



SATISH SCIENCE ACADEMY  
DHANORI PUNE - 411015

BIOLOGY  
ENTRANCE EXAM - MHT - CET

**Time Allowed:** 1 hour and 30 minutes

**Maximum Marks :** 100

**Section A**

- 1) The fact that all biomolecules undergo turnover is known as: [1]
  - a) Metabolism
  - b) All of these
  - c) Anabolism
  - d) Catabolism
- 2) Which is the first step in analysis of biomolecules? [1]
  - a) Precipitation
  - b) Extraction
  - c) Reagent reaction
  - d) Staining
- 3) The amino acids are linked together serially by: [1]
  - a) Peptide bonds
  - b) Covalent bonds
  - c) Hydrogen bonds
  - d) Ionic bonds
- 4) Which one is prerequisite for nitrogen fixation? [1]
  - a) Oxygen deficiency
  - b) Nitrite deficiency
  - c) Ammonia deficiency
  - d) Nitrate deficiency
- 5) Those essential element which occurs in 1 - 10 mg/g of dry matter are: [1]
  - a) Toxic elements
  - b) Beneficial nutrients
  - c) Macronutrients
  - d) Micronutrients
- 6) In plant cell, the cytoplasm of the adjacent cells are connected through bridges called \_\_\_\_\_. [1]
  - a) Intercellular bridge
  - b) Plasmodesmata
  - c) Cell membrane
  - d) Intracellular bridge
- 7) Which is the correct dental formula for human? [1]
  - a)  $\frac{1223}{1223}$
  - b)  $\frac{2213}{2213}$
  - c)  $\frac{2113}{2113}$
  - d)  $\frac{2123}{2123}$
- 8) Parodontax toothpaste launched a few months ago that helps to prevent periodontal disease which are caused by microbe named: [1]
  - a) Porphyromonas gingivalis
  - b) Entamoeba gingivalis
  - c) Tannerella forsythia gingivalis
  - d) Escherichia gingivalis
- 9) Genes present in the cytoplasm of eukaryotic cells, are found in: [1]
  - a) Golgi bodies and smooth endoplasmic reticulum
  - b) Lysosomes and peroxisomes
  - c) Plastids and inherited via male gamete
  - d) Mitochondria and inherited via egg cytoplasm
- 10) **Genetics** term was proposed by: [1]
  - a) Mendel
  - b) Morgan
  - c) Bateson
  - d) Johanssen
- 11) Which one of the following trait of pea plants studied by Mendel is dominant? [1]
  - a) Green pod colour
  - b) White pod colour
  - c) Terminal pod colour
  - d) Yellow pod colour
- 12) During protein synthesis, AUG functions as the initiator codon in mRNA. What should be the anticodon on the t - RNA molecule that picks up and brings the amino acid specified by this codon? [1]
  - a) TAC
  - b) GUA
  - c) CAU
  - d) UAC
- 13) Lac operon consists of: [1]
  - a) Only two regulator genes.
  - b) Two regulator gene and two structural genes.
  - c) One regulator and one structural gene.
  - d) One regulator gene and three structural genes.
- 14) Out of 64 codons only 61 codes for the 20 different amino acids. This character of genetic code is called: [1]
  - a) Non - ambiguous nature
  - b) Degeneracy
  - c) Overlapping
  - d) Redundancy
- 15) Out of 64 codons, the number of codons with GGG is: [1]
  - a) 4
  - b) 2
  - c) 1
  - d) 6
- 16) T.O. Diener discovered a: [1]
  - a) Infectious protein
  - b) Free infectious DNA
  - c) Free infectious RNA
  - d) Bacteriophage
- 17) Role of GEAC is to: [1]
  - a) Study the positive effects of GMO's
  - b) Commercialize the new technology
  - c) Bring new technology
  - d) Take decisions regarding GM research and safety of introducing GM genes.
- 18) In hybridoma technology: [1]
  - a) T - cells are fused with myeloma cells.
  - b) B - cells are fused with T - cells.
  - c) C - cells are fused with T - cells.
  - d) B - cells are fused with myeloma cells.
- 19) Gene - gun is suitable for: [1]
  - a) DNA fingerprinting
  - b) Transformation of plant cells
  - c) Disarming pathogen vectors
  - d) Constructing recombinant DNA by joining with vectors.
- 20) Plasmids are extra chromosomal genetic material of: [1]
  - a) Amoeba
  - b) Algae
  - c) Virus
  - d) Bacteria
- 21) Bacillus thuringiensis is used to control: [1]
  - a) Nematodes
  - b) Fungal pathogens
  - c) Bacterial pathogens
  - d) Insect pests
- 22) Pusa RH - 10 is a: [1]
  - a) Long stapled coloured variety of Cotton
  - b) High yielding variety of Sunflower
  - c) Lysine rich amber coloured Wheat variety
  - d) Long and scented grained variety of Rice
- 23) Procedure between the formation of plantlets in culture and establishment of seedlings in the field is called: [1]

- a) Hardening                      b) Somatic transfer  
c) Transgene                      d) Regeneration
- 24) The capacity to generate a whole plant from any cell/explant is called: [1]  
a) Totipotency                      b) Hybridisation  
c) Ex situ                              d) In situ
- 25) Which variety of wheat is used as a donor for high protein? [1]  
a) IR - 8                              b) Atlas 66  
c) Himgiri                              d) Sonalika
- 26) When two unrelated individuals or lines are crossed, the performance of F<sub>1</sub> hybrid is often superior to both the parents. This phenomenon is called: [1]  
a) Metamorphosis                      b) Transformation  
c) Splicing                              d) Heterosis
- 27) The virus commonly used as biocontrol agents are called: [1]  
a) Myxovirus                              b) Retrovirus  
c) Baculovirus                              d) Reo - virus
- 28) In Nostoc, enzyme nitrogenase occurs in: [1]  
a) Only in hormogones  
b) Both Vegetative cells and Heterocysts  
c) Heterocysts  
d) Vegetative cells
- 29) Biogas, produced by fermentation of manure, sewage, cattle dung, etc., predominantly comprises: [1]  
a) Methane and nitric oxide  
b) Methane, nitrogen and hydrogen  
c) Methane and carbon monoxide  
d) Methane and carbon dioxide
- 30) Lactic acid bacteria (LAB) grow in milk and convert it to curd and improve its nutritional quality by increasing: [1]  
a) Vitamin - A                              b) Vitamin - C and A  
c) Vitamin - B<sub>1</sub>                              d) Vitamin - B<sub>12</sub>
- 31) What would happen if oxygen availability to activated sludge flocs is reduced? [1]  
a) The center of flocs will become anoxic, which would cause death of bacteria and eventually breakage of flocs  
b) Protozoa would grow in large numbers  
c) It will slow down the rate of degradation of organic matter  
d) Flocs would increase in size as anaerobic bacteria would grow around flocs
- 32) The free - living fungus Trichoderma can be used for: [1]  
a) Killing insects  
b) Biological control of plant diseases  
c) Producing antibiotics  
d) Controlling butterfly caterpillars
- 33) In gobar gas, the maximum amount is that of : [1]  
a) Methane                              b) Propane  
c) Carbon dioxide                      d) Butane
- 34) Which of the following plants show C<sub>4</sub> anatomy? [1]  
a) Sugarcane                              b) China rose  
c) Pine                                      d) Rice
- 35) The law of limiting factors is given by: [1]  
a) Sachs                                      b) Priestly  
c) Blackmann
- 36) FAD<sup>+</sup> is produced during the conversion of: [1]  
a) Succinic acid to Fumaric acid  
b) Isocitric acid Oxalosuccinic acid  
c) Fumaric acid to Malic acid  
d) Citric acid to isocitric acid
- 37) Which of the following pair act as ETC poison? [1]  
a) Cyanide and FAD  
b) Antimycin and aldehyde  
c) 2:4 Dinitrophenol and alcohol  
d) Cyanide and Antimycin
- 38) Type of pollination in Commelina is: [1]  
a) Chasmogamy                              b) Cleistogamy  
c) Xenogamy                              d) Geitonogamy
- 39) A haploid plant produces male or female gametes by: [1]  
a) Mitosis                                      b) Meiosis  
c) Amitosis                                      d) Binary fission
- 40) Which of the following represents the edible part of fruit of litchi? [1]  
a) Pericarp                                      b) Mesocarp  
c) Endocarp                                      d) Juicy aril
- 41) Which one of the following is surrounded by a callose wall? [1]  
a) Male gamete  
b) Microspore mother cell  
c) Egg  
d) Pollen grain
- 42) When pollen is transferred from anther of a flower to stigma of another flower of the same plant, pollination is referred to as: [1]  
a) Allogamy                                      b) Siphonogamy  
c) Xenogamy                                      d) Geitonogamy
- 43) How many meiotic divisions are required to form 64 pollen grains: [1]  
a) 80    b) 32  
c) 16    d) 64
- 44) In general, pollen tube enters the ovule through: [1]  
a) Chalaza                                      b) Hilum  
c) Funicle                                      d) Micropyle
- 45) Double fertilization (or triple fusion) leading to initiation of endosperm in angiosperms, requires: [1]  
a) Fusion of 4 or more polar nuclei and the second male gamete only.  
b) Fusion of one polar nucleus and second male gamete only.  
c) Fusion of 2 polar nuclei and second male gamete only.  
d) All the above types of fusions in different types of angiosperms.
- 46) Which one shows meiosis: [1]  
a) Archosporium                              b) Root tips  
c) Anther                                      d) Pollen grain
- 47) Filiform apparatus present at micropylar part of the Synergids help in: [1]  
a) Providing nutrition to the embryo  
b) Help in germination of seed

- c) Help in absorption of water  
d) Guiding the entry of pollen tube
- 48) Detritivores break down the detritus by the process called: [1]  
a) Leaching                      b) Humification  
c) Mineralization              d) Fragmentation
- 49) Which of the following type of ecosystem is expected in an area where evaporation exceeds precipitation, and mean annual rainfall is below 100mm? [1]  
a) Grassland                      b) Shrubby forest  
c) Desert                          d) Mangrove
- 50) An ecological succession on bare land proceeds towards: [1]  
a) Increasing wetness              b) Increasing fossils  
c) Increasing dryness              d) Decreasing wetness
- 51) To protect and improve the quality of our environment which act was passed and in Which year? [1]  
a) The environment act 1988  
b) The environment act 1986  
c) The Water (Prevention and control of pollution) act 1974  
d) The Air (Prevention and control of pollution) act 1981
- 52) In a food chain, deers are: [1]  
a) Primary consumers              b) Primary producers  
c) Decomposers                      d) Secondary consumers
- 53) A tree providing food to several herbivores and parasitic organisms will represent: [1]  
a) An upright pyramid of number  
b) An inverted pyramid of biomass  
c) A downright pyramid of number  
d) An inverted pyramid of number
- 54) What's the difference between genetic drift and change due to natural selection? [1]  
a) Genetic drift does not require the presence of variation.  
b) Genetic drift never occurs in nature, natural selection does.  
c) There is no difference.  
d) Genetic drift does not involve competition between members of a species.
- 55) Trilobites were evolved during which one of the following periods? [1]  
a) Precambrian                      b) Silurian  
c) Ordovician                        d) Cambrian
- 56) Which one of the following is considered as common ancestor of old world monkeys, apes and man? [1]  
a) Parapithecus                      b) Shivapithecus  
c) Ramapithecus                      d) Oligopithecus
- 57) Closely related species varying different in traits expresses: [1]  
a) Parallel evolution  
b) Convergent evolution  
c) Divergent evolution  
d) Both Convergent evolution and Divergent evolution
- 58) The extinct human who lived 1,00,000 to 40,000 years ago, in Europe, Asia, and parts of Africa, with short stature, heavy eyebrows, retreating foreheads, large jaws with heavy teeth, stocky bodies, a lumbering gait and stooped posture was. [1]  
a) Neanderthal human              b) Homo habilis  
c) Cro - Magnon human              d) Ramapithecus
- 59) Which of the following provides most evident proof of evolution? [1]  
a) Vestigial organs                      b) Morphology  
c) Embryo                              d) Fossils
- 60) Which of the following will not result in variations among siblings? [1]  
a) Crossing over  
b) Linkage  
c) Mutation  
d) Independent assortment of genes
- 61) Polyploidy can be produced artificially by : [1]  
a) Colchicine                          b) Line breeding  
c) Self pollination                      d) Inbreeding
- 62) In XO type of sex determination:  
i. Some sperms bear X - chromosome whereas some do not.  
ii. The numbers of male and female chromosomes are equal.  
iii. An egg fertilized by sperms having an X - chromosome becomes female.  
[1]  
a) Only (b) is correct  
b) Only (a) is correct  
c) Both (a) and (c) are correct  
d) Both (b) and (c) are correct
- 63) Human skin colour is an example of: [1]  
a) Interallelic interaction  
b) Pleiotropy  
c) Quantitative interaction  
d) Intragenic interaction
- 64) If a genetic disease is transferred from a phenotypically normal but carrier female to only some of the male progeny, the disease is: [1]  
a) Autosomal recessive              b) Sex - linked recessive  
c) Sex - linked dominant              d) Autosomal dominant
- 65) C - peptide of human insulin is: [1]  
a) Removed during maturation of pro - insulin to insulin.  
b) Responsible for its biological activity.  
c) Responsible for formation of disulphide bridges.  
d) A part of the mature insulin molecule.
- 66) A genetically engineered microorganism used successfully in bioremediation of oil spills is a species of: [1]  
a) Trichoderma                          b) Pseudomonas  
c) Bacillus                              d) Xanthomonas
- 67) Which chromosome of human genome contains least number of genes? [1]  
a) Chromosome X                      b) Chromosome Y  
c) Chromosome 12                      d) Chromosome 1
- 68) Which one of the following is a bridge linking childhood and adulthood? [1]  
a) Young age                              b) Adulthood  
c) Adolescence                          d) Puberty
- 69) A cancer causing agent is known as: [1]

- a) Metastasis                      b) Carcinogen  
c) Carcinoma                        d) Sarcoma
- 70) The cytokine barrier among these is: [1]  
a) Monocytes  
b) Interferon  
c) Polymorphonuclear neutrophils  
d) NK - cells
- 71) Cirrhosis of the liver is caused by the chronic intake of: [1]  
a) Cocaine                              b) Opium  
c) Tobacco (Chewing)              d) Alcohol
- 72) Which antibody initiates allergic reaction? [1]  
a) IgD                                    b) IgM  
c) IgE                                    d) IgA
- 73) Development of a vaccine is difficult for AIDS because HIV gene: [1]  
a) Integrates into large number of host genes  
b) Integrates its genome into that of helper T cells  
c) Undergoes reverse transcriptase  
d) Undergoes mutation at rapid
- 74) Antibodies are produced by: [1]  
a) T - cells                              b) Phagocytes  
c) B - cells                              d) Monocytes
- 75) Which substance, when introduced into human body, produces antibodies? [1]  
a) Both of these                        b) Antibody  
c) Histamine                            d) Antigen
- 76) Which of the following disease is caused by virus? [1]  
a) Tuberculosis                        b) Diphtheria  
c) Poliomyelitis                        d) Syphilis
- 77) Drug which depresses brain activity and produces feeling of calmness, relaxation, drowsiness and deep sleep is: [1]  
a) Hallucinogen                        b) Stimulants  
c) Opiate narcotics                    d) Sedative
- 78) Mule is produced by: [1]  
a) Inbreeding  
b) Interspecific Hybridization  
c) Crossbreeding  
d) Selection
- 79) The practice of mating unrelated animals within the same breed, but with no common ancestor on either side of the pedigree for 4 - 6 generation is known as [1]  
a) In - breeding                        b) Out - crossing  
c) Cross - breeding                    d) Out - breeding
- 80) The pre - hypertension blood pressure value is a measurement between: [1]  
a) 100/70 and 120/80                b) 139/89 and 140/90  
c) 120/80 and 139/89                d) 120/80 and 140/90
- 81) Which of the following proteins is involved in blood clotting? [1]  
a) Fibrinogen                            b) Bilirubin  
c) Albumin                                d) Globulin
- 82) Which of the following correctly explains a phase/event in cardiac cycle in a standard electrocardiogram? [1]  
a) P - wave indicates beginning of ventricular contraction.  
b) QRS complex indicates ventricular contraction.  
c) QRS complex indicates atrial contraction.  
d) Time between S and T represents atrial systole.
- 83) The organ of corti is a structure present in: [1]  
a) Cochlea                                b) Semi circular canal  
c) Middle ear                            d) External ear
- 84) Which of the following is true about chemical synapse? [1]  
a) Chemical synapse is primarily responsible for the action of the sympathetic neural system.  
b) Chemical synapse is primarily responsible for the action of the parasympathetic neural system.  
c) There is a lesser gap between membranes.  
d) There is gap between membranes of two axons.
- 85) In rabbit, head of epididymis, present at head of the testis, is called: [1]  
a) Caput epididymis                    b) Cauda epididymis  
c) Gubernaculum                        d) Vas deferens
- 86) In humans, the oocyte is maintained in a state of meiotic arrest by secretion of: [1]  
a) Granulosa cells                      b) Zona pellucida  
c) Theca                                    d) Cumulus oophorus
- 87) Which of following events is not associated with ovulation in human female? [1]  
a) Full development of Graafian follicle  
b) Decrease in estradiol  
c) Release of secondary oocyte  
d) LH - surge
- 88) Number of chromosomes found in human being is: [1]  
a) 22 pairs                                b) 4 pairs  
c) 23 pairs                                d) 24 pairs
- 89) Several memory ducts join to form wider mammary ampulla which is connected to: [1]  
a) Alveoli                                 b) Memory lobes  
c) Lactiferous ducts                    d) Nipple
- 90) What is present in the middle piece of sperm? [1]  
a) Nucleus                                b) Proximal centriole  
c) Acrosome                              d) Mitochondria
- 91) Mitotic division in zygote as it moves through the isthmus of the oviduct is called: [1]  
a) Multiple fission                      b) Binary fission  
c) Trophoblast                            d) Cleavage
- 92) Drones in a colony of honey bees originate by: [1]  
a) Diploid parthenogenesis  
b) Cyclic parthenogenesis  
c) Thelytoky  
d) Arrhenotoky
- 93) In oocyte, secondary maturation division occurs in: [1]  
a) Abdominal cavity                    b) Ovary  
c) Uterus                                 d) Fallopian tube
- 94) Which extra - embryonic membrane in human prevents desiccation of the embryo inside the uterus? [1]  
a) Allantois                                b) Amnion  
c) Yolk sac                                d) Chorion
- 95) Average ratio of men and women in human population is: [1]  
a) 1 : 2                                      b) 1 : 1  
c) 3 : 4                                      d) 3 : 5
- 96) Sacred groves are specially useful in: [1]

- a) Preventing soil erosion
  - b) Generating environmental awareness
  - c) Conserving rare and threatened species
  - d) Year - round flow of water in rivers
- 97) The pH of human urine is approximately: [1]
- a) 7
  - b) 7.5
  - c) 6
  - d) 6.5
- 98) Which is the functional unit of kidneys? [1]
- a) Nephron
  - b) Glomerulus
  - c) Loop of Henle
  - d) Bowman's capsule
- 99) In a bundle of green coriander leaves, you will find leaves of different shapes. What does this show? [1]
- a) Ornamentation
  - b) Plasticity
  - c) Homophylly
  - d) Heterophylly
- 100) Flowering in short - day plants is stimulated by: [1]
- a) Short day and uninterrupted long nights
  - b) Short day and short night
  - c) Short nights
  - d) Short day and interrupted long nights