



BIOLOGY
ENTRANCE EXAM - MHT - CET

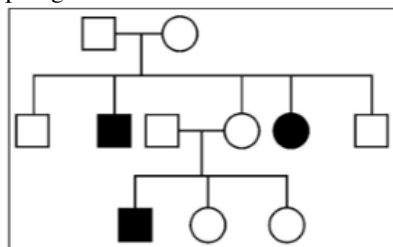
Time Allowed: 1 hour and 30 minutes

Maximum Marks : 100

Section A

- 1) Monoterpene esters called pyrethroids found in flowers and leaves of chrysanthemum are used commercially for making _____. [1]
 - a) Perfumes
 - b) Insecticides
 - c) Drugs
- 2) The number of amino acids found in proteins is _____. [1]
 - a) 22
 - b) 18
 - c) 20
 - d) 16
- 3) The following ratio is generally constant for a given species: [1]
 - a) A+C/T+G
 - b) T+C/G+A
 - c) G+C/A+T
 - d) A+G/C+T
- 4) Main function of Nickel (Ni^{2+}) in leaves and root is: [1]
 - a) Metabolism of urea and ureides
 - b) Activates enzymes
 - c) Amylase and anion - cation balance
 - d) Cytochrome oxidase
- 5) Organic and mineral nutrients transported by: [1]
 - a) Multidirectional
 - b) Symport
 - c) Unidirectional
 - d) Antiport
- 6) Bulk flow can be achieved by: [1]
 - a) Turgor pressure
 - b) Positive and negative hydrostatic pressure
 - c) Concentration gradient
 - d) Concentration gradient and turgor pressure
- 7) Select which one is correctly matched pair: [1]
 - a) Fructose - transported by facilitated diffusion that doesn't need energy
 - b) Amino acids - transported by simple diffusion that doesn't need energy
 - c) Galactose - absorbed by active transport that doesn't need energy
 - d) Glucose - absorbed by passive transport that doesn't need energy
- 8) Which of the following is not a common disorder associated with digestive system? [1]
 - a) Jaundice
 - b) Tetanus
 - c) Dysentery
 - d) Diarrhoea
- 9) A tall plant was grown in nutrient deficient soil and remained dwarf. When it is crossed with dwarf plant then: [1]
 - a) 50% tall and 50% of dwarf
 - b) All hybrid plants are tall
 - c) All hybrid plants are dwarf
 - d) 75% tall and 25% dwarf
- 10) Study the pedigree chart of a family showing the inheritance pattern of a certain disorder. Select the option that correctly identifies the nature of the trait depicted in the

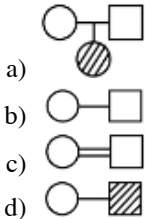
pedigree chart.



[1]

- a) Dominant X - linked
 - b) Autosomal recessive
 - c) Recessive X - linked
 - d) Autosomal dominant
- 11) In the F_2 generation of a Mendelian dihybrid cross the number of phenotypes and genotypes are: [1]
 - a) Phenotypes - 4; genotypes - 8
 - b) Phenotypes - 9; genotypes - 4
 - c) Phenotypes - 4; genotypes - 16
 - d) Phenotypes - 4; genotypes - 9
 - 12) Which is not found in RNA? [1]
 - a) Guanine
 - b) Cytosine
 - c) Thymine
 - d) Uracil
 - 13) Initiation codon is: [1]
 - a) UUU
 - b) UAG
 - c) UGA
 - d) AUG
 - 14) During transcription the DNA site at which RNA polymerase binds is called: [1]
 - a) Receptor
 - b) Enhancer
 - c) Regulator
 - d) Promoter
 - 15) Uracil is present in RNA at the place of: [1]
 - a) Guanine
 - b) Thymine
 - c) Adenine
 - d) Cytosine
 - 16) Removal of introns and joining of exons in a defined order during transcription is called [1]
 - a) Splicing
 - b) Inducing
 - c) Looping
 - d) Slicing
 - 17) The autonomously independent, self replicating extra nuclear DNA imparting certain factors to some bacterium is called: [1]
 - a) Phagemid
 - b) Plasmid
 - c) Plastid
 - d) Cosmid
 - 18) DNA fragments move at different distances in Gel Electrophoresis because: [1]
 - a) The voltage is too high.
 - b) Molecular weights of the fragments are different.
 - c) DNA has a positive charge.
 - d) DNA gets denatured.
 - 19) If agoi is inserted at the Bam HI site in Pbr322, the plasmid: [1]
 - a) Will lose both ampicillin and tetracycline resistance
 - b) Will lose ampicillin resistance
 - c) Will not replicate

- d) Will lose tetracycline resistance
- 20) An MNC exploiting biological resources (turmeric) of other nation without proper authorization will be called as: [1]
 a) Eugenics b) Bioethics
 c) Biopiracy d) Biopatent
- 21) The X - gal will be converted into a coloured product when: [1]
 a) When lactose is available.
 b) Gene coding for β - galactosidase is cleaved.
 c) When goi is inserted in the vector at the site coding for β - galactosidase.
 d) β -galactosidase acts on it.
- 22) The plant can be made disease - resistant through: [1]
 a) Hormone treatment
 b) Breeding with wild varieties
 c) Colchicine treatment
 d) X - ray treatment
- 23) The term totipotency refers to the capacity of a: [1]
 a) Cell to generate whole plant
 b) Seed to germinate
 c) Cell to enlarge in size
 d) Bud to generate whole plant
- 24) Which culture is suitable for the production of virus free plants? [1]
 a) Callus culture b) Anther culture
 c) Suspension culture d) Meristem culture
- 25) Selection of homozygous plant is: [1]
 a) Mutation b) Pure line selection
 c) Mixed selection d) Mass selection
- 26) Mass selection is preferred in case of: [1]
 a) Mutation
 b) Cross pollinated plants
 c) Self - pollinated plants
 d) Vegetatively propagated plants
- 27) Which of the following is a free - living nitrogen - fixing bacteria present in the soil? [1]
 a) Pseudomonas b) Rhizobium
 c) Nitrosomonas d) Azotobacter
- 28) A complex polysaccharide produced from sucrose by the bacterium *Leuconostoc mesenteroides* is: [1]
 a) Starch b) Cellulose
 c) Chitin d) Dextran
- 29) Soil microorganism which converts proteins to ammonia is: [1]
 a) Nitrosomonas b) Pseudomonas
 c) None of these d) *Bacillus vulgaris*
- 30) A common biocontrol agent for the control of plant diseases is: [1]
 a) Baculo virus
 b) Glomus
 c) *Bacillus thuringiensis*
 d) *Trichoderma*
- 31) Which of the following microbes is used for commercial production of ethanol? [1]
 a) *Streptococcus*
 b) *Closteridium butylinum*
 c) *Trichoderma polysporum*
 d) *Saccharomyces cerevisiae*
- 32) Nitrosomonas changes: [1]
 a) Ammonia to nitrite b) Ammonia to nitrogen
 c) Nitrogen to ammonia d) Nitrite to nitrate
- 33) *Bacillus thuringiensis* (Bt) strains have been used for designing novel: [1]
 a) Bio - insecticidal plants
 b) Bio - metallurgical techniques
 c) Bio - mineralization process
 d) Bio - fertilizers
- 34) Which of the following happens during light reaction? [1]
 a) Formation of ATP and NADPH₂
 b) Trapping of light energy
 c) Formation of PGA
 d) Carbon fixation
- 35) As compared to sun plants, plants adapted to low light intensity possess: [1]
 a) High rate of CO₂ fixation
 b) More extended root system
 c) Larger photosynthetic unit
 d) Spiny leaves
- 36) The respiratory pathway (Kreb's cycle) is involved in both anabolism and catabolism because it provides _____. [1]
 a) A number of intermediates
 b) ATP is released as well as utilised
 c) Produce energy as well as use energy
 d) A number of final products
- 37) Which is the location for electron transport system? [1]
 a) Inner membrane of mitochondria
 b) Matrix of mitochondria
 c) Outer membrane of mitochondria
 d) Cristae
- 38) The flower which possesses both androecium and gynoecium is called _____. [1]
 a) Hermaphrodite b) Incomplete flower
 c) Unisexual d) Dioecious
- 39) The flower is a modified shoot because: [1]
 a) Growth is unlimited
 b) Growth is limited
 c) Floral organs are arranged in whorls
 d) Flower develop in the axils of bracts like axillary shoots
- 40) The flower which does not open for pollination are called as: [1]
 a) Chasmogamous b) Autogamous
 c) Cleistogamous d) Geitogamous
- 41) The phenomenon involved in the formation of female gametophyte is known as: [1]
 a) Hydrolysis b) Megasporogenesis
 c) Multisporogenesis d) Microsporogenesis
- 42) In the embryos of a typical dicot and a grass, true homologous structures are: [1]
 a) Coleorhiza and coleoptile
 b) Cotyledons and scutellum
 c) Coleoptile and scutellum
 d) Hypocotyl and radicle

- 43) The flower which does not open at all are called: [1]
 a) Cleistogamous flower b) Xenogamous flower
 c) Autogamous flower d) Chasmogamous flower
- 44) One of the most resistant biological material is: [1]
 a) Lignin b) Lignocellulose
 c) Sporopollenin d) Hemicellulose
- 45) A bilobed ditheous anther had 50 microspore mother cells per microsporangium. How many male gametes this anther can produce: [1]
 a) 200 b) 400
 c) 800 d) 100
- 46) In a fertilised embryo sac, the haploid, diploid, and triploid structures are: [1]
 a) Synergid, polar nuclei, and zygote
 b) Synergid, antipodal, and polar nuclei
 c) Synergid, zygote, and primary endosperm nucleus
 d) Antipodal, synergid, and primary endosperm nucleus
- 47) Which of the following is prevented by unisexuality? [1]
 a) Both xenogamy and geitonogamy
 b) Geitonogamy but not xenogamy
 c) Autogamy and geitonogamy
 d) Autogamy but not geitonogamy
- 48) In a particular climatic condition, decomposition rate is slower if: [1]
 a) Detritus is rich in sugars.
 b) Detritus is rich in lignin and chitin.
 c) Detritus is rich in humus.
 d) Detritus is rich in nitrogen.
- 49) Among the following which one causes maximum indoor chemical pollution? [1]
 a) Room spray
 b) Burning cooking gas
 c) Burning coal
 d) Burning mosquito coil
- 50) Examples of local and global nutrient cycles will be: [1]
 a) Carbon and phosphorus cycles respectively
 b) Carbon and nitrogen cycles respectively
 c) Phosphorus and calcium cycles respectively
 d) Phosphorus and carbon cycles respectively
- 51) The type of ecosystem with the highest mean plant productivity is: [1]
 a) Tundra b) Temperate grassland
 c) Desert d) Tropical rain forest
- 52) Which of the following may cause algal blooms in the aquatic system? [1]
 a) Carbon b) Oxygen
 c) Phosphorus d) Sulphur
- 53) The concentration of the greenhouse is increasing due to:
 i. Deforestation
 ii. Increased use of refrigerators
 iii. Increased combustion of coal and petroleum
 iv. Increasing human population
 [1]
 a) All statements are correct.
 b) All statements are incorrect.
 c) Statement I, II and III are correct.
 d) Statement II, III and IV are correct.
- 54) The bones of forelimbs of whale, bat, cheetah, and man are similar in structure, because: [1]
 a) They have biochemical similarities
 b) They share a common ancestor
 c) One organism has given rise to another
 d) They perform the same function
- 55) The most apparent change during the evolutionary history of Homo sapiens is traced in: [1]
 a) Walking upright
 b) Shortening of the jaws
 c) Loss of body hair
 d) Remarkable increase in brain size
- 56) Who wrote the book **Genetics and Origin of Species**? [1]
 a) Charles Darwin b) Joseph Hooker
 c) Th. Dobzhansky d) A.I. Oparin
- 57) Fossil found in Mandla district of Madhya Pradesh is : [1]
 a) 260 million years old
 b) 20 million years old
 c) 50 million years old
 d) 100 million years old
- 58) In nature, the process by which different organisms evolve similar traits is called: [1]
 a) Divergent evolution b) Genetic drift
 c) Artificial selection d) Convergent evolution
- 59) Stanley Miller had put the Oparin - Haldane theory to test in 1953 by creating in the laboratory, the probable conditions of the primitive earth. In the experiment, simple amino acids were synthesized from which of the following mixtures as observed after 18 days? [1]
 a) NH_3 , CH_4 and O_2
 b) H_2 , O_2 , N and H_2O
 c) CH_4 , CN, H_2 and O_2
 d) H_2 , NH_3 , CH_4 and water vapours
- 60) Point mutation involves: [1]
 a) Insertion
 b) Deletion
 c) Change in single base pair
 d) Duplication
- 61) Which one of the following option denotes mating between relatives in human pedigree analysis [1]

- 62) Sickle cell anaemia is: [1]
 a) X - linked dominant inheritance
 b) Autosomal dominant inheritance
 c) X - linked recessive inheritance
 d) Autosomal recessive inheritance
- 63) The loss of a chromosomal segment is due to: [1]
 a) Inversion b) Duplication
 c) Polyploidy d) Deletion

- 64) Which genetic disorder is caused due to the presence of an additional copy of X - chromosome resulting in a karyotype of 47, XXY. [1]
 a) Down's Syndrome
 b) Anemia
 c) Turner's Syndrome
 d) Klinefelter's Syndrome
- 65) Which of the following is not a use of transgenic animals? [1]
 a) Obtaining biological product.
 b) Chemical safety testing.
 c) Study of viral disease.
 d) Study of normal physiology and development.
- 66) The sensitivity of fingerprinting technique has been increased by use of [1]
 a) VNTR
 b) Polymerase chain reaction (PCR)
 c) Repetitive DNA
 d) ELISA
- 67) In human beings 99.9% of genome sequence are same in all individuals only 0.1% of genome differ that: [1]
 a) Make every individual similar in phenotypic appearance.
 b) Make every individual genetically similar.
 c) Make every individual unique in phenotypic appearance.
 d) Make a genetic variation for evolution.
- 68) Which of the following is associated with smoking? [1]
 a) Bronchitis
 b) Lung cancer
 c) Emphysema
 d) All of these
- 69) The causal organism of filariasis/elephantiasis is: [1]
 a) Wuchereria bancrofti
 b) Ascaris lumbricoides
 c) Entamoeba histolytica
 d) Trichophyton
- 70) Haemozoin is released into the blood during the infection of Plasmodium vivax every: [1]
 a) 12 hrs
 b) 24 hrs
 c) 48 hrs
 d) 72 hrs
- 71) A tumor enclosed within a capsule is termed: [1]
 a) Basophils
 b) Malignant
 c) Benign
 d) Metastasis
- 72) Hodgkin's disease is: [1]
 a) Cancer of WBCs
 b) Cancer of mammary glands
 c) Cancer of liver
 d) Cancer of lymphoid tissue
- 73) Cancer cells can be easily be destroyed by radiations due to: [1]
 a) Rapid cell division
 b) Lack of oxygen
 c) Lack of mutation
 d) Fast mutation
- 74) Leukaemia is due to: [1]
 a) Excess of WBCs
 b) Decrease of WBCs
 c) Excess of RBCs
 d) Platelets
- 75) Which disease is the patient suffering from who is showing symptoms such as sustained high fever (39°C to 40°C), stomach pain, constipation, headache, loss of appetite and weakness? [1]
 a) Amoebiasis
 b) Pneumonia
 c) Malaria
 d) Typhoid
- 76) Cornea transplant in humans is usually never rejected. This is because: [1]
 a) It has no blood supply.
 b) Its cells are least permeable to bacteria.
 c) It is a non - living layer.
 d) It is composed of enucleated cells.
- 77) LSD is obtained from: [1]
 a) Tea leaves
 b) Agaricus
 c) Lichens
 d) Claviceps
- 78) Continued close inbreeding: [1]
 a) Development of new variety
 b) Increased fertility and productivity
 c) Development of impure line
 d) Reduce fertility and productivity
- 79) Heterosis cannot be maintained in sexually reproducing plants as it disappears on: [1]
 a) Inbreeding
 b) Cross breeding
 c) Out breeding
 d) Mutation
- 80) Which of the following represent examples of extracellular fluids? [1]
 a) Blood plasma
 b) Blood
 c) Both tissue fluid and blood plasma
 d) Tissue fluid
- 81) ECG depicts the depolarisation and repolarisation processes during the cardiac cycle. In the ECG of a normal healthy individual one of the following waves is not represented. [1]
 a) Repolarisation of atria
 b) Depolarisation of atria
 c) Repolarisation of ventricles
 d) Depolarisation of ventricles
- 82) Angina pectoris is very often mistaken for: [1]
 a) Apnea
 b) Chest pain
 c) Indigestion
 d) Severe headache
- 83) Brain cavities are filled with CSF. In subarachnoid space, the CSF plays the following roles: [1]
 a) Changes pressure inside cranium in coordination with blood pressure
 b) Keeps brain and spinal cord dry to prevent infection
 c) Acts as a shock proof cushion
 d) Plays a role in night vision
- 84) The function of our visceral organs is controlled by: [1]
 a) Sympathetic and para sympathetic neural system
 b) Sympathetic and somatic neural system
 c) Central and para somatic nervous system
 d) Central and somatic nervous system
- 85) Automated DNA sequences work on the principle of a method developed by: [1]
 a) Frederick Sanger
 b) Friedrich Miescher
 c) Francis Crick
 d) Alec Jeffreys
- 86) Epithelial tubules, connected with rete testis and lower part of ductus epididymis are called: [1]
 a) Ductus choledochus
 b) Ductuli aberrantes
 c) Ductuli efferentes
 d) Ductus reuniens

- 87) Beginning of menstrual cycle is called _____. [1]
 a) Menopause b) Oogenesis
 c) Menarche d) Ovulation
- 88) Which accessory genital gland occurs only in mammalian male? [1]
 a) Bartholin gland b) Prostate gland
 c) Cowper's gland d) Perineal gland
- 89) The gaseous hormone that helps in switching over its respiratory and circulatory system just after delivery is: [1]
 a) Carbon monoxide (CO) b) Deoxygenate
 c) Nitric oxide (NO) d) Sulphur dioxide
- 90) Human sperm moves by: [1]
 a) Nucleosome b) Basal body
 c) Flagellum d) Cilia
- 91) The amnion of mammalian embryo is derived from : [1]
 a) Endoderm and mesoderm
 b) Ectoderm and endoderm
 c) Mesoderm and trophoblast
 d) Ectoderm and mesoderm
- 92) In which one of the following options does the endocrine gland correctly match with its hormonal secretion and its function? [1]
 a) Endocrine Gland - Placenta, Hormone - Estrogen, Function - Initiates secretion of milk
 b) Endocrine Gland - Leydig cells, Hormone - Androgen, Function - Initiates the production of sperms
 c) Endocrine Gland - Ovary, Hormone - FSH, Function - Stimulates follicular development
 d) Endocrine Gland - Sertoli cells, Hormone - Testosterone, Function - Development of secondary sexual characteristics
- 93) A sperm cell moving from the lumen of the seminiferous tubule to the exterior of the body passes through all of the following structures except the: [1]
 a) Vas deferens b) Epididymis
 c) Seminal vesicle d) Urethra
- 94) Given below are structural details of a human mammary gland:
 i. The glandular tissue in the breast has 15 - 20 clusters of cells called alveoli.
 ii. The milk is stored in the lumen of alveoli.
 iii. The alveoli join to form the mammary ducts.
 iv. Mammary ampulla is connected to lactiferous ducts.
 Choose the option that gives the correct detail of human mammary gland. [1]
 a) (i) and (iii) b) (ii) and (iv)
 c) (i) and (ii) d) (ii) and (iii)
- 95) The population limited to a particular geographical area is called: [1]
 a) Alien b) Pandemic
 c) Endemic d) Natural
- 96) Animals have shorter and smaller extremities in colder region. It is: [1]
 a) Dollo's rule b) Cope's rule
 c) Bergman's rule d) Allen's rule
- 97) The condition of accumulation of urea in the blood is termed as: [1]
 a) Glomerulonephritis b) Ketonuria
 c) Uremia d) Renal Calculi
- 98) The part of a nephron which adds some material to the filtrate is: [1]
 a) Loop of Henle
 b) Proximal convoluted tubule
 c) Distal convoluted tubule
 d) Bowman's capsule
- 99) Photoperiodism stimulus is perceived by [1]
 a) Flower b) Buds
 c) Meristem d) Leaves
- 100) Plasticity in plant growth means that: [1]
 a) Plant roots are extensible
 b) Stems can extend
 c) Plant development is independent on the environment
 d) Plant development is dependent on the environment