13

12 BIOLOGY

12th Standard

Biology

304 x 1 = 304

1) In which type of parthenogenesis are only males produced?
(a) Arrhenotoky (b) Thelytoky (c) Amphitoky (d) Both a and b

2) The mode of reproduction in bacteria is by
(a) Formation of gametes (b) Endospore formation (c) Conjugation
(d) Zoospore formation

3) In which mode of reproduction variations are seen
(a) Asexual (b) Parthenogenesis (c) Sexual (d) Both a and b

4) The mature sperms are stored in the
(a) Seminiferous tubules (b) Vas deferens (c) Epididymis (d) Seminal vesicle

5) The male sex hormone testosterone is secreted from
(a) Sertoli cells (b) Leydig cell (c) Epididymis (d) Prostate gland

6) The glandular accessory organ which produces the largest proportion of semen is
(a) Seminal vesicle (b) Bulbourethral gland (c) Prostate gland (d) Mucous gland

7) The male homologue of the female clitoris is
(a) Scrotum (b) Penis (c) Urethra (d) Testis

8) The site of embryo implantation is the
(a) Uterus (b) Peritoneal cavity (c) Vagina (d) Fallopian tube

9) The foetal membrane that forms the basis of the umbilical cord is
(a) Allantois (b) Amnion (c) Chorion (d) Yolk sac

10) The most important hormone in intiating and maintaining lactation after birth is
(a) Oestrogen (b) FSH (c) Prolactin (d) Oxytocin

11) Mammalian egg is
(a) Mesolecithal and non cleidoic (b) Microlecithal and non cleidoic
(c) Alecithal and non cleidoic (d) Alecithal and cleidoic

12) The process which the sperm undergoes before penetrating the ovum is
(a) Spermiation (b) Cortical reaction (c) Spermiogenesis (d) Capacitation

13) The milk secreted by the mammary glands soon after child birth is called
(a) Mucous (b) Colostrum (c) Lactose (d) Sucrose

14) Colostrum is rich in
(a) Ig E (b) Ig A (c) Ig D (d) Ig M

15) The Androgen Binding Protein (ABP) is produced by
(a) Leydig cells (b) Hypothalamus (c) Sertoli cells (d) Pituitary gland

16) Find the wrongly matched pair
(a) Bleeding phase- fall in oestrogen and progesterone
(b) Follicular phase-rise in oestrogen (c) Luteal phase - rise in FSH level
(d) Ovulatory phase - LH surge

17) Which of the following is correct regarding HIV, hepatitis B, gonorrhoea and trichomoniasis?

(a) Gonorrhoea is a STD whereas others are not.

(b) Trichomoniasis is a viral disease whereas others are bacterial.

(c) HIV is a pathogen whereas others are diseases.

(d) Hepatitis B is eradicated completely whereas others are not.

18) Which one of the following groups includes sexually transmitted diseases caused by bacteria only?

(a) Syphilis, gonorrhoea and candidiasis (b) Syphilis, chlamydiasis and gonorrhoea

(c) Syphilis, gonorrhoea and trichomoniasis

(d) Syphilis, trichomoniasis and pediculosis

19) Identify the correct statements from the following

(a) Chlamydiasis is a viral disease

(b) Gonorrhoea is caused by a spirochaete bacterium, Treponema palladium

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

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

20) A contraceptive pill prevents ovulation by

(a) blocking fallopian tube (b) inhibiting release of FSH and LH

(c) stimulating release of FSH and LH

(d) causing immediate degeneration of released ovum.

21) The approach which does not give the defined action of contraceptive is

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

(b) Vasectomy-Prevents spermatogenesis (c) Barrier method-Prevents fertilization

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

22) Read the given statements and select the correct option.
Statement 1: Diaphragms, cervical caps and vaults are made of rubber and are inserted into the female reproductive tract to cover the cervix before coitus.
Statement 2: They are chemical barriers of conception and are reusable.

(a) Both statements 1 and 2 are correct and statement 2 is the correct explanation of statement 1.

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

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

(d) Both statements 1 and 2 are incorrect

23) Match column I with column II and select the correct option from the codes given below.

Column I	Column II
A. Copper releasing IUD	(i) LNG-20
B. Hormone releasing	(ii) Lippes loop IUD
C. Non medicated IUD	(iii) Saheli
D. Mini pills	(iv) Multiload-375

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

24) Select the incorrect action of hormonal contraceptive pills from the following

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

25) Haemophilia is more common in males because it is a

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

26) ABO blood group in man is controlled by

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

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

(a) $I^A I^B$ and $I^o I^o$ (b) $I^A I^o$ and $I^B I^o$ (c) $I^B I^B$ and $I^A I^A$ (d) $I^A I^A$ and $I^o I^o$

28) Which of the following is not correct?

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

29) Which of the following phenotypes in the progeny are possible from the parental combination AxB?

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

30) Which of the following phenotypes is not possible in the progeny of the parental genotypic combination $I^A I^O$ x $I^A I^B$?

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

31) Which of the following is true about Rh factor in the offspring of a parental combination DdxDd (both Rh positive)?

(a) All will be Rh-positive (b) Half will be Rh positive (c) About ¾ will be Rh negative
(d) About one fourth will be Rh negative

32) What can be the blood group of offspring when both parents have AB blood group?

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

33) If the childs blood group is 'O' and fathers blood group is 'A' and mother's blood group is 'B' the genotype of the parents will be

(a) $I^A I^A$ and $I^B I^o$ (b) $I^A I^o$ and $I^B I^o$ (c) $I^A I^o$ and $I^o I^o$ (d) $I^o I^o$ and $I^B I^B$

34) XO type of sex determination and XY type of sex determination are examples of

(a) Male heterogamety (b) Female heterogamety (c) Male homogamety

(d) Both (b) and (c)

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

(a) 'O' and Rh negative (b) 'O' and Rh positive (c) 'B' and Rh negative

(d) 'AB' and Rh positive

36) Father of a child is colourblind and mother is carrier for colourblindness, the probability of the child being colourblind is

(a) 25% (b) 50% (c) 100% (d) 75%

37) A marriage between a colourblind man and a normal woman produces

(a) All carrier daughters and normal sons

(b) 50% carrier daughters, 50% normal daughters

(c) 50% colourblind sons, 50% normal sons (d) All carrier offsprings

38) Mangolism is a genetic disorder which is caused by the presence of an extra chromosome number

(a) 20 (b) 21 (c) 4 (d) 23

39) Klinefelters' syndrome is characterized by a karyotype of

(a) XYY (b) XO (c) XXX (d) XXY

40) Females with Turners' syndrome have

(a) Small uterus (b) Rudimentary ovaries (c) Underdeveloped breasts

(d) All of these

41) Pataus' syndrome is also referred to as

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

42) "Universal Donor" and "Universal Recipients" blood group are _____and_____respectively

(a) AB, O (b) O, AB (c) A, B (d) B, A

43) ZW-ZZ system of sex determination occurs in

(a) Fishes (b) Reptiles (c) Birds (d) All of these

44) Co-dominant blood group is

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

45) Which of the following is incorrect regarding ZW-ZZ type of sex determination?

(a) It occurs in birds and some reptiles

(b) Females are homogametic and males are heterogametic

(c) Male produce two types of gametes (d) It occurs in gypsy moth

46) Hershey and Chase experiment with bacteriophage showed that

(a) Protein gets into the bacterial cells (b) DNA is the genetic material

(c) DNA contains radioactive sulphur (d) Viruses undergo transformation

47) DNA and RNA are similar with respect to

(a) Thymine as a nitrogen base (b) A single-stranded helix shape

(c) Nucleotide containing sugars, nitrogen bases and phosphates

(d) The same sequence of nucleotides for the amino acid phenyl alanine

48) A mRNA molecule is produced by

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

49) The total number of nitrogenous bases in human genome is estimated to be about

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

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

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

(c) One intermediate density band. (d) One low and one intermediate density band

51) What is the basis for the difference in the synthesis of the leading and lagging strand of DNA molecules?

(a) Origin of replication occurs only at the 5' end of the molecules

(b) DNA ligase works only in the 3' → 5' direction

(c) DNA polymerase can join new nucleotides only to the 3' end of the growing stand.

(d) Helicases and single-strand binding proteins that work at the 5' end

52) Which of the following is the correct sequence of event with reference to the central dogma?

(a) Transcription, Translation, Replication (b) Transcription, Replication, Translation

(c) Duplication, Translation, Transcription (d) Replication, Transcription, Translation

53) Which of the following statements about DNA replication is not correct?

(a) Unwinding of DNA molecule occurs as hydrogen bonds break.

(b) Replication occurs as each base is paired with another exactly like it

(c) Process is known as semi conservative replication because one old strand is conserved in the new molecule.

(d) Complementary base pairs are held together with hydrogen bonds

54) Which of the following statements is not true about DNA replication in eukaryotes?

(a) Replication begins at a single origin of replication.

(b) Replication is bidirectional from the origins.

(c) Replication occurs at about 1 million base pairs per minute

(d) There are numerous different bacterial chromosomes, with replication ocurring in each at the same time.

55) The first codon to be deciphered was _____ which codes for _____.

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

56) Meselson and Stahl's experiment proved

(a) Transduction (b) Transformation (c) DNA is the genetic material

(d) Semi-conservative nature of DNA replication

57) An operon is a:

(a) Protein that suppresses gene expression

(b) Protein that accelerates gene expression

(c) Cluster of structural genes with related function

(d) Gene that switched other genes on or off

58) When lactose is present in the culture medium:

(a) Transcription of lac y, lac z, lac a genes occurs.

(b) Repressor is unable to bind to the operator.

(c) Repressor is able to bind to the operator. (d) Both (a) and (b) are correct.

59) The first life on earth originated

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

60) Who published the book “Origin of species by Natural Selection” in 1859?

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

61) Which of the following was the contribution of Hugo de Vries?

(a) Theory of mutation (b) Theory of natural Selection

(c) Theory of inheritance of acquired characters (d) Germplasm theory

62) The wings of birds and butterflies is an example of

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

63) The phenomenon of “ Industrial Melanism” demonstrates

(a) Natural selection (b) induced mutation (c) reproductive isolation

(d) geographical isolation

64) Darwin’s finches are an excellent example of

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

65) Who proposed the Germplasm theory?

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

66) The age of fossils can be determined by

(a) electron microscope (b) weighing the fossils (c) carbon dating

(d) analysis of bones

67) Fossils are generally found in

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

68) Evolutionary history of an organism is called

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

69) The golden age of reptiles was

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

70) Which period was called “Age of fishes”?

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

71) Modern man belongs to which period?

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

72) The Neanderthal man had the brain capacity of

(a) 650 – 800cc (b) 1200cc (c) 900cc (d) 1400cc

73) According to Darwin, the organic evolution is due to

(a) Intraspecific competition (b) Interspecific competition

(c) Competition within closely related species.

(d) Reduced feeding efficiency in one species due to the presence of interfering species.

74) A population will not exist in Hardy- Weinberg equilibrium if

(a) Individuals mate selectively (b) There are no mutations (c) There is no migration

(d) The population is large

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

(a) Streptococcus pyogens (b) Clostridium difficile (c) Shigella dysenteria

(d) Salmonella enteritidis

76) Exo-erythrocytic schizogony of Plasmodium takes place in _____

(a) RBC (b) Leucocytes (c) Stomach (d) Liver

77) The sporozoites of Plasmodium vivax are formed from _____
(a) Gametocytes (b) Sporoblasts (c) Oocysts (d) Spores
78) Amphetamines are stimulants of the CNS, whereas barbiturates are _____
(a) CNS stimulant (b) both a and b (c) hallucinogenic (d) CNS depressants
79) The Athlete's foot disease in human is caused by _____
(a) Bacteria (b) Fungi (c) Virus (d) Protozoan
80) Choose the correctly match pair.
(a) Amphetamines - Stimulant (b) LSD - Narcotic (c) Heroin - Psychotropic
(d) Benzodiazepine - Pain killer
81) Cirrhosis of liver is caused by chronic intake of _____
(a) Opium (b) Alcohol (c) Tobacco (d) Cocaine
82) The sporozoite of the malarial parasite is present in _____
(a) saliva of infected female Anopheles mosquito
(b) RBC of human suffering from malaria. (c) Spleen of infected humans
(d) Gut of female Anopheles mosquito
83) Paratope is an
(a) Antibody binding site on variable regions
(b) Antibody binding site on heavy regions (c) Antigen binding site on variable regions
(d) Antigen binding site on heavy regions
84) Allergy involves
(a) IgE (b) IgG (c) lgA (d) IgM
85) Spread of cancerous cells to distant sites is termed as
(a) Metastasis (b) Oncogenes (c) Proto-oncogenes (d) Malignant neoplasm
86) AIDS virus has
(a) Single stranded RNA (b) Double stranded RNA (c) Single stranded DNA
(d) Double stranded DNA
87) B cells that produce and release large amounts of antibody are called
(a) Memory cells (b) Basophils (c) Plasma cells (d) killer cells
88) Which of the following microorganism is used for production of citric acid in industries?
(a) Lactobacillus bulgaris (b) Penicillium citrinum (c) Aspergillus niger
(d) Rhizopus nigricans
89) Which of the following pair is correctly matched for the product produced by them?
(a) Acetobacter aceti - Antibiotics (b) Methanobacterium - Lactic acid
(c) Penicilium notatum - Acetic acid (d) Saccharomyces cerevisiae - Ethanol
90) The most common substrate used in distilleries for the production of ethanol is_____
(a) Soyameal (b) Groundgram (c) Molasses (d) Corn meal
91) Cyclosporin – A is an immunosuppressive drug produced from _____
(a) Aspergillus niger (b) Manascus purpureus (c) Penicillium notatum
(d) Trichoderma polysporum
92) CO_2 is not released during
(a) Alcoholic fermentation (b) Lactate fermentation (c) Aerobic respiration in animals
(d) Aerobic respiration in plants

93) The purpose of biological treatment of waste water is to _____

(a) Reduce BOD (b) Increase BOD (c) Reduce sedimentation

(d) Increase sedimentation

94) The gases produced in anaerobic sludge digesters are

(a) Methane, oxygen and hydrogen sulphide

(b) Hydrogen sulphide, methane and sulphur dioxide

(c) Hydrogen sulphide, nitrogen and methane

(d) Methane, hydrogen sulphide and CO_2.

95) The first clinical gene therapy was done for the treatment of

(a) AIDS (b) Cancer (c) Cystic fibrosis (d) SCID

96) Dolly, the sheep was obtained by a technique known as

(a) Cloning by gene transfer (b) Cloning without the help of gametes

(c) Cloning by tissue culture of somatic cells (d) Cloning by nuclear transfer

97) The genetic defect adenosine deaminase deficiency may be cured permanently by

(a) Enzyme replacement therapy

(b) periodic infusion of genetically engineered lymphocytes having ADA cDNA

(c) administering adenosine deaminase activators

(d) introducing bone marrow cells producing ADA into embryo at an early stage of development.

98) How many amino acids are arranged in the two chains of Insulin

(a) Chain A has 12 and Chain B has 13

(b) Chain A has 21 and Chain B has 30 amino acids

(c) Chain A has 21 and Chain B has 30 amino acids

(d) Chain A has 12 and chain B has 20 amino acids.

99) PCR proceeds in three distinct steps governed by temperature, they are in order of

(a) Denaturation, Annealing, Synthesis (b) Synthesis, Annealing, Denaturation

(c) Annealing, Synthesis, Denaturation (d) Denaturation, Synthesis, Annealing

100) Which one of the following statements is true regarding DNA polymerase used in PCR?

(a) It is used to ligate introduced DNA in recipient cells

(b) It serves as a selectable marker (c) It is isolated from a Virus

(d) It remains active at a high temperature

101) ELISA is mainly used for

(a) Detection of mutations (b) Detection of pathogens

(c) Selecting animals having desired traits (d) Selecting plants having desired traits

102) Transgenic animals are those which have

(a) Foreign DNA in some of their cells (b) Foreign DNA in all their cells

(c) Foreign RNA in some of their cells (d) Foreign RNA in all their cells

103) Vaccines that use components of a pathogenic organism rather than the whole organism are called

(a) Subunit recombinant vaccines (b) attenuated recombinant vaccines

(c) DNA vaccines (d) conventional vaccines

104) All populations in a given physical area are defined as

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

105) Organisms which can survive a wide range of temperatuer are called

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

106) The interaction in nature, where one gets benefit on the expense of other is…

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

107) Predation and parasitism are which type of interactions?

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

108) Competition between species leads to

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

109) Which of the following is an r-species

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

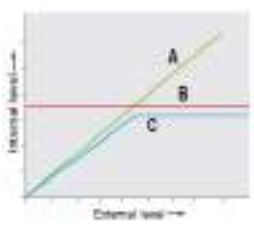
110) Match the following and choose the correct combination from the options given below.

Column I	Column II
A. Mutalism	1. Lion and deer
B. Commensalism	2. Round worm and man
C. Parasitism	3. Birds compete with squirrels for nuts
D. Competition	4. Sea anemone on hermit crab
E. Predation	5. Bernacles attached to Whales.

(a) A- 4, B-5, C-2, D –3, E-1 (b) A- 3, B-1, C-4, D – 2, E-5

(c) A- 2, B-3, C-1, D – 5, E-4 (d) A- 5, B-4, C-2, D – 3, E-1

111) The figure given below is a diagrammatic representation of response of organisms to abiotic factors. What do A, B and C represent respectively.



(a)

A	B	C
Conformer	Regulator	Partial Regulator

(b)

A	B	C
Regulatorr	Partial Regulator	Conformer

(c)

A	B	C
Partial Regulatorr	Regulator	Conformer

(d)

A	B	C
Regulatorr	Conformerr	Partial Regulatorr

112) The relationship between sucker fish and shark is_____

(a) Competition (b) Commensalism (c) Predation (d) Parasitism.

113) Which of the following is correct for r-selected species

(a) Large number of progeny with small size

(b) large number of progeny with large size

(c) small number of progeny with small size

(d) small number of progeny with large size

114) Animals that can move from fresh water to sea called as_____

(a) Stenothermal (b) Eurythermal (c) Catadromous (d) Anadromous

115) Some organisms are able to maintain homeostasis by physical means _____

(a) Conform (b) Regulate (c) Migrate (d) Suspend.

116) Which of the following region has maximum biodiversity

(a) Taiga (b) Tropical forest (c) Temperate rain forest (d) Mangroves

117) Conservation of biodiversity within their natural habitat is

(a) Insitu conservation (b) Exsitu conservation (c) In vivo conservation

(d) In vitro conservation

118) Which one of the following is not coming under insitu conservation

(a) Sanctuaries (b) Natural parks (c) Zoological park (d) Biosphere reserve

119) Which of the following is considered a hotspots of biodiversity in India

(a) Western ghats (b) Indo-gangetic plain (c) Eastern Himalayas (d) A and C

120) The organization which published the red list of species is

(a) WWF (b) IUCN (c) ZSI (d) UNEP

121) Who introduced the term biodiversity?

(a) Edward Wilson (b) Walter Rosen (c) Norman Myers (d) Alice Norman

122) Which of the following forests is known as the lungs of the planet earth?

(a) Tundra forest (b) Rain forest of north east India (c) Taiga forest

(d) Amazon rain forest

123) Which one of the following are at high risk extinction due to habitat destruction

(a) Mammals (b) Birds (c) Amphibians (d) Echinoderms

124) Assertion: The Environmental conditions of the tropics are favourable for speciation and diversity of organisms.
Reason: The climate seasons, temperature, humidity and photoperiod are more or less stable and congenial.

(a) Both Assertion and Reason are true and Reason explains Assertion correctly.

(b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

(c) Assertion is true, but Reason is false. (d) Both Assertion and Reason are false.

125) Right to Clean Water is a fundamental right, under the Indian Constitution

(a) Article 12 (b) Article 21 (c) Article 31 (d) Article 41

126) The 'thickness' of Stratospheric Ozone layer is measured in/on:

(a) Sieverts units (b) Dobson units (c) Melson units (d) Beaufort Scale

127) As per 2017 statistics, the highest per capita emitter of Carbon dioxide in the world is

(a) USA (b) China (c) Qatar (d) Saudi Arabia

128) The use of microorganism metabolism to remove pollutants such as oil spills in the water bodies is known as

(a) Biomagnification (b) Bioremediation (c) Biomethanation (d) Bioreduction

129) Which among the following always decreases in a Food chain across tropic levels?

(a) Number (b) Accumulated chemicals (c) Energy (d) Force

130) In the E- waste generated by the Mobile Phones, which among the following metal is most abundant?

(a) Copper (b) Silver (c) Palladium (d) Gold

131) SMOG is derived from :

(a) Smoke (b) Fog (c) Both A and B (d) Only A

132) Excess of fluoride in drinking water causes:

(a) Lung disease (b) Intestinal infection (c) Fluorosis (d) None of the above

133) Choose the correct statement from the following

(a) Gametes are involved in asexual reproduction

(b) Bacteria reproduce asexually by budding

(c) Conidia formation is a method of sexual reproduction

(d) Yeast reproduce by budding

134) An eminent Indian embryologist is

(a) S.R.Kashyap (b) P.Maheswari (c) M.S. Swaminathan (d) K.C.Mehta

135) Identify the correctly matched pair

(a) Tuber - Allium cepa (b) Sucker - Pistia (c) Rhizome - Musa (d) Stolon - Zingiber

136) Pollen tube was discovered by

(a) J.G.Kolreuter (b) G.B.Amici (c) E.Strasburger (d) E.Hanning

137) Size of pollen grain in Myosotis

(a) 10 micrometer (b) 20 micrometer (c) 200 micrometer (d) 2000 micrometer

138) First cell of male gametophyte in angiosperm is

(a) Microspore (b) megaspore (c) Nucleus (d) Primary Endosperm Nucleus

139) Match the following

I)	External fertilization	i)	pollen grain
II)	Androecium	ii)	anther wall
III)	Male gametophyte	iii)	algae
IV)	Primary parietal layer	iv)	stamens

(a)

I	II	III	IV
iv	i	ii	iii

(b)

I	II	III	IV
iii	iv	i	ii

(c)

I	II	III	IV
iii	iv	ii	i

(d)

I	II	III	IV
iii	i	iv	ii

140) Arrange the layers of anther wall from locus to periphery

(a) Epidermis,middle layers, tapetum, endothecium

(b) Tapetum, middle layers, epidermis, endothecium

(c) Endothecium, epidermis, middle layers, tapetum

(d) Tapetum, middle layers endothecium epidermis

141) Identify the incorrect pair

(a) sporopollenin - exine of pollen grain

(b) tapetum – nutritive tissue for developing microspores

(c) Nucellus – nutritive tissue for developing embryo

(d) obturator – directs the pollen tube into micropyle

142) Assertion : Sporopollenin preserves pollen in fossil deposits
Reason : Sporopollenin is resistant to physical and biological decomposition

(a) assertion is true; reason is false (b) assertion is false; reason is true

(c) Both Assertion and reason are not true (d) Both Assertion and reason are true.

143) Choose the correct statement(s) about tenuinucellate ovule

(a) Sporogenous cell is hypodermal (b) Ovules have fairly large nucellus

(c) sporogenous cell is epidermal (d) ovules have single layer of nucellus tissue

144) Which of the following represent megagametophyte

(a) Ovule (b) Embryo sac (c) Nucellus (d) Endosperm

145) In Haplopappus gracilis, number of chromosomes in cells of nucellus is 4. What will be the chromosome number in Primary endosperm cell?

(a) 8 (b) 12 (c) 6 (d) 2

146) Transmitting tissue is found in

(a) Micropylar region of ovule (b) Pollen tube wall (c) Stylar region of gynoecium

(d) Integument

147) The scar left by funiculus in the seed is

(a) tegmen (b) radicle (c) epicotyl (d) hilum

148) A Plant called X possesses small flower with reduced perianth and versatile anther. The probable agent for pollination would be

(a) water (b) air (c) butterflies (d) beetles

149) Consider the following statement(s)

i) In Protandrous flowers pistil matures earlier

ii) In Protogynous flowers pistil matures earlier

iii) Herkogamy is noticed in unisexual flowers

iv) Distyly is present in Primula

(a) i and ii are correct (b) ii and iv are correct (c) ii and iii are correct

(d) i and iv are correct

150) Coelorhiza is found in

(a) Paddy (b) Bean (c) Pea (d) Tridax

151) Parthenocarpic fruits lack

(a) Endocarp (b) Epicarp (c) Mesocarp (d) seed

152) In majority of plants pollen is liberated at

(a) 1 celled stage (b) 2 celled stage (c) 3 celled stage (d) 4 celled stage

153) Extra nuclear inheritance is a consequence of presence of genes in

(a) Mitrochondria and chloroplasts (b) Endoplasmic reticulum and mitrochondria

(c) Ribosomes and chloroplast (d) Lysososmes and ribosomes

154) In order to find out the different types of gametes produced by a pea plant having the genotype AaBb, it should be crossed to a plant with the genotype

(a) aaBB (b) AaBB (c) AABB (d) aabb

155) How many different kinds of gametes will be produced by a plant having the genotype AABbCC?

(a) Three (b) Four (c) Nine (d) Two

156) Which one of the following is an example of polygenic inheritance?

(a) Flower colour in Mirabilis Jalapa (b) Production of male honey bee

(c) Pod shape in garden pea (d) Skin Colour in humans

157) In Mendel's experiments with garden pea, round seed shape (RR) was dominant over wrinkled seeds (rr), yellow cotyledon (YY) was dominant over green cotyledon (yy). What are the expected phenotypes in the F2 generation of the cross RRYY x rryy?

(a) Only round seeds with green cotyledons

(b) Only wrinkled seeds with yellow cotyledons

(c) Only wrinkled seeds with green cotyledons

(d) Round seeds with yellow cotyledons an wrinkled seeds with yellow cotyledons

158) Test cross involves

(a) Crossing between two genotypes with recessive trait

(b) Crossing between two F_1 hybrids

(c) Crossing the F_1 hybrid with a double recessive genotype

(d) Crossing between two genotypes with dominant trait

159) In pea plants, yellow seeds are dominant to green. If a heterozygous yellow seed plant is crossed with a green seeded plant, what ratio of yellow and green seeded plants would you expect in F_1 generation?

(a) 9:1 (b) 1:3 (c) 3:1 (d) 50:50

160) The genotype of a plant showing the dominant phenotype can be determined by

(a) Back cross (b) Test cross (c) Dihybrid corss (d) Pedigree analysis

161) Select the correct statement from the ones given below with respect to dihydrid cross

(a) Tightly linked genes on the same chromosomes show very few combinations

(b) Tightly linked genes on the same chromosomes show higher combinations

(c) Genes farapart on the same chromosomes show very few recombinations

(d) Genes loosely linked on the same chromosomes show similar recombinations as the tightly linked ones

162) Which Mendelian idea is depicted by a cross in which the F_1 generation resembles both the parents

(a) Incomplete dominance (b) Law of dominance (c) Inheritance of one gene

(d) Co-dominance

163) Fruit colour in squash is an example of

(a) Recessive epistatsis (b) Dominant epistasis (c) Complementary genes

(d) Inhibitory genes

164) In his classic experiments on Pea plants, Mendel did not use

(a) Flowering position (b) Seed colour (c) Pod length (d) Seed shape

165) The epistatic effect, in which the dihybrid cross 9:3:3:1 between AaBb Aabb is modified as

(a) Dominance of one allele on another allele of both loci

(b) Interaction between two alleles of different loci

(c) Dominance of one allele to another alleles of same loci

(d) Interaction between two alleles of some loci

166) In a test cross involving F_1 dihybrid flies, more parental type offspring were produced than the recombination type offspring. This indicates

(a) The two genes are located on two different chromosomes

(b) Chromosomes failed to separate during meiosis

(c) The two genes are linked and present on the some chromosome

(d) Both of the characters are controlled by more than one gene

167) The genes controlling the seven pea characters studied by Mendel are known to be located on how many different chromosomes?

(a) Seven (b) Six (c) Five (d) Four

168) Which of the following explains how progeny can posses the combinations of traits that none of the parent possessed?

(a) Law of segregation (b) Chromosome theory (c) Law of independent assortment

(d) Polygenic inheritance

169) "Gametes are never hybrid". This is a statement of

(a) Law of dominance (b) Law of independent assortment (c) Law of segregation

(d) Law of random fertilization

170) Gene which suppresses other genes activity but does not lie on the same locus is called as

(a) Epistatic (b) Supplement only (c) Hypostatic (d) Codominant

171) Pure tall plants are crossed with pure dwarf plants. In the F_1 generation, all plants were tall. These tall plants of F_1 generation were selfed and the ratio of tall to dwarf plants obtained was 3:1. This is called

(a) Dominance (b) Inheritance (c) Codominance (d) Heredity

172) The dominant epistatis ratio is

(a) 9:3:3:1 (b) 12:3:1 (c) 9:3:4 (d) 9:6:1

173) Select the period for Mendel's hybridization experiments

(a) 1856 - 1863 (b) 1850 - 1870 (c) 1857 - 1869 (d) 1870 - 1877

174) Among the following characters which one was not considered by Mendel in his experimentation pea?

(a) Stem – Tall or dwarf (b) Trichomal glandular or non-glandular

(c) Seed – Green or yellow (d) Pod – Inflated or constricted

175) An allohexaploidy contains

(a) Six different genomes (b) Six copies of three different genomes

(c) Two copies of three different genomes (d) Six copies of one genome

176) The A and B genes are 10 cm apart on a chromosome. If an AB/ab heterozygote is testcrossed to ab/ab, how many of each progeny class would you expect out of 100 total progeny?

(a) 25 AB, 25 ab, 25 Ab, 25 aB (b) 10 AB, 10 ab (c) 45 AB, 45 ab

(d) 45 AB, 45 ab, 5 Ab, 5aB

177) Match list I with list II

List I	**list II**
A. A pair of chromosomes extra with diploid	i) monosomy
B. One chromosome extra to the diploid	ii) tetrasomy
C. One chromosome loses from diploid	iii) trisomy
D.Two individual chromosomes lose from diploid	iv) double monosomy

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

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

178) Which of the following sentences are correct?

1. The offspring exhibit only parental combinations due to incomplete linkage
2. The linked genes exhibit some crossing over in complete linkage
3. The separation of two linked genes are possible in incomplete linkage
4. Crossing over is absent in complete linkage

(a) 1 and 2 (b) 2 and 3 (c) 3 and 4 (d) 1 and 4

179) Accurate mapping of genes can be done by three point test cross because increases

(a) Possibility of single cross over (b) Possibility of double cross over

(c) Possibility of multiple cross over (d) Possibility of recombination frequency

180) Due to incomplete linkage in maize, the ratio of parental and recombinants are

(a) 50:50 (b) 7:1:1:7 (c) 96.4: 3.6 (d) 1:7:7:1

181) Genes G S L H are located on same chromosome. The recombination percentage is between L and G is 15%, S and L is 50%, H and S are 20%. The correct order of genes is

(a) GHSL (b) SHGL (c) SGHL (d) HSLG

182) The point mutation sequence for transition, transition, transversion and transversion in DNA are

(a) A to T, T to A, C to G and G to C (b) A to G, C to T, C to G and T to A

(c) C to G, A to G, T to A and G to A (d) G to C, A to T, T to A and C to G

183) If haploid number in a cell is 18. The double monosomic and trisomic number will be

(a) 35 and 37 (b) 34 and 37 (c) 37 and 35 (d) 17 and 19

184) Changing the codon AGC to AGA represents

(a) missense mutation (b) nonsense mutation (c) frameshift mutation

(d) deletion mutation

185) Assertion (A): Gamma rays are generally use to induce mutation in wheat varieties. Reason (R): Because they carry lower energy to non-ionize electrons from atom

(a) A is correct. R is correct explanation of A

(b) A is correct. R is not correct explanation of A

(c) A is correct. R is wrong explanation of A (d) A and R is wrong

186) How many map units separate two alleles A and B if the recombination frequency is 0.09?

(a) 900 cM (b) 90 cM (c) 9 cM (d) 0.9 cM

187) Restriction enzymes are

(a) Not always required in genetic engineering

(b) Essential tools in genetic engineering

(c) Nucleases that cleave DNA at specific sites (d) both b and c

188) Plasmids are

(a) circular protein molecules (b) required by bacteria (c) tiny bacteria

(d) confer resistance to antibiotics

189) EcoRI cleaves DNA at

(a) AGGGTT (b) GTATATC (c) GAATTC (d) TATAGC

190) Genetic engineering is

(a) making artificial genes.

(b) hybridization of DNA of one organism to that of the others.

(c) production of alcohol by using micro organisms.

(d) making artificial limbs, diagnostic instruments such as ECG, EEG etc.,

191) Consider the following statements:
I. Recombinant DNA technology is popularly known as genetic engineering is a stream of biotechnology which deals with the manipulation of genetic materials by man invitro
II. pBR322 is the first artificial cloning vector developed in 1977 by Boliver and Rodriguez from E.coli plasmid
III. Restriction enzymes belongs to a class of enzymes called nucleases.
Choose the correct option regarding above statements

(a) I & II (b) I & III (c) II & III (d) I,II & III

192) The process of recombinant DNA technology has the following steps
I. amplication of the gene
II. Insertion of recombinant DNA into the host cells
III. Cutting of DNA at specific location using restriction enzyme .
IV. Isolation of genetic material (DNA) Pick out the correct sequence of step for recombinant DNA technology.

(a) ii, iii, iv, and i (b) iv, ii, iii, and i (c) i, ii, iii, and iv (d) iv, iii, i, and ii

193) Which one of the following palindromic base sequence in DNA can be easily cut at about the middle by some particular restriction enzymes?

(a) 5' CGTTCG 3' 3' ATCGTA 5' (b) 5'GATATG 3' 3' CTACTA 5'
(c) 5'GAATTC 3' 3' CTTAAG 5' (d) 5'CACGTA 3' 3' CTCAGT 5'

194) pBR 322, BR stands for

(a) Plasmid Bacterial Recombination (b) Plasmid Bacterial Replication
(c) Plasmid Boliver and Rodriguez (d) Plasmid Baltimore and Rodriguez

195) Which of the following one is used as a Biosensors?

(a) Electrophoresis (b) Bioreactors (c) Vectors (d) Electroporation

196) Match the Following :

Column A	Column B
1 Exonuclease	a. add or remove phosphate
2 Endonuclease	b. binding the DNA fragments
3 Alkaline Phosphatase	c. cut the DNA at terminus
4 Ligase	d. cut the DNA at middle

(a) A) a b c d (b) B) c d b a (c) C) a c b d (d) D) c d a b

197) In which techniques Ethidium Bromide is used?

(a) Southern Blotting techniques (b) Western Blotting techniques
(c) Polymerase Chain Reaction (d) Agrose Gel Electroporosis

198) Assertion : Agrobacterium tumifaciens is popular in genetic engineering because this bacterium is associated with the root nodules of all cereals and pulse crops
Reason: A gene incorporated in the bacterial chromosomal genome gets atomatically transferred to the cross with which bacterium is associated.

(a) Both assertion and reason are true. But reason is correct explanation of assertion.
(b) Assertion is true, but reason is false. (c) Assertion is false, but reason is true
(d) Both assertion and reason are false.

199) Which one of the following is not correct statement

(a) Ti plasmid causes the bunchy top disease
(b) Multiple cloning site is known as Polylinker
(c) Non viral method transfection of Nucleic acid in cell
(d) Polylactic acid is a kind of biodegradable and bioactive thermoplastic.

200) An analysis of chromosomal DNA using the southern hybridisation technique does not use

(a) Electrophoresis (b) Blotting (c) Autoradiography (d) Polymerase Chain Reaction

201) An antibiotic gene in a vector usually helps in the selection of

(a) Competent cells (b) Transformed cells (c) Recombinant cells

(d) None of the above

202) Some of the characteristics of Bt cotton are

(a) Long fibre and resistant to aphids

(b) Medium yield, long fibre and resistant to beetle pests

(c) high yield and production of toxic protein crystals which kill dipteran pests.

(d) High yield and resistant to ball worms

203) Totipotency refers to

(a) capacity to generate genetically identical plants.

(b) capacity to generate a whole plant from any plant cell / explant.

(c) capacity to generate hybrid protoplasts.

(d) recovery of healthy plants from diseased plants.

204) Micro propagation involves

(a) vegetative multiplication of plants by using micro-organisms.

(b) vegetative multiplication of plants by using small explants.

(c) vegetative multiplication of plants by using microspores.

(d) Non-vegetative multiplication of plants by using microspores and megaspores.

205) Match the following :

1) Totipotency	A) Reversion of mature cells into meristerm
2) Dedifferentiation	B) Biochemical and structural changes of cells
3) Explant	C) Properties of living cells develops into entire plant
4) Differentiation	D) Selected plant tissue transferred to culture medium

(a) C A D B (b) A C B D (c) B A D C (d) D B C A

206) The time duration for sterilization process by using autoclave is _____ minutes and the temperature is _____

(a) 10 to 30 minutes and 125° C (b) 15 to 30 minutes and 121° C

(c) 15 to 20 minutes and 125° C (d) 10 to 20 minutes and 121° C

207) Which of the following statement is correct

(a) Agar is not extracted from marine algae such as seaweeds

(b) Callus undergoes differentiation and produces somatic embryoids.

(c) Surface sterilization of explants is done by using mercuric bromide

(d) P^H of the culture medium is 5.0 to 6.0

208) Select the incorrect statement from given statement

(a) A tonic used for cardiac arrest is obtained from Digitalis purpuria

(b) Medicine used to treat Rheumatic pain is extracted from Capsicum annum

(c) An anti malarial drug is isolated from Cinchona officinalis.

(d) Anti-cancinogenic property is not seen in Catharanthus roseus.

209) Virus free plants are developed from

(a) Organ culture (b) Meristem culture (c) Protoplast culture

(d) Cell suspension culture

210) The prevention of large scale loss of biological interity

(a) Biopatent (b) Bioethics (c) Biosafety (d) Biofuel

211) Cryopreservation means it is a process to preserve plant cells, tissues or organs

(a) at very low temperature by using ether.

(b) at very high temperature by using liquid nitrogen

(c) at very low temperature of -196 by using liquid nitrogen

(d) at very low temperature by using liquid nitrogen

212) Solidifying agent used in plant tissue culture is

(a) Nicotinic acid (b) Cobaltous chloride (c) EDTA (d) Agar

213) Arrange the correct sequence of ecological hierarchy starting from lower to higher level.

(a) Individual organism → Population Landscape → Ecosystem

(b) Landscape → Ecosystem → Biome → Biosphere

(c) community → Ecosystem → Landscape → Biome

(d) Population → organism → Biome → Landscape

214) Ecology is the study of an individual species is called

i) Community ecology
ii) Autecology
iii) Species ecology
iv) Synecology

(a) i only (b) ii only (c) i and iv only (d) ii and iii only

215) A specific place in an ecosystem, where an organism lives and performs its functions is

(a) habitat (b) niche (c) landscape (d) biome

216) Read the given statements and select the correct option.

i) Hydrophytes possess aerenchyma to support themselves in water.
ii) Seeds of Viscum are positively photoblastic as they germinate only in presence of light.
iii) Hygroscopic water is the only soil water available to roots of plant growing in soil as it is present inside the micropores.
iv) High temperature reduces use of water and solute absorption by roots

(a) i, ii, and iii only (b) ii, iii and iv (c) ii and iii only (d) i and ii only

217) Which of the given plant produces cardiac glycosides?

(a) Calotropis (b) Acacia (c) Nepenthes (d) Utricularia

218) Read the given statements and select the correct option.
i) Loamy soil is best suited for plant growth as it contains a mixture of silt, sand and clay.
ii) The process of humification is slow in case of organic remains containing a large amount of lignin and cellulose.
iii) Capillary water is the only water available to plant roots as it is present inside the micropores.
iv) Leaves of shade plant have more total chlorophyll per reaction centre, low ratio of chl a and chl b are usually thinner leaves.

(a) i, ii and iii only (b) ii, iii and iv only (c) i, ii and iv only (d) ii and iii only

219) Read the given statements and select the correct option.
Statement A : Cattle do not graze on weeds of Calotropis.
Statement B : Calotropis have thorns and spines, as defense against herbivores.

(a) Both statements A and B are incorrect.

(b) Statement A is correct but statement B is incorrect

(c) Both statements A and B are correct but statement B is not the correct explanation of statement A.

(d) Both statements A and B are correct and statement B is the correct explanation of statement A.

220) In soil water available for plants is

(a) gravitational water (b) chemically bound water (c) capillary water

(d) hygroscopic water

221) Read the following statements and fill up the blanks with correct option.
i) Total soil water content in soil is called _____
ii) Soil water not available to plants is called _____
iii) Soil water available to plants is called

(a)

(i)	(ii)	(iii)
Holard	Echard	Chresard

(b)

i	ii	iii
Echard	Holard	Chresard

(c)

i	ii	iii
Chresard	Echard	Holard

(d)

i	ii	iii
Holard	Chresard	Echard

222) Column I represent the size of the soil particles and Column II represents type of soil components. Which of the following is correct match for the Column I and Column II

Column - I	**Column - II**
I) 0.2 to 2.00 mm	i) Slit Soil
II) Less than 0.002	ii) Clayey Soil
III) 0.002 to 0.02 mm	iii) Sandy Soil
IV) 0.002 to 0.2 mm	iv) Loamy Soil

(a)

I	II	III	IV
ii	iii	iv	i

(b)

I	II	III	IV
vi	i	iii	ii

(c)

I	II	III	IV
iii	ii	i	iv

(d) None of the above

223) The plant of this group are adapted to live partly in water and partly above substratum and free from water

(a) Xerophytes (b) Mesophytes (c) Hydrophytes (d) Halophytes

224) Identify the A, B, C and D in the given table

Interaction	Effects on species X	Effects on species Y
Mutualism	A	(+)
B	(+)	(-)
Competition	(-)	C
D	(-)	o

(a)

A	B	C	D
(+)	Parasitism	(-)	Amensalism

(b)

A	B	C	D
(-)	Mutualism	(+)	Competition

(c)

A	B	C	D
(+)	Competition	(0)	Mutualism

(d)

A	B	C	D
(O)	Amensalism	(+)	Parasitism

225) Ophrys an orchid resembling the female of an insect so as to able to get pollinated is due to phenomenon of

(a) Myrmecophily (b) Ecological equivalents (c) Mimicry (d) None of these

226) A free living nitrogen fixing cyanobacterium which can also form symbiotic association with the water fern Azolla

(a) Nostoc (b) Anabaena (c) chlorella (d) Rhizobium

227) Pedogenesis refers to

(a) Fossils (b) Water (c) Population (d) Soil

228) Mycorrhiza promotes plant growth by

(a) Serving as a plant growth regulators (b) Absorbing inorganic ions from soil

(c) Helping the plant in utilizing atmospheric nitrogen

(d) Protecting the plant from infection

229) Which of the following plant has a non-succulent xerophytic and thick leathery leaves with waxy coating

(a) Bryophyllum (b) Ruscus (c) Nerium (d) Calotropis

230) In a fresh water environment like pond, rooted autotrophs are

(a) Nymphaea and typha (b) Ceratophyllum and Utricularia (c) Wolffia and pistia

(d) Azolla and lemna

231) Match the following and choose the correct combination from the options given below:

Column I (Interaction)	**Column II (Examples)**
I. Mutualism	i) Trichoderma and Penicillium
II. Commensalism	ii) Balanophora, Orobanche
III. Parasitism	iii) Orchids and Ferns
IV. Predation	iv) Lichen and Mycorrhiza
V. Amensalism	v) Nepenthes and Diaonaea

(a)

I	II	III	IV	V
i	ii	iii	iv	v

(b)

I	II	III	IV	V
ii	iii	iv	v	i

(c)

I	II	III	IV	V
iii	iv	v	i	ii

(d)

I	II	III	IV	V
iv	iii	ii	v	i

232) Strong, sharp spines that get attached to animal's feet are found in the fruits of

(a) Argemone (b) Ecballium (c) Heritier (d) Crossandra

233) Sticky glands of Boerhaavia and Cleome support

(a) Anemochory (b) Zoochory (c) Autochory (d) Hydrochory

234) Which of the following is not a abiotic component of the ecosystem?

(a) Bacteria (b) Humus (c) Organic compounds (d) Inorganic compounds

235) Which of the following is / are not a natural ecosystem?

(a) Forest ecosystem (b) Rice field (c) Grassland ecosystem (d) Desert ecosystem

236) Pond is a type of

(a) forest ecosystem (b) grassland ecosystem (c) marine ecosystem

(d) fresh water ecosystem

237) Pond ecosystem is

(a) not self sufficient and self regulating (b) partially self sufficient and self regulating

(c) self sufficient and not self regulating (d) self sufficient and self regulating

238) Profundal zone is predominated by heterotrophs in a pond ecosystem, because of

(a) with effective light penetration (b) no effective light penetration

(c) complete absence of light (d) a and b

239) Solar energy used by green plants for photosynthesis is only

(a) 2 – 8% (b) 2 – 10% (c) 3 – 10% (d) 2 – 9%

240) Which of the following ecosystem has the highest primary productivity?

(a) Pond ecosystem (b) Lake ecosystem (c) Grassland ecosystem

(d) Forest ecosystem

241) Ecosystem consists of

(a) decomposers (b) producers (c) consumers (d) all of the above

242) Which one is in descending order of a food chain

(a) Producers → Secondary consumers → Primary consumers → Tertiary consumers

(b) Tertiary consumers → Primary consumers →Secondary consumers → Producers

(c) Tertiary consumers → Secondary consumers → Primary consumers → Producers

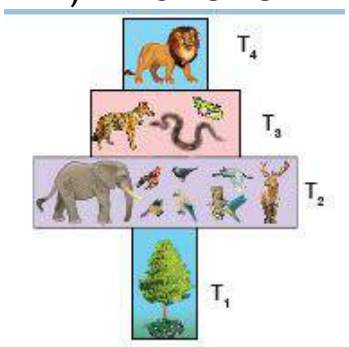
(d) Tertiary consumers → Producers → Primary consumers → Secondary consumers

243) Significance of food web is / are

(a) it does not maintain stability in nature (b) it shows patterns of energy transfer

(c) it explains species interaction (d) b and c

244) The following diagram represents



(a) pyramid of number in a grassland ecosystem

(b) pyramid of number in a grassland ecosystem

(c) pyramid of number in a forest ecosystem

(d) pyramid of biomass in a pond ecosystem

245) Which of the following is / are not the mechanism of decomposition

(a) Eluviation (b) Catabolism (c) Anabolism (d) fragmentation

246) Which of the following is not a sedimentary cycle

(a) Nitrogen cycle (b) Phosphorous cycle (c) Sulphur cycle (d) Calcium cycle

247) Which of the following are not regulating services of ecosystem services
i) Genetic resources
ii) Recreation and aesthetic values
iii) Invasion resistance
iv) Climatic regulation

(a) i and iii (b) ii and iv (c) i and ii (d) i and iv

248) Which of the following would most likely help to slow down the greenhouse effect.

(a) Converting tropical forests into grazing land for cattle.

(b) Ensuring that all excess paper packaging is buried to ashes.

(c) Redesigning landfill dumps to allow methane to be collected.

(d) Promoting the use of private rather than public transport.

249) With respect to Eichhornia
Statement A: It drains off oxygen from water and is seen growing in standing water.
Statement B: It is an indigenous species of our country.

(a) Statement A is correct and Statement B is wrong

(b) Both Statements A and B are correct

(c) Statement A is correct and Statement B is wrong.

(d) Both statements A and B are wrong

250) Find the wrongly matched pair.

(a) Endemism - Species confined to a region and not found anywhere else.

(b) Hotspots - Western ghats (c) Ex-situ Conservation - Zoological parks

(d) Sacred groves - Saintri hills of Rajasthan (e) Alien sp. Of India - Water hyacinth

251) Depletion of which gas in the atmosphere can lead to an increased incidence of skin cancer?

(a) Ammonia (b) Methane (c) Nitrous oxide (d) Ozone

252) One green house gas contributes 14% of total global warming and another contributes 6%. These are respectively identified as

(a) N_2O and CO_2 (b) CFC_s and N_2O (c) CH_4 and CO_2 (d) CH_4 and CFCS

253) One of the chief reasons among the following for the depletion in the number of species making endangered is

(a) over hunting and poaching (b) green house effect (c) competition and predation

(d) Habitat destruction

254) Deforestation means

(a) growing plants and trees in an area where there is no forest

(b) growing plants and trees in an area where the forest is removed

(c) growing plants and trees in a pond (d) Removal of plants and trees

255) Deforestation does not lead to

(a) Quick nutrient cycling (b) soil erosion (c) alternation of local weather conditions

(d) Destruction of natural habitat weather conditions

256) The unit for measuring ozone thickness

(a) Joule (b) Kilos (c) Dobson (d) Watt

257) People's movement for the protection of environment in Sirsi of Karnataka is

(a) Chipko movement (b) Amirtha Devi Bishwas movement (c) Appiko movement

(d) None of the above

258) The plants which are grown in silivpasture system are

(a) Sesbania and Acacia (b) Solenum and Crotalaria (c) Clitoria and Begonia

(d) Teak and sandal

259) Assertion: Genetic variation provides the raw material for selection
Reason: Genetic variations are differences in genotypes of the individuals.

(a) Assertion is right and reason is wrong. (b) Assertion is wrong and reason is right

(c) Both reason and assertion is right. (d) Both reason and assertion is wrong.

260) While studying the history of domestication of various cultivated plants _____ were recognized earlier

(a) Centres of origin (b) Centres of domestication (c) Centres of hybrid

(d) Centres of variation

261) Pick out the odd pair

(a) Mass selection - Morphological characters

(b) Purline selection - Repeated self pollination

(c) Clonal selection - Sexually propagated (d) Natural selection - Involves nature

262) Match Column I with Column II

Column I	Column II
i) William S. Gaud	I) Heterosis
ii) Shull	II) Mutation breeding
iii) Cotton Mather	III) Green revolution
iv) Muller and Stadler	IV) Natural hybridization

(a) i – I, ii – II, iii – III, iv – IV (b) i – III, ii – I, iii – IV, iv – II

(c) i – IV, ii – II, iii – I, iv – IV (d) i – II, ii – IV, iii – III, iv – I

263) The quickest method of plant breeding is

(a) Introduction (b) Selection (c) Hybridization (d) Mutation breeding

264) Desired improved variety of economically useful crops are raised by

(a) Natural Selection (b) hybridization (c) mutation (d) biofertilisers

265) Plants having similar genotypes produced by plant breeding are called

(a) clone (b) haploid (c) autopolyploid (d) genome

266) Importing better varieties and plants from outside and acclimatising them to local environment is called

(a) cloning (b) heterosis (c) selection (d) introduction

267) Dwarfing gene of wheat is

(a) pal 1 (b) Atomita 1 (c) Norin 10 (d) pelita 2

268) Crosses between the plants of the same variety are called

(a) interspecific (b) inter varietal (c) intra varietal (d) inter generic

269) Progeny obtained as a result of repeat self pollination a cross pollinated crop to called

(a) pure line (b) pedigree line (c) inbreed line (d) heterosis

270) Jaya and Ratna are the semi dwarf varieties of

(a) wheat (b) rice (c) cowpea (d) mustard

271) Which one of the following are the species that are crossed to give sugarcane varieties with high sugar, high yield, thick stems and ability to grow in the sugarcane belt of North India?

(a) Saccharum robustum and Saccharum officinarum

(b) Saccharum barberi and Saccharum officinarum

(c) Saccharum sinense and Saccharum officinarum

(d) Saccharum barberi and Saccharum robustum

272) Match column I (crop) with column II (Corresponding disease resistant variety) and select the correct option from the given codes.

Column I	Column II
I) Cowpea	i) Himgiri
II) Wheat	ii) Pusa komal
III) Chilli	iii) Pusa Sadabahar
IV) Brassica	iv) Pusa Swarnim

(a)

I	II	III	IV
iv	iii	ii	i

(b)

I	II	III	IV
ii	i	iii	iv

(c)

I	II	III	IV
ii	iv	i	iii

(d)

I	II	III	IV
i	iii	iv	ii

273) A wheat variety, Atlast 66 which has been used as a donor for improving cultivated wheat, which is rich in

(a) iron (b) carbohydrates (c) proteins (d) vitamins

274) Which one of the following crop varieties correct matches with its resistance to a disease?

(a)

Variety	Resistance to disease
Pusa Komal	Bacterial blight

(b)

Variety	Resistance to disease
Pusa Sadabahar	White rust

(c)

Variety	Resistance to disease
Pusa Shubhra	Chilli mosaic virus

(d)

Variety	Resistance to disease
Brassica	Pusa swarnim

275) Which of the following is incorrectly paired?

(a) Wheat - Himgiri (b) Milch breed - Sahiwal (c) Rice - Ratna

(d) Pusa Komal - Brassica

276) Match list I with list II

List I	List II
Biofertilizer	Organisms
i) Free living N2	a) Aspergillus
ii) Symbiotic N2	b) Amanita
iii) P Solubilizing	c) Anabaena azollae
iv) P Mobilizing	d) Azotobactor

(a) ic, iia, iiib, ivd (b) id, iic, iiia, ivb. (c) ia, iic, iiib, ivd (d) ib, iia, iiid, ivc

277) Consider the following statements and choose the right option.
i) Cereals are members of grass family.
ii) Most of the food grains come from monocotyledon.

(a) (i) is correct and (ii) is wrong (b) Both (i) and (ii) are correct

(c) (i) is wrong and (ii) is correct (d) Both (i) and (ii) are wrong

278) Assertion: Vegetables are important part of healthy eating.
Reason: Vegetables are succulent structures of plants with pleasant aroma and flavours.

(a) Assertion is correct, Reason is wrong (b) Assertion is wrong, Reason is correct

(c) Both are correct and reason is the correct explanation for assertion.

(d) Both are correct and reason is not the correct explanation for assertion.

279) Groundnut is native of _____

(a) Philippines (b) India (c) North America (d) Brazil

280) Statement A: Coffee contains caffeine
Statement B: Drinking coffee enhances cancer

(a) A is correct, B is wrong (b) A and B – Both are correct (c) A is wrong, B is correct

(d) A and B – Both are wrong

281) Tectona grandis is coming under family

(a) Lamiaceae (b) Fabaceae (c) Dipterocaipaceae (d) Ebenaceae

282) Tamarindus indica is indigenous to

(a) Tropical African region (b) South India, Sri Lanka (c) South America, Greece

(d) India alone

283) New world species of cotton

(a) Gossipium arboretum (b) G.herbaceum (c) Both a and b (d) G.barbadense

284) Assertion: Turmeric fights various kinds of cancer
Reason: Curcumin is an anti-oxidant present in turmeric

(a) Assertion is correct, Reason is wrong (b) Assertion is wrong, Reason is correct

(c) Both are correct (d) Both are wrong

285) Find out the correctly matched pair.

(a) Rubber-Shorea robusta (b) Dye-Lawsonia inermis (c) Timber-Cyperus papyrus

(d) Pulp-Hevea brasiliensis

286) Observe the following statements and pick out the right option from the following:
Statement I – Perfumes are manufactured from essential oils.
Statement II – Essential oils are formed at different parts of the plants.

(a) Statement I is correct (b) Statement II is correct (c) Both statements are correct

(d) Both statements are wrong

287) Observe the following statements and pick out the right option from the following:
Statement I: The drug sources of Siddha include plants, animal parts, ores and minerals.
Statement II: Minerals are used for preparing drugs with long shelf-life.

(a) Statement I is correct (b) Statement II is correct (c) Both statements are correct

(d) Both statements are wrong

288) The active principle trans-tetra hydro canabial is present in

(a) Opium (b) Curcuma (c) Marijuana (d) Andrographis

289) Which one of the following matches is correct?

(a) Palmyra - Native of Brazil (b) Saccharun - Abundant in Kanyakumari

(c) Steveocide - Natural sweetener (d) Palmyra sap - Fermented to give ethanol

290) The only cereal that has originated and domesticated from the New world.

(a) Oryza sativa (b) Triticum asetumn (c) Triticum duram (d) Zea mays

291) Colostrum provides

(a) Naturally acquired active immunity (b) Naturally acquired passive immunity

(c) Artificially acquired active immunity (d) Artificially acquired passive immunity

292) Paratope is an

(a) Antibody binding site on variable regions

(b) Antibody binding site on heavy regions (c) Antigen binding site on variable regions

(d) Antigen binding site on heavy regions

293) Allergy involves

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

294) Anaphylactic shock is due to

(a) Allergic reaction (b) Secretion of toxins (c) Secretion of histamines

(d) All the above

295) Spread of cancerous cells to distant sites is termed as

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

296) AIDS virus has

(a) Single stranded RNA (b) Double stranded RNA (c) Single stranded DNA

(d) Double stranded DNA

297) All are peripheral lymphoid organs except

(a) Lymph nodes (b) Spleen (c) Mucosa associated lymphoid tissue (d) Thymus

298) Which is not a macrophage?

(a) Monocyte (b) Microglia (c) Kupffer cell (d) Lymphocyte

299) True about interferon is that

(a) It is synthetic antiviral agent (b) It inhibits viral replication in cells

(c) It is specific for a particular virus (d) It causes infection

300) Cell mediated iriununity is carried out by _____ while humoral immunity is mainly carried out by

(a) B cells/T cells (b) Epitopes/antigens (c) T cells/B cells (d) antibodies/antigens

301) B Cells are activated by

(a) Complement (b) Antibody (c) Interferon (d) Antigen

302) In agglutination and precipitation reactions, the antigen is a _____ and _____ respectively

(a) Whole cell/soluble molecule (b) Soluble molecule/whole cell (c) Bacterium/virus

(d) Protein/Antibody

303) B cells that produce and release large amounts of antibody are called

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

304) Raja is injured and got swelling. The swelling is due to the infection of tissue is an example of

(a) Mechanical barrier (b) Physiological barrier (c) Phagocytosis (d) Inflammation

100 x 2 = 200

305) Name an organism where cell division is itself a mode of reproduction.

306) Name the phenomenon where the female gamete directly develops into a new organism with with an avian example.

307) Why is the offspring formed by asexual reproduction referred as a clone?

308) How is juvenile phase different from reproductive phase?
309) What is the difference between syngamy and fertilization?
310) Mention the differences between spermiogenesis and spermatogenesis
311) At what stage of development are the gametes formed in new born male and female?
312) Expand the acronyms
 a. FSH
 b. LH
 c. hCG
 d. hPL
313) Placenta is an endocrine tissue. Justify
314) Draw a labeled sketch of a spermatozoan.
315) What is inhibin? State its functions
316) Name the hormones produced from the placenta during pregnancy.
317) Define gametogenesis.
318) Expand the following
 a) ZIFT
 b) ICSI
319) Differentiate foeticide and infanticide
320) Write the preventive measures of STDs.
321) What is haplodiploidy?
322) What is Lyonisation?
323) What is criss-cross inheritance?
324) Mention the symptoms of Phenylketonuria
325) Give reasons: 'Genetic code is universal'.
326) Differentiate - Template strand and coding strand.
327) From their examination of the structure of DNA, What did Watson and Crick infer about the probable mechanism of DNA replication, coding capability and mutation?
328) Why tRNA is called an adapter molecule?
329) HGP is the windows for treatment of various genetic disorders. Justify the statement.
330) List out the major gases seems to be found in the primitive earth.
331) Mention the main objections to Darwinism.
332) How does Neanderthal man differ from the modern man in appearance?
333) What are interferons? Mention their role.
334) List out chemical alarm signals produced during inflammation.
335) A person is infected by HIV. How will you diagnose for AIDS?
336) Autoimmunity is a misdirected immune response. Justify.
337) Give any two bioactive molecules produced by microbes and state their uses.
338) List the advantages of biogas plants in rural areas.
339) Define the following terms:
 a) Antibiotics
 b) Zymology
 c) Superbug
340) PCR is a useful tool for early diagnosis of an Infectious disease. Elaborate
341) What is a Habitat?
342) Define ecological niche.
343) What is Acclimatisation?
344) What is Pedogenesis?
345) What is soil permeability?
346) Differentiate between Eurytherms and Stenotherms.
347) Define endemism

348) How many hotspots are there in India? Name them
349) What are the three levels of biodiversity?
350) “Amazon forest is considered to be the lungs of the planet”- Justify this statement.
351) Expand
(i) CFC
(ii) AQI
(iii) PAN
352) What effect can fertilizer runoff have on an aquatic ecosystem?
353) How does recycling help reduce pollution?
354) What is reproduction?
355) List out two sub-aerial stem modifications with example.
356) What is layering?
357) What are clones?
358) What is Cantharophily.
359) “The endosperm of angiosperm is different from gymnosperm”. Do you agree. Justify your answer.
360) Define the term Diplospory
361) What is Mellitophily?
362) Give the names of the scientists who rediscovered Mendelism
363) What is back cross?
364) Define Genetics.
365) What are multiple alleles?
366)

s.no	gamete types	Number of progenies
1	ABC	349
2	Abc	114
3	abC	124
4	AbC	5
5	aBc	4
6	aBC	116
7	ABc	128
8	abc	360

i) What is the name of this test cross?
ii) How will you construct gene mapping from the above given data?
iii) Find out the correct order of genes.
367) What is the difference between missense and nonsense mutation?
368) What are the materials used to grow microorganism like Spirulina?
369) What are the enzymes you can used to cut terminal end and internal phospho di ester bond of nucleotide sequence?
370) Name the chemicals used in gene transfer.
371) Give the examples for micro propagation performed plants .
372) Define ecology.
373) What is ecological hierarchy? Name the levels of ecological hierarchy.
374) What are ecological equivalents? Give one example
375) Why are some organisms called as eurythermals and some others as stenohaline ?
376) ‘Green algae are not likely to be found in the deepest strata of the ocean’. Give at least one reason.
377) What is Phytoremediation ?
378) Soil formation can be initiated by biological organisms. Explain how?
379) Lichen is considered as a good example of obligate mutualism. Explain.
380) How does an orchid ophrys ensures its pollination by bees ?

381) Why do submerged plants receive weak illumination than exposed floating plants in a lake?
382) How is rhytidome act as the structural defence by plants against fire?
383) What is myrmecophily?
384) What is seed ball?
385) How is anemochory differ from zoochory?
386) Productivity of profundal zone will be low. Why?
387) Pyramid of energy is always upright. Give reasons
388) What will happen if all producers are removed from ecosystem?
389) What is ozone hole?
390) Give four examples of plants cultivated in commercial agroforestry.
391) Expand CCS.
392) How do forests help in maintaining the climate?
393) Differentiate primary introduction from secondary introduction.
394) How are microbial innoculants used to increase the soil fertility?
395) Explain the best suited type followed by plant breeders at present?
396) Write the cosmetic uses of Aloe.
397) What is pseudo cereal? Give an example.
398) Name the humors that are responsible for the health of human beings.
399) Give definitions for organic farming?
400) How does saliva act inbody defence?
401) How does immune system work?
402) Name and explain the type of barriers which involve macrophages.
403) What are interferons? Mention their role.
404) List out chemical alarm signals produced during inflammation.

405) What is parthenogenesis? Give two examples from animals.
406) Which type of reproduction is effective -Asexual or sexual and why?
407) The unicellular organisms which reproduce by binary fission are considered immortal. Justify
408) How is polyspermy avoided in humans?
409) What is colostrum? Write its significance.
410) Mention the importance of the position of the testes in humans.
411) What is the composition of semen?
412) Describe the structure of the human ovum with a neat labelled diagram.
413) Give a schematic representation of spermatogenesis and oogenesis in humans.
414) Explain the role of oxytocin and relaxin in parturition and lactation.
415) What is amniocentesis? Why a statutory ban is imposed on this technique?
416) Correct the following statements
a) Transfer of an ovum collected from donor into the fallopian tube is called ZIFT.
b) Transfering of an embryo with more than 8 blastomeres into uterus is called GIFT.
c) Multiload 375 is a hormone releasing IUD.
417) Which method do you suggest the couple to have a baby, if the male partner fails to inseminate the female or due to very low sperm count in the ejaculate?
418) What are the strategies to be implemented in India to attain total reproductive health?
419) Amniocentesis, the foetal sex determination test, is banned in our country, Is it necessary? Comment.
420) Why are sex linked recessive characters more common in the male human beings?

421) Explain the mode of sex determination in honeybees.
422) What are the applications of Karyotyping?
423) Differentiate - Leading stand and lagging strand
424) State any three goals of the human genome project.
425) Distinguish between structural gene, regulatory gene and operator gene
426) A low level of expression of lac operon occurs at all the windows for treatment of various genetic disorders. Justify the statement
427) It is established that RNA is the first genetic material. Justify giving reasons.
428) Differentiate between divergent evolution and convergent evolution with one example for each.
429) How does Hardy-Weinberg's expression ($p^2 + 2pq + q^2 = 1$) explain that genetic equilibrium is maintained in a population? List any four factors that can disturb the genetic equilibrium.
430) How did Darwin explain fitness of organisms?
431) Who disproved Lamarck's Theory of acquired characters? How?
432) Rearrange the descent in human evolution
Austrolopithecus → Homo erectus → Homo sapiens → Ramapithecus → Homo habilis.
433) Name and explain the type of barriers which involve macrophages.
434) Explain the structure of immunoglobulin with suitable diagram.
435) What are the cells involved innate immune system.
436) A patient was hospitalized with fever and chills. Merozoites were observed in her blood. What is your diagnosis?
437) List the common withdrawal symptoms of drugs and alcohol abuse.
438) Why do you think it is not possible to produce vaccine against 'common cold'?
439) How is milk converted into curd? Explain the process of curd formation
440) When does antibiotic resistance develop?
441) What is bioremediation ?
442) How is the amplification of a gene sample of interest carried out using PCR?
443) What is genetically engineered Insulin?
444) ELISA is a technique based on the principles of antigen-antibody reactions. Can this technique be used in the molecular diagnosis of a genetic disorder such as Phenylketonuria?
445) What are transgenic animals? Give examples
446) If a person thinks he is infected with HIV, due to unprotected sex, and goes for a blood test. Do you think a test such as ELISA will help? If so why? If not, why?
447) What are DNA vaccines?
448) Differentiate between Somatic cell gene therapy and germline gene therapy
449) What are recombinant vaccines?Explain the types
450) Explain why cloning of Dolly, the sheep was such a major scientific breakthrough?
451) Explain hibernation and aestivation with examples.
452) Give the diagnostic characters features of a Biome
453) Differentiate J and S shaped curve
454) Give an account of population regulation
455) Differentiate between Tundra and Taiga Biomes.
456) Explain parasitism with an example.
457) Differentiate between predator and prey.
458) Compare and Contrast the insitu and exsitu conservation.
459) What are called endangered species? Explain with examples
460) Why do we find a decrease in biodiversity distribution, if we move from the tropics towards the poles?

461) What are the factors that drive habitat loss?
462) Alien species invasion is a threat to endemic species – substantiate this statement.
463) What is SMOG and how it is harmful for us?
464) Write notes on the following:
a. Eutrophication
b. Algal Bloom
465) What are some solutions to toxic dumping in our oceans?
466) A detached leaf of Bryophyllum produces new plants. How?
467) Differentiate Grafting and Layering.
468) Distinguish mound layering and air layering.
469) What is endothelium
470) What is polyembryony. How it can commercially exploited.
471) "Endothecium is associated with dehiscence of anther" Justify the statement
472) List out the functions of tapetum.
473) Write short note on Pollen kitt.
474) Differentiate incomplete dominance and codominance.
475) What is meant by cytoplasmic inheritance
476) Explain the mechanism of crossing over.
477) Write the steps involved in molecular mechanism of DNA recombination with diagram.
478) You are working in a biotechnology lab with a becterium namely E.coli. How will you cut the nucleotide sequence? explain it.
479) What do you know about the word pBR332?
480) What are restriction enzyme. Mention their type with role in Biotechnology.
481) How will you identify a vector ?
482) Write the advantages and disadvantages of Bt cotton.
483) Write the benefits and risk of Genetically Modified Foods.
484) Write the various steps involved in cell suspension culture.
485) What do you mean Embryoids? Write its application.
486) Give an account on Cryopreservation.
487) What do you know about Germplasm conservation. Describe it.
488) Distinguish habitat and niche
489) What is Albedo effect and write their effects?
490) List any two adaptive features evolved in parasites enabling them to live successfully on their host?
491) Mention any two significant roles of predation plays in nature.
492) What is vivipary? Name a plant group which exhibits vivipary.
493) What is thermal stratification? Mention their types.
494) What is co evolution?
495) List out the effects of fire to plants.
496) Discuss the gross primary productivity is more efficient than net primary productivity.
497) Name of the food chain which is generally present in all type of ecosystem. Explain and write their significance.
498) Shape of pyramid in a particular ecosystem is always different in shape. Explain with example.
499) Generally human activities are against to the ecosystem, where as you a student how will you help to protect ecosystem?
500) How do sacred groves help in the conservation of biodiversity?

501) Which one gas is most abundant out of the four commonest greenhouse gases? Discuss the effect of this gas on the growth of plants?

502) Discuss which wood is better for making furniture.

503) A person got irritation while applying chemical dye. What would be your suggestion for alternative?

504) Which is called as the “King of Bitters”? Mention their medicinal importance.

505) Differentiate bio-medicines and botanical medicines.

506) What are millets? What are its types? Give example for each type.

507) Enumerate the uses of turmeric

508) Write the uses of nuts you have studied.

509) Give an account of active principle and medicinal values of any two plants you have studied.

510) What are the King and Queen of spices? Explain about them and their uses.

511) Differentiate between:
Innate immunity and acquired immunity

512) Differentiate between:
Primary and secondary immune responses

513) Differentiate between:
Active and passive immunity

514) Differentiate between:
Humoral and CMI immunity

515) Differentiate between:
Autoimmune disease and Immunodeficiency disease

516) Explain the process of replication of retrovirus after it gains entry into the human body.

517) Why is an antibody molecule represented as H2 L2?

518) Explain the structure of immunoglobulin with suitable diagram.

100 x 5 = 500

519) Give reasons for the following:
(a) Some organisms like honey bees are called parthenogenetic animals
(b) A male honey bee has 16 chromosomes where as its female has 32 chromosomes

520) Differentiate between the following:
(a) Binary fission in amoeba and multiple fission in Plasmodium
(b) Budding in yeast and budding in Hydra
(c) Regeneration in lizard and Planaria

521) Explain the various phases of the menstrual cycle.

522) Describe the major STDs and their symptoms.

523) How are STDs transmitted?

524) Explain the genetic basis of ABO blood grouping man.

525) How is sex determined in human beings?

526) What is male heterogamety?

527) Brief about female heterogamety

528) Give an account of genetic control of Rh factor.

529) Explain the inheritance of sex linked characters in human being.

530) Why the human genome project is called a mega project?

531) What are the three structural differences between RNA and DNA?

532) How is the two stage process of protein synthesis advantageous?

533) Why did Hershey and Chase use radioactively labelled phosphorous and sulphur only? Would they have got the same result if they use radiolabelled carbon and nitrogen?

534) Explain the formation of a nucleosome.

535) Explain the three major categories in which fossilization occur?

536) Explain how mutations, natural selection and genetic drift affect Hardy Weinberg equilibrium.
537) Taking the example of Peppered moth, explain the action of natural selection. What do you call the above phenomenon?
538) Darwin's finches and Australian marsupials are suitable examples of adaptive radiation – Justify the statement
539) How does Mutation theory of De Vries differ from Lamarck and Darwin's view in the origin of new species.
540) Explain stabilizing, directional and disruptive selection with examples
541) Given below are some human organs. Identify one primary and one secondary lymphoid organ. Explain its role. Liver, thymus, stomach, thyroid, tonsils.
542) Explain the process of replication of retrovirus after it gains entry into the human body.
543) What is vaccine? What are its types?
544) Write short notes on the following.
a) Brewer's yeast
b) Ideonella sakaiensis
c) Microbial fuel cells
545) Explain how "Rosie" is different from a normal cow
546) Explain how ADA deficiency can be corrected
547) What are stem cells? Explain its role in the field of medicine
548) Mention the advantages (3) and disadvantages of cloning (3).
549) Explain how recombinant Insulin can be produced.
550) What are the ways by which organisms respond to abiotic factors?
551) Classify the adaptive traits found in organisms
552) Give an account of the properties of soil.
553) List the adaptations seen in terrestrial animals
554) Describe Growth Models/Curves.
555) Tabulate and analysis of two species population interaction.
556) In north eastern states, the jhum culture is a major threat to biodiversity – substantiate.
557) List out the various causes for biodiversity losses
558) How can we contribute to promote biodiversity conservation?
559) Write a note on
i) Protected areas,
ii) Wild life sanctuaries,
iii) WWF.
560) How can we control eutrophication?
561) Discuss the role of an individual to reduce environmental pollution.
562) Discuss briefly the following :
a. Catalytic converter
b. Ecosan toilets
563) Explain the conventional methods adopted in vegetative propagation of higher plants.
564) Highlight the milestones from the history of plant embryology.
565) Discuss the importance of Modern methods in reproduction of plants.
566) Write short note on Heterostyly.
567) Enumerate the characteristic features of Entomophilous flowers
568) Discuss the steps involved in Microsporogenesis.
569) Give a concise account on steps involved in fertilization of an angiosperm plant.
570) What is endosperm. Explain the types.

571) Differentiate the structure of Dicot and Monocot seed.
572) What are the reasons for Mendel's successes in his breeding experiment?
573) Explain the law of dominance in monohybrid cross.
574) Describe dominant epistasis with an example.
575) Explain polygenic inheritance with an example.
576) Differentiate continuous variation with discontinuous variation.
577) Explain with an example how single genes affect multiple traits and alleles the phenotype of an organism.
578) When two different genes came from same parent they tend to remain together.
i) What is the name of this phenomenon?
ii) Draw the cross with suitable example.
iii) Write the observed phenotypic ratio.
579) Write the salient features of Sutton and Boveri concept.
580) How is Nicotiana exhibit self-incompatibility. Explain its mechanism.
581) How sex is determined in monoecious plants. write their genes involved in it.
582) What is gene mapping? Write its uses
583) Draw the diagram of different types of aneuploidy.
584) Mention the name of man-made cereal. How it is formed?
585) How do you use the biotechnology in modern practice?
586) Mention the application of Biotechnology.
587) Compare the various types of Blotting techniques
588) Write the advantages of herbicide tolerant crops
589) What is bioremediation? give some examples of bioremediation.
590) Explain the basic concepts involved in plant tissue culture
591) Based on the material used, how will you classify the culture technology? Explain it.
592) Write the protocol for artificial seed preparation.
593) What is soil profile? Explain the characters of different soil horizons.
594) Give an account of various types of parasitism with examples.
595) Explain different types of hydrophytes with examples.
596) Enumerate the anatomical adaptations of xerophytes.
597) List out any five morphological adaptations of halophytes.
598) What are the advantages of seed dispersal?
599) Describe dispersal of fruit and seeds by animals.
600) Generally in summer the forest are affected by natural fire. Over a period of time it recovers itself by the process of successions .Find out the types of succession and explain.
601) Draw a pyramid from following details and explain in brief.
Quantities of organisms are given-Hawks - 50, plants - 1000.rabbit and mouse - 250 + 250, pythons and lizard - 100 + 50 respectively.
602) Suggest a solution to water crisis and explain its advantages.
603) Explain afforestation with case studies.
604) What are the effects of deforestation and benefits of agroforesty?
605) What are the different types of hybridization?
606) Write a note on heterosis.
607) List out the new breeding techniques involved in developing new traits in plant breeding.
608) Write the origin and area of cultivation of green gram and red gram.
609) What is TSM? How does it classified and what does it focuses on?
610) Give an account on the role of Jasminum and Rosa in perfuming

611) Write the economic importance of rice.

612) What are psychoactive drugs? Add a note Marijuana and Opium

613) How will you prepare an organic pesticide for your home garden with the vegetables available from your kitchen?

614) What are the cells involved innate immune system?

615) Why is opsonisation efficient in phagocytosis?

616) What is vaccine? What are its types?

617) A person is infected by HIV. How will you diagnose for AIDS?

618) Autoimmunity is a misdirected immune response. Justify.

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