of gene therapies.
25. சூரிய ஆற்றலின் ஏதேனும் மூன்று சுற்றுச்சூழல் தாக்கங்களை எழுதுக.
Mention any three impact of Solar energy.
26. ஆசிய வகைக் கோழி இனங்களின் பண்புகளைக் கூறுக.
What are the characteristic features of Asiatic breed of Fowl ?
27. கால்நடைகளில் செயற்கை விந்துரட்டத்தின் நன்மைகள் யாவை ?
Mention the advantages of Artificial Insemination in cattle ?
28. வேற்றிட சிற்றினங்கள் மற்றும் ஓரிடச் சிற்றினங்களுக்குள் உள்ள வேறுபாட்டினை எழுதுக.
Differentiate Allopatric and Sympatric species.

பிரிவு - இ / SECTION - C

- குறிப்பு : ஏதேனும் மூன்று வினாக்களுக்கு விடையளி. இவற்றுள் வினா எண் 31 -க்கு கண்டிப்பாக விடையளித்தல் வேண்டும். 3x5=15
- Note : Answer any three questions including question No. 31 which is compulsory.

29. ராம்பன்செஃபலான் பகுதியில் உள்ள உறுப்புகளையும் அவற்றின் வேலைகளையும் குறிப்பிடுக.
Name the parts of Rhombencephalon and mention their functions.
30. விலங்கு வைரஸ்களை வளர்க்கும் செய்முறையான “கோழி கருவுள் வளர்ப்பு” செய்முறையை விளக்குக.
Explain the method of animal virus culture by using ‘Chicken Embryo Technique’.

31. மண்ணீரல் ஒரு புற உடல் அமைவு நிணநீரிய உறுப்பு என்பதை நியாயப்படுத்துக.
Justify spleen as a Pheripheral Lymphoid organ.
32. மறுசேர்க்கை DNA தொழில் நுட்பத்தின் செயல்படுத்தலையும், பயன்பாடுகளையும் வரிசைப் படுத்துக.
What are the applications and uses of Recombinant DNA Technology ?
33. வேறுபட்ட இனங்களுக்கிடையே கலப்பு எவ்வாறு தடுக்கப்படுகிறது. விவரி.
Write down the mechanism that prevents inter specific cross.

பிரிவு - ஈ / SECTION - D

குறிப்பு : எவையேனும் இரண்டு வினாக்களுக்கு மட்டும் விடையளி.

2x10=20

Note : Answer any two questions.

34. இரத்த செல்களை பற்றி விரிவாக விளக்குக.
Give an account on Cellular Components of Blood.
35. பல்வேறு பிறப்புக் கட்டுப்பாட்டு முறைகளை விளக்குக.
Describe the various methods of Birth Control techniques.
36. நன்னீர் நெருக்கடியைத் தவிர்க்க நாம் மேற்கொள்ளவேண்டிய வழிமுறைகளைப் பற்றி ஒரு கட்டுரை வரைக.
Explain various measures to be taken to resolve fresh water crisis.
37. மீன் வளர்த்தல் என்றால் என்ன ? வளர்ப்பிற்கு பயன்படுத்தப்படும் மீன்களின் பண்புகளை வகைப்படுத்துக.
What is Fish farming ? Explain the characters of cultivable fishes.