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What is the significance of the equation:
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Q 15 How does pollution affect biodiversity?

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Give an example of each:
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BIOLOGY FOR CLASS 12 BIOTECHNOLOGY:PRINCIPLES AND PROCESSES

Q 1 Define Biotechnology.

Mark (1)

Q 2 What is origin of replication?

Mark (1)

Q 3 From which organism restriction endonuclease was first extracted?

Mark (1)

Q 4 How is a DNA fragment amplified?

Mark (1)

Q 5 What is agarose?

Mark (1)

Q 6 Define Transformation.

Mark (1)

Q 7 What is a recombinant protein?

Mark (1)

Q 8 What happens to a DNA fragment that is transferred into an alien organism?

Marks (2)

Q 9 Expand EFB. What is the definition of Biotechnology according to EFB?

Marks (2)

Q 10 What are the two core techniques that enabled birth of modern biotechnology?

Marks (2)

Q 11 What is the benefit of sexual reproduction over asexual reproduction?

Marks (2)

Q 12 Traditional hybridization procedures used in plants and animal breeding, very often lead to inclusion and multiplication of undesirable genes. How can you overcome this problem?

Marks (2)

Q 13 What is cloning?

Marks (2)

Q 14 What are ‘molecular scissors’?

Marks (2)

Q 15 Why are plasmids and bacteriophages used as cloning vectors?

Marks (2)

Q 16 Explain the working of a restriction endonuclease.
Marks (2)

Q 17 What is the sole purpose of recombinant DNA technology?
Marks (2)

Q 18 What is an antibiotic resistance gene? What is its significance in recombinant DNA technology?
Marks (2)

Q 19 What do you understand by the term competent host with reference to recombinant DNA technology?
Marks (2)

Q 20 What is a primer? Why is it required?
Marks (2)

Q 21 What is a bioreactor?
Marks (2)

Q 22 What is insertional inactivation? Give an example.
Marks (3)

Q 23 What do you understand by the term genetic engineering? What are the basic three steps involved in genetic modification of an organism?
Marks (3)

Q 24 What is the difference between modern biotechnology and biotechnology in general?

Marks (3)

Q 25 Write a short note on DNA ligase.

Marks (3)

Q 26 What are the key tools required for genetic engineering?

Marks (3)

Q 27 Write a short note on *Agrobacterium tumifaciens*.

Marks (3)

Q 28 What is known as recognition sequence of a restriction endonuclease? Give an example.

Marks (3)

Q 29 Describe the convention for naming restriction endonucleases.

Marks (3)

Q 30 What are nucleases? What is the difference between endonucleases and exonucleases?

Marks (3)

Q 31 What is a palindromic sequence? What is its significance in genetic engineering?

Marks (3)

Q 32 What are sticky ends? What is its significance?
Marks (3)

Q 33 How do you separate DNA fragments?
Marks (3)

Q 34 Write a short note on gel-electrophoresis?
Marks (3)

Q 35 Write a short note on pBR322.
Marks (3)

Q 36 What are vectors? Write a short note on cloning vectors.
Marks (5)

Q 37 Write a short note on the followings:
a. Ori
b. Selectable marker
c. Cloning sites
Marks (5)

Q 38 With a diagram explain the steps involved in recombinant DNA technology.
Marks (5)

Q 39 What are the various methods available for inserting an engineered vector into the host?
Marks (5)

Q 40 Write short note on the following:
a. Micro-injection
b. Biolistics
c. Disarmed pathogen

Marks (5)

Q 41 Expand PCR. Explain the steps involved in the technique. What is the PCR machine called?

Marks (5)

Most Important Questions

Q 1 Why are the recognition sites of restriction endonucleases known as palindromic sites? Give example to explain.

Q 2 How will you obtain a recombinant DNA from a bacterial cell?

Q 3 How does genetic recombination occur in nature?

Q 4 Compare the sizes of DNA fragments at the topmost part of an electrophoresis gel and lowermost part of it.

Q 5 During complementary base pairing between the restriction fragments of DNA from two different sources, why is DNA ligase required?

Q 6 How can a recombinant vector be identified among other cells?

Q 7 Can exonucleases act as restriction enzymes? Why?

Q 8 What will happen if a piece of DNA not associated with a replication origin (‘Ori’) is inserted into another genome?

Q 9 If a viral DNA is inserted into a bacterial DNA, which way will it be effective in recombinant DNA technology, lytic cyle or lysogenic cycle?

Q 10 What is cloning?

Q 11 How can you say that genetically modified food is preferable to the traditional food?

Q 12 Why are plasmids and not original bacterial DNA preferred as vectors?

Q 13 What is the difference between a mutant gene and a recombinant gene?

Q 14 Why are two DNAs to be joined with one another treated with the same restriction enzyme and not different ones?

Q 15 How does ethidium bromide help in visualizing DNA?

Q 16 Why is the primer required in PCR added at the 3’ end of DNA template?

Q 17 If the restriction site is within an antibiotic resistance gene, how will the recombinant vector be recognized?

Q 18 Which of the two will join more readily- human DNA cut with *Hin*dII and spider DNA cut with *Hin*dII or human DNA cut with *Eco*RI and another human DNA cut with *Hin*dII?

Q 19 Why is PCR known as a chain reaction?

Q 20 How can DNA be purified from a sample of cell?

Q 21 How can an oncogenic retrovirus be used as a safe cloning vector?

Q 22 Why is chitinase required to extract DNA from fungal cells?

Q 23 Can an RNA sample be amplified using PCR? Why?

Q 24 Why is Taq polymerase called so?

Q 25 Why is the stirrer required in a bioreactor?

Q 26 Can DNA be isolated without using proteases from an eukaryotic cell?

Q 27 How are cosmids more beneficial than plasmids in recombinant DNA technology?

Q 28 Will centrifugation of a cell is sufficient in isolating an eukaryotic DNA?

Q 29 What is a gene product?

Q 30 Why is biolistics not suitable for animal cells?

BIOLOGY FOR CLASS 12 ECOSYSTEM

Q 1 What is to be referred as standing state ?

Mark (1)

Q 2 Give two examples of man made ecosystem ?

Mark (1)

Q 3 What are two components of an ecosystem ?

Mark (1)

Q 4 Define decomposition.

Mark (1)

Q 5 What are the important steps of decomposition process ?

Mark (1)

Q 6 What is the source of energy for all ecosystems on earth ?

Mark (1)

Q 7 Expand PAR.

Mark (1)

Q 8 What are producers and consumers?

Mark (1)

Q 9 Expand GFC and DFC.

Mark (1)

Q 10 What is a standing crop ?

Mark (1)

Q 11 What are the three ecological pyramids?

Mark (1)

Q 12 What is ecological succession ?

Mark (1)

Q 13 What is sere ?

Mark (1)

Q 14 Which species are called as pioneer species?

Mark (1)

Q 15 What is nutrient cycling ?

Mark (1)

Q 16 What are the two types of nutrient cycle ?

Mark (1)

Q 17 What is the function of reservoir ?

Mark (1)

Q 18 What are the sources of carbon ?
Mark (1)

Q 19 What is the importance of carbon ?
Marks (2)

Q 20 Define Ecosystem ?
Marks (2)

Q 21 What are two categories of ecosystem ?
Marks (2)

Q 22 What is stratification? Give some examples.
Marks (2)

Q 23 What is the difference between biotic component and abiotic component ?
Marks (2)

Q 24 Differentiate between primary and secondary productivity ?
Marks (2)

Q 25 Differentiate between gross primary productivity and net primary Productivity ?
Marks (2)

Q 26 What is to be considered as raw material for decomposition ?
Marks (2)

Q 27 What are two steps in decomposition operating simultaneously on dentritus ?

Marks (2)

Q 28 What are two steps occuring during decomposition in the soil.

Marks (2)

Q 29 What is unidirectional flow of solar energy from plant to different organisms in an ecosystem?

Marks (2)

Q 30 What is the difference between primary and secondary consumer ?

Marks (2)

Q 31 What is Detritus food Chain?

Marks (2)

Q 32 What are the limitations of ecological pyramids ?

Marks (2)

Q 33 Represent diagrammatically the trophic levels in an ecosystem ?

Marks (2)

Q 34 What is the difference between hydrarch succession and xerarch succession ?

Marks (2)

Q 35 What is the importance of phosphorus ?

Marks (2)

Q 36 What are the main sources of phosphorus ?

Marks (2)

Q 37 What are the differences between carbon and phosphorus cycles ?

Marks (2)

Q 38 Draw a model which shows the phosphorus cycling in a terrestrial ecosystem ?

Marks (2)

Q 39 What is to be termed as ecosystem services? Give some examples.

Marks (2)

Q 40 Represent diagrammatically the decomposition cycle in a terrestrial ecosystem ?

Marks (3)

Q 41 Draw a diagram which shows the flow of energy through different trophic levels.

Marks (3)

Q 42 Differentiate between Gaseous and Sedimentary cycles ?

Marks (3)

Q 43 List the ecosystem services of a forest?
Marks (3)

Q 44 Discuss the energy flow in an ecosystem.
Marks (3)

Q 45 Write any three basic functions of ecosystem.
Marks (3)

Q 46 Describe all the sources of carbon.
Marks (5)

Q 47 What are the different climatic and edaphic factors of abiotic component of ecosystem? Describe them.
Marks (5)

Q 48 With the help of a diagram, describe carbon cycle and phosphorous cycle?
Marks (5)

Most Important Questions

Q 1 Give two examples of man-made ecosystems.

Q 2 Why is it not possible for a food chain to have infinite number of trophic levels in the order of eating and being eaten?

Q 3 What is extra-cellular digestion?

Q 4 How is gross primary productivity different from net primary productivity?

Q 5 What are the three steps in which decomposition is completed on detritus?

Q 6 What are the three types of ecological pyramids?

Q 7 What do you understand by the term secondary producers?

Q 8 Define a detritus food chain.

Q 9 Give an example of a marine food chain.

Q 10 How is the rate of decomposition regulated in nature?

Q 11 What is humification?

Q 12 Describe how energy flows in an ecosystem.

Q 13 Give the SI units for primary production and productivity.

Q 14 Define biomass?

Q 15 What is an ecosystem?

Q 16 What are the two types of biogeochemical cycles?

Q 17 Give the differences between primary succession and secondary succession.

Q 18 Can lichens on rock be regarded as climax community?

Q 19 How can you say forests help to prevent soil erosion?

Q 20 What are microelements and macroelements?

Q 21 How do nutrients enter an ecosystem?

Q 22 With only a diagram, describe carbon cycle.

Q 23 Where is phosphorus found in earth’s crust?

Q 24 What are the three aspects under which the ecosystems serve us?

Q 25 What do you understand by ecological economy?

Q 26 How are nutrients cycled internally in an ecosystem?

Q 27 Give two examples of sedimentary biogeochemical cycles.

Q 28 What is a hydrosere?

Q 29 Define lithosere.

Q 30 What do you understand by succession in terms of ecology?

BIOLOGY FOR CLASS 12 ENVIRONMENTAL ISSUES

Q 1 Name the act passed by Government of India to safeguard our water resources.

Mark (1)

Q 2 What is known as the 'Terror of Bengal'?

Mark (1)

Q 3 What is the term used for biological magnification of a non-metabolisable substance in a food chain?

Mark (1)

Q 4

Name the award given to the individual or communities for their extraordinary work in protection of wildlife.

Mark (1)

Q 5 Name the unit for measuring the thickness of ozone layer.

Mark (1)

Q 6 What is an ozone hole?

Mark (1)

Q 7 Expand CFC.

Mark (1)

Q 8 Define reforestation.

Mark (1)

Sample Question Papers for Biology (2012-13)

Q 9 Name the two prime constituents of waste water that act as plant nutrients?

Mark (1)

Q 10 What do you understand by the term pollution? Define pollutants.

Marks (2)

Q 11 For what purpose are air scrubbers and electrostatic precipitators used?

Marks (2)

Q 12 What size of air pollutants does cause greatest damage to human health and why?

Marks (2)

Q 13 List a few sources of air pollution.

Marks (2)

Q 14 Why is unleaded petrol being used?

Marks (2)

Q 15 What steps were taken in Delhi to control vehicular air pollution?

Marks (2)

Q 16 What kind of measures should be taken to control noise pollution?

Marks (2)

Q 17 What are algal blooms?

Marks (2)

Q 18 Improper disposal of sewage may result in the outbreak of various diseases. Name few of these diseases.

Marks (2)

Q 19 Differentiate between domestic and industrial waste water.

Marks (2)

Q 20 What is cultural eutrophication?

Marks (2)

Q 21 What are the effects of release of thermal waste waters into the natural water bodies?

Marks (2)

Q 22 What do you understand by solid wastes?

Marks (2)

Q 23 What are the constituents of Municipal Solid Waste?

Marks (2)

Q 24 What is Polyblend and what is it used for?

Marks (2)

Q 25 What are the various greenhouse gases? What is the contribution of various greenhouse gases to total global warming?

Marks (2)

Q 26 Where is the ozone layer found? What is its importance?

Marks (2)

Q 27 How does a UV-B radiation affect humans?

Marks (2)

Q 28 What is slash and burn agriculture and what is it commonly known as?

Marks (2)

Q 29 Name two major environmental issues.

Marks (2)

Q 30 What are the effects of sewage discharge in a river?

Marks (2)

Q 31 List the various types of pollution and name the act passed by Government of India in order to control environmental pollution.

Marks (3)

Q 32 What are the harmful effects of air pollution? On what factors do these effects depend?

Marks (3)

Q 33
a) Expand CNG.
b) Why is it considered better than petrol and diesel?
c) Why is it difficult to switch over to CNG?

Marks (3)

Q 34 What auto fuel policy has the Government of India issued to reduce vehicular pollution in India?

Marks (3)

Q 35 a) What is noise?
b) Which act was ammended to include noise as an air pollutant?
c) What are the harmful effects of noise on humans?

Marks (3)

Q 36 What are the various sources of waste water? What is the composition of waste water?

Marks (3)

Q 37 a) Expand and define BOD.
b) What is effect of the discharge of sewage water in to a river supporting various aquatic life forms?

Marks (3)

Q 38 What was the cause for the decline in the population of Bald Eagles in the mid-twenty century in USA?

Marks (3)

Q 39 a) What do you understand by the term Eutrophication?
b) What are its affects on the lake ecosystem?
c) How is it different from Cultural or Accelerated Eutrophication?
Marks (3)

Q 40 Give an example of integrated approach to waste water treatment.
Marks (3)

Q 41 What are EcoSan toilets? How can pollution from human excreta be controlled?
Marks (3)

Q 42 How can solid waste be managed effectively?
Marks (3)

Q 43 Write a short note on sanitary landfills.
Marks (3)

Q 44 What is the role of plastic as solid waste?
Marks (3)

Q 45 What do you understand by radioactive wastes? What are their harmful effects?
Marks (3)

Q 46 What are the various ways to manage radioactive wastes?
Marks (3)

Q 47 What is a greenhouse? Explain greenhouse phenomenon.
Marks (3)

Q 48 Write a short note on global warming.
Marks (3)

Q 49 Why is the ozone layer degrading?
Marks (3)

Q 50 Improper resource utilisation and maintenance practices can cause degradation of natural resources. Justify.
Marks (3)

Q 51 What is deforestation? What are its consequences?
Marks (3)

Q 52 Discuss the role of local communities in protection and conservation of forests.
Marks (3)

Q 53 Explain the working of the following:
a. Air scrubbers
b. Electrostatic precipitator
Marks (3)

Q 54 Write a short note on Biomagnification and its effects.
Marks (3)

Q 55 Write a short note on any two of the followings:
a. Electronic wastes.
b. Effect of agro-chemicals.
c. Organic farming.

Marks (5)

Q 56 Biological instruments are good means to control and reduce wastes. Justify.

Marks (5)

Q 57 Write a note on Biomagnification and its effects with example.

Marks (5)

Most Important Questions

Q 1 What are the various sources of air pollution?

Q 2 When is the rain water called acidic? How is acid rain formed?

Q 3 How does acid rain affect living organisms on the earth?

Q 4 Name a device used to control particulate substances in the air. How does it work?

Q 5 What steps have been taken in Delhi to control vehicular pollution?

Q 6 Why is the use of catalytic convertors suggested in vehicles?

Q 7 What are the major sources of water pollution? Name the various pollutants that cause water pollution.

Q 8 How does water pollution affect aquatic life?

Q 9

1. Give an example of each:

a) An aquatic weed responsible for water pollution
b) Water borne disease
c) Unit for measuring noise

Q 10 What is meant by eutrophication? How is it affected by human activities?

Q 11 What is an EcoSan? List a few advantages of it.

Q 12 Name the acts that control air and water pollution in India.

Q 13 Explain some methods for disposal of soild wastes.

Q 14 What wastes are included in hospital wastes, e-wastes, agro-wastes?

Q 15 What is integrated organic farming? How has Ramesh Dagar applied it?

Q 16 How does radioactive pollution harm living organisms? Suggest ways to control radioactive pollution.

Q 17 Name the green house gases along with their sources.

Q 18 Explain the phenomenon responsible for global warming.

Q 19 How is deforestation responsible for causing global warming?

Q 20 What is ozone layer? Why is it important for us?

Q 21 How do chlorofluorocarbons cause depletion of ozone?

Q 22 What is soil erosion? How can soil erosion lead to desertification?

Q 23 How can water logging cause salinization?

Q 24 Explain the Jhum cultivation. How does it cause deforestation?

Q 25 Differentiate between deforestation and reforestation.

Q 26 How does Joint forest management help in sustainable management of forests?

Q 27
Give an example of each:
a) A protocol signed for control of global warming by the nations.
b) Award given by the Government of India for extraordinary dedication in Wildlife conservation.
c) An accident of leakage of nuclear radiations.

Q 28 How does formation of ozone hole take place over Antarctica?

BIOLOGY FOR CLASS 12 EVOLUTION

Q 1 Define directional selection.

Mark (1)

Q 2 Cite one example of homologous organs in plants.

Mark (1)

Q 3 Define saltation.

Mark (1)

Q 4 Name the scientists who experimentally confirmed the Oparin-Haldane theory of origin of life.

Mark (1)

Q 5 Were the first life forms on the earth autotrophic or heterotrophic?

Mark (1)

Q 6 Give a three word definition of "organic evolution".

Mark (1)

Q 7 Write the period which is called as 'age of reptiles'.

Mark (1)

Q 8
Which organism was affected in the phenomenon of Industrial Melanism?

Mark (1)

Q 9 What was the idea of Lamarck about the biological evolution?

Marks (2)

Q 10 What is adaptive radiation? Give one example.

Marks (2)

Q 11 Differentiate between homologous and analogous structures.

Marks (2)

Q 12
What are fossils? How do they indicate the geological period?

Marks (2)

Q 13 State Hardy-Weinberg equilibrium. What is its significance?

Marks (2)

Q 14 Name the factors, which are known to affect Hardy-Weinberg equilibrium.

Marks (2)

Q 15 How are gene flow, genetic drift and founder effect related?

Marks (3)

Q 16 What was the composition of earth at the time of its origin?

Marks (3)

Q 17 How does the Big Bang theory attempt to explain the origin of universe?

Marks (3)

Q 18 Describe Oparin & Haldane's theory of origin of life.

Marks (5)

Q 19 Explain the process of evolution by natural selection with special reference to famous example of *Biston betularia* (Moth).

Marks (5)

Most Important Questions

Q 1 What were the sources of energy during origin of life?

Q 2 What was the form of energy used in Miller's experiment?

Q 3 What are coacervates? How were they formed?

Q 4 How was coacervate different from Eobiont?

Q 5 What were the characteristics of Eobionts?

Q 6 Two fossils X and Y were discovered. X was found from a lower stratum. Which one would you consider older and why?

Q 7 Spontaneous generation theories were discarded on the basis of Pasteur's experiment. What was this path breaking experiment?

Q 8 Why is abiogenesis not possible on present earth?

Q 9 What is the significance of Oxygen Revolution? Which organisms were responsible for it?

Q 10 What was the first organic molecule formed on primitive earth?

Q 11 What are stromatolites?

Q 12 At an excavation site some teeth, pottery, metal ornaments and utensils were found. Which of them can be used for carbon dating and why?

Q 13 What are homologous organs? Give example.

Q 14 What are analogous organs? Give example.

Q 15 How are vestigial organs helpful in studying evolution?

Q 16 What is divergent evolution?

Q 17 What is convergent evolution?

Q 18
What are coelacanths and why are they of interest to evolutionists?

Q 19 What was the major life form 1.6 billion years ago?

Q 20 How does ozone layer relate to biological evolution?

Q 21 What came earlier: Ozone or chlorophyll?

Q 22 In your locality, there are two types of beetles living on trees. Green and red. Which one will survive natural selection?

Q 23 What was Pangea?

Q 24 Why are monotremes and marsupials so restricted geographically?

Q 25 What is industrial melanism are what are its implications in natural selection?

Q 26 What are the major drawbacks of Darwin’s theory?

Q 27 From where did Darwin get the idea of natural selection?

Q 28 Who was Thomas Malthus?

Q 29 You come across many breeds of dogs. Are they different species?

Q 30 What are the diffrent tenets of Darwin's theory?

Q 31 How would you explain elongation of giraffe's necks according to Darwinism?

Q 32 What are macroevolution and microevolution, and how do they occur?

Q 33 How is Hardy-Weinberg equilibrium used to predict allele frequencies in populations?

Q 34 What is the basic unit of evolution?

Q 35 What is population genetics and how does it relate to evolution?

Q 36 What were the most characteristic features to have evolved in primates?

Q 37 What were the critical steps to develop in early hominids which paved the path to the evolution of humans?

Q 38 Would random genetic drift occur more rapidly in large or small populations? Why?

Q 39 When a population of mice is infected with parasites, many of the mice die from the parasitic infection, but some mice appear as healthy as they were before being infected. Some people are considering using these parasites to control the mouse population in people's homes. Give one advantage and one disadvantage of using these parasites instead of mouse traps or poisons to limit the population of mice.

Q 40 Doctors need to be careful not to give their patients an antibiotic such as penicillin too often. If the same antibiotic is prescribed too many times, it can become less effective against bacteria. Explain fully why this is so.

Q 41 A population of 40 guinea pigs undergoing natural selection is reduced to 20 individuals in only five generations. At this point genotype frequencies are 0.25, 0.5, and 0.25 for the genotypes AA, Aa, and aa, respectively. Assume that natural selection continues to act on this population. Is the population in Hardy-Weinberg equilibrium?

Q 42 In addition to no mutation, no natural selection, no genetic drift, and no migration, what further criteria must be met for a population to be in Hardy-Weinberg equilibrium?

Q 43 In a population with two alleles for a particular locus, *B* and *b*, the allele frequency of *B* is 0.7. What would be the frequency of heterozygotes if the population is in Hardy-Weinberg equilibrium?

Q 44 In a population that is in Hardy-Weinberg equilibrium, 16% of the individuals show the recessive trait. What is the frequency of the dominant allele in the population?

Q 45 Differentiate between founder effect and genetic bottleneck.

Q 46 How is genetic drift different from natural selection?

Q 47 Which is our immediate ancestor?

Q 48 Which human ancestor had a cranial capacity nearest to modern man?

Q 49 What is basis of considering Africa as the cradle of human evolution?

Q 50 Who discovered fire?

Q 51 How can you say that Neanderthal man believed in life after death?

Q 52 Which human ancestor is associated with cave paintings?

Q 53 Which was the first animal to be domesticated and by whom?

Q 54 Which are closer to modern man: New world or Old World monkeys?

Q 55 Which is the common ancestor to both apes and man?

Q 56 Who is also known as naked ape?

BIOLOGY FOR CLASS 12 HUMAN HEALTH AND DISEASE

Q 1 What is a sedative?

Mark (1)

Q 2 Give the source of opium.

Mark (1)

Q 3 Mention the drinks that contain caffeine.

Mark (1)

Q 4
Name a plant with hallucinogenic properties.

Mark (1)

Q 5 Which molecule acts as a biological response modifier to destroy cancerous tumour?

Mark (1)

Q 6 Give the role of anabolic steroids.

Mark (1)

Q 7
Name two methods of detecting cancer.

Mark (1)

Q 8 How does the knowledge of biology help us to control infectious diseases?

Marks (2)

Q 9 What does ‘a suitable gene’ means in the context of DNA vaccines?

Marks (2)

Q 10 What measure would you take to prevent water borne diseases?

Marks (2)

Q 11 Name the primary and secondary lymphoid organs.

Marks (2)

Q 12 What are the various routes by which transmission of human immuno-deficiency virus takes place?

Marks (2)

Q 13 Explain what is meant by metastasis?

Marks (2)

Q 14 Do you think that friends can influence one to take alcohol/drug? If yes, how may one protect himself/herself from such an influence?

Marks (2)

Q 15 Why is that once a person starts taking alcohol or drugs, it is difficult to get rid of this habit?

Marks (2)

Q 16 What are distilled and undistilled alcohols?

Marks (2)

Q 17 Give one example each of bacterial, viral, fungal and protozoan disease.

Marks (2)

Q 18 (a) In which disease is there an uncontrolled division of cells resulting in formation of tumours? How is this disease detected?
(b) How do interferons help in controlling the disease?

Marks (2)

Q 19 Write names of the causative agents of the following:
AIDS, Leprosy, Malaria, Filariasis

Marks (2)

Q 20 What is leukemia commonly known as? How does it spread?

Marks (2)

Q 21
How is a cancerous cell different from a normal cell?

Marks (3)

Q 22 Draw a well labeled diagram of an antibody molecule.

Marks (3)

Q 23 (a) What treatment would be required for a snake bite? Justify.
(b) How does an autoimmune disease arise? Give an example of autoimmune disease.

Marks (3)

Q 24 (a) Hepatitis-B vaccination has been made mandatory for new born babies. Why?
(b) What is the difference in the use of injecting anti toxins and toxoid vaccines?

Marks (3)

Q 25 Differentiate between communicable, non-communicable and genetic disease.

Marks (3)

Q 26 How does the transmission of each of the following diseases take place?
a) Amoebiasis
b) Malaria
c) Ascariasis
d) Pneumonia
e) Typhoid

Marks (5)

Q 27 What are the public health measures, which you would suggest as safeguard against infectious diseases?

Marks (5)

Q 28 Give differences between the following pairs-
(a)Innate and acquired immunity
(b)Active and passive immunity.

Marks (5)

Q 29 Expand each one of its full form:
(a) MALT (b) CMI (c) AIDS (d) NACO (e) HIV

Marks (5)

Q 30 List the harmful effects caused by alcohol/drugs abuse.
Marks (5)

Q 31 What motivates youngsters to take alcohol or drugs and how can this be avoided?
Marks (5)

Q 32 What is the mechanism by which the AIDS virus does cause deficiency of immune system of the infected person?
Marks (5)

Q 33
Draw all the stages with explanation, in the life cycle of *Plasmodium vivex.*

Marks (5)

Q 34 (a) Name the malaria causing pathogen.
(b) How is malaria transmitted and which is its target cell?
(c) Give four symptoms of malaria.
Marks (5)

Q 35 (a) Antibiotics are proved to be largely ineffective against viral diseases. Then, which is the most optimistic approach for antiviral therapy.
(b) How B-lymphocytes form specific antibodies?
(c) Name:
I. The kind of immunity provided by interferons.
II. The antibody responsible for allergy.
Marks (5)

Q 36 (a)In which form tobacco is consumed? Reveal the associated health risks of this drug.
(b) Why it is difficult to get rid of drug addiction?
(c) How are the different plant parts of Cannabis sativa used in making drugs?

Marks (5)

Most Important Questions

Q 1 Define health.

Q 2 Name two diseases transmitted through contaminated food and water.

Q 3 Why could no vaccine be prepared against common cold?

Q 4 List the factors affecting health.

Q 5 Name two bacterial diseases in man.

Q 6 Name two viral diseases in man.

Q 7 Name two protozoan diseases in human beings.

Q 8 Name two disease spread by mosquitoes.

Q 9 Which organism causes malignant malaria?

Q 10 What is meant by droplet infection?

Q 11 Name the causative agent of ringworm.

Q 12 Why is it necessary to control the population of mosquitoes?

Q 13 Why amoebiasis is often called as traveler’s diarrhoea?

Q 14 Name a disease caused by a round worm which affects the lymphatics.

Q 15 Pneumonia is more common in infants and old people. Why?

Q 16 Ascariasis is a very common infection in children. Why?

Q 17 What is the infective stage of *Plasmodium* for human beings?

Q 18 Gametogony in *Plasmodium* cannot be completed in human beings. Why?

Q 19 Why is it necessary to isolate the patient in case of infectious disease?

Q 20 Are all STDs infectious?

Q 21 Define immunity.

Q 22 Distinguish between innate and acquired immunity.

Q 23 What are the different barriers that provide innate immunity?

Q 24 From where do B cells arise and where do they mature?

Q 25 From where do T cells arise and where do they mature.

Q 26 When does a primary response occur?

Q 27 When does a secondary response occur?

Q 28 A child who has suffered from chicken pox, never contracts it again in life. Why?

Q 29 Which property of immunity is exploited in vaccination?

Q 30 Name two diseases for which attenuated vaccines are given.

Q 31 What is the constituent of tetanus vaccine?

Q 32 How is person treated after a snake bite?

Q 33 What are primary lymphoid organs?

Q 34 What are secondary lymphoid organs?

Q 35 What is allergy?

Q 36 AIDS is more common among drug addicts. Why?

Q 37 Name two incurable diseases.

Q 38 What are the various ways to treat cancer?

Q 39 What does the genome of HIV consist of?

Q 40 Which cells are attacked by HIV?

Q 41 What is meant by metastasis?

Q 42 How do cancer cells differ from normal cells?

Q 43 What is the source of opium?

Q 44 What are psychotropic drugs?

Q 45 Why are adolescents attracted towards drugs?

Q 46 Why do sportspersons take anabolic steroids?

Q 47 What is a sedative?

Q 48 Give the term,which WHO prefers instead of addiction.

Q 49 Name any two opioids.

Q 50 What are stimulants?

Q 51 Name a synthetic stimulant often abused by students and truck drivers.

Q 52 Which drugs are obtained from *Cannabis sativa*?

Q 53 What is the source of cocaine?

Q 54 Name the organs that suffer most due to smoking.

Q 55 Why is heroin more potent than morphine?

Q 56 Name a drug obtained from fungus.

Q 57 Which drugs increase the secretion of adrenaline after being taken?

Q 58 Alcoholic mothers give birth to children with abnormalities. Explain why?

Q 59 Name the beverages that contain caffeine.

Q 60 If the amount of nicotine present in one cigarette is extracted and injected intravenously, the person dies. True or false.

Q 61 Does alcohol act as a stimulant or suppressant?

Q 62 Which drug has analgesic property?

BIOLOGY FOR CLASS 12 HUMAN REPRODUCTION

Q 1 Which membrane does cover the vaginal opening in a virgin?

Mark (1)

Q 2 Give the function of scrotum?

Mark (1)

Q 3 What is the function of Leydig cells?

Mark (1)

Q 4 How many sperms are usually present in a single human male ejaculation?

Mark (1)

Q 5 State the function of lactiferous duct.

Mark (1)

Q 6 Which gland does stimulate the secretion of LH and FSH?

Mark (1)

Q 7 What changes do occur during the transformation of secondary follicle into tertiary follicle?

Mark (1)

Q 8 Which layer surrounds the secondary oocyte?

Mark (1)

Q 9 Name the stage of first menstruation.

Mark (1)

Q 10 Define menopause.

Mark (1)

Q 11 What is the function of acrosome?

Mark (1)

Q 12 Give the time period after which first cleavage occurs in the zygote.

Mark (1)

Q 13 What is Corpus luteum? How does it function as an endocrine gland?

Mark (1)

Q 14 How many spermatogonia will be required for the formation of 200 spermatozoa?

Marks (2)

Q 15 "Breast feeding during the initial period of infant growth is recommended," Why?

Marks (2)

Q 16
Give two functions performed by LH in female reproductive system

Marks (2)

Q 17 Define menstrual cycle. When does ovulation take place in menstrual cycle?

Marks (2)

Q 18 Give any two major differences between spermatogenesis and oogenesis?

Marks (2)

Q 19 List some changes which take place during the process of spermiogenesis.

Marks (2)

Q 20
Define the fallowing terms:
(a) Acrosome (b) Semen

Marks (2)

Q 21 Differentiate between mammary duct and lactiferous duct.

Marks (2)

Q 22 What is the advantage of testes being located in the scrotum outsides abdominal cavity.

Marks (2)

Q 23 Through Schematic representation, show the control of hormones in male reproductive system.

Marks (3)

Q 24 Show a fully developed human foetus within the uterus of the mother by a labelled diagram.

Marks (3)

Q 25 Define parturition. Discuss the role of oxytocin in the process of parturition.

Marks (3)

Q 26 Define placenta. How it is developed?

Marks (3)

Q 27 When does first cleavage occur in the zygote? Differentiate between Morula and Blastula (Blaslocyst) stage of embryo development.

Marks (3)

Q 28 Mention the site of fertilization in human being. Give any two events that take place after egg-sperm binding prior to fertilization.

Marks (3)

Q 29 Give diagrammatic representation of various events during a menstrual cycle depicting uterine event, hormonal levels (estrogen, progesterone, FSH & LH)

Marks (3)

Q 30 Discuss any three important parts of a fully developed spermatozoa?

Marks (3)

Q 31 Differentiate among the following :-
1.Spermatogenesis
2.Spermiogenesis
3.Spermiation

Marks (3)

Q 32 Name all accessory glands associated with male reproductive system and briefly mention the functions of their secretions?

Marks (3)

Q 33 Draw a labelled diagram of male reproductive system showing the following:
(a) Vas deferens
(b) Epididymis
(c) Testis
(d) Seminal Vesicles
(e) Urethra
(f) Ejaculatory duct

Marks (3)

Q 34 Name any three different types of cells found in the male reproductive organ and their significance?

Marks (3)

Q 35 Draw T.S of testis showing lumens of seminiferous tubules and interstitial space.

Marks (3)

Q 36 State the functions of the following:
a) Acrosome
b) Corpus luteum
c) Relaxin
d) Trophoblast
e) Vas deferens

Marks (5)

Q 37 Enlist all the events that take place during a menstrual cycle.

Marks (5)

Q 38 Define oogenesis. Schematically represent the process of oogenesis in a human female.

Marks (5)

Q 39 Draw sectional view of the female reproductive system. Briefly mention the structure of fallopian tube in female reproductive system.

Marks (5)

Most Important Questions

Q 1 Name the endocrine cells present in the testes.

Q 2 What are the types of cells present in the seminiferous tubules?

Q 3 Name the accessory ducts of the male reproductive system.

Q 4 What is rete testis?

Q 5
Give the names of columns of spongy tissue present in the penis.

Q 6 What is inguinal canal?

Q 7
In which part of the body does embryonic development of testes occur?

Q 8
What happens if the temperature of scrotum is raised?

Q 9 Name the androgen secreted in males.

Q 10 Which structure conducts the sperms from vas deferens to the urethra?

Q 11 What is mesovarium?

Q 12 Which layer of uterine wall is made up of smooth muscles?

Q 13
Name the secondary sexual organs of human female.

Q 14 Which structure of the female reproductive system is homologous to penis of male?

Q 15 Which accessory glands in male and female produce similar secretions?

Q 16 What are the three parts of fallopian tubes?

Q 17 What is the neck of uterus called?

Q 18 Which glands are present on the lateral sides of vagina?

Q 19
What kinds of cells are present on the lining of fallopian tubes?

Q 20 Give the term for external genitalia of female.

Q 21 How do Leydig cells help in spermatogenesis?

Q 22
Where does spermatogenesis occur?

Q 23 Which cells provide nourishment to the developing spermatozoa?

Q 24 Pick the structures which are haploid: spermatogonia, primary spermatocytes, secondary spermatocytes, spermatid, spermatozoon.

Q 25 What is the function of acrosome in the sperm?

Q 26 In which part of the sperm are mitochondria located?

Q 27
What is semen?

Q 28 During which stage of spermatogenesis does acrosome develop?

Q 29 Define menarche.

Q 30 Define menopause.

Q 31 Which hormone is predominant in proliferative phase of menstrual cycle?

Q 32 Which hormone is predominant in luteal phase?

Q 33
In a normal 28 day cycle, when does ovulation occur?

Q 34
What happens to Graafian follicle after ovulation?

Q 35 Which hormone is responsible for the formation of corpus luteum?

Q 36
Which hypothalamic hormone initiates gametogenesis in both males and females?

Q 37 Which hormone is secreted by granulosa cells?

Q 38
What is the site of fertilisation?

Q 39
Why is progesterone called pregnancy hormone?

Q 40 What happens to the corpus luteum if the ovum fails to fertilize?

Q 41
What happens to the corpus luteum if the ovum gets fertilized?

Q 42 How many cleavage divisions occur to give rise to 16–celled morula?

Q 43 At which stage does implantation occur?

Q 44
If fertilisation occurred on 25th April, when would implantation occur?

Q 45 What is the role of oxytocin in parturition?

Q 46 What is the role of oxytocin in lactation?

Q 47 What is colostrum?

Q 48 Which part of the blastocyst forms the embryo?

Q 49 Which structure of the blastocyst gives rise to chorionic villi?

Q 50

The secretion of which hormone helps in detection of pregnancy?

Q 51 Placenta is a temporary endocrine gland. Justify the statement.

Q 52 Does ovulation and menstrual cycles continue during pregnancy?

BIOLOGY FOR CLASS 12 MICROBES IN HUMAN WELFARE

Q 1 Expand LAB.

Mark (1)

Q 2 What is an antibiotics?

Mark (1)

Q 3
What is the botanical name of baker's yeast?

Mark (1)

Q 4 Expand the term BOD.

Mark (1)

Q 5 Name three enzymes of industrial importance.

Mark (1)

Q 6 Give examples to prove that microbes release gases during metabolism.

Mark (1)

Q 7 Bacteria can not be seen with the naked eye, but these can be seen with the help of a microscope. If you have to carry a sample from your home to your biology laboratory to demonstrate the presence of microbes under a microscope, which sample would you carry and why?

Mark (1)

Q 8 Name some traditional Indian foods made of wheat, rice and Bengal gram.

Mark (1)

Q 9 In which way microbes have played major role in controlling diseases caused by harmful bacteria?

Mark (1)

Q 10 Find out the name of the microbes from which Cyclosporine A (an immuno suppressive drug) and Statins (blood cholesterol lowering agents) are obtained.

Marks (2)

Q 11 Do you think microbes can also be used as source of energy? If yes, how?

Marks (2)

Q 12 Three water samples namely river water, untreated sewage water and secondary effluent discharged from a sewage treatment plant were subjected to BOD test. The samples were labeled A, B and C; but the laboratory attendant did not note which was which. The BOD values of the three samples A, B and C were recorded as 20mg/L, 8mg/L and 400 mg/L, respectively. Which sample of the water is most polluted? Can you assign the correct label to each assuming the river water is relatively clean?

Marks (2)

Q 13 Name any two species of fungus, which are used in the production of antibiotics?

Marks (2)

Q 14 What is the key difference between primary and secondary Sewage treatment?

Marks (2)

Q 15 Microbes can be used to decrease the use of chemical fertilizers and pesticides. Explain how this can be accomplished?

Marks (2)

Q 16 Find out the role of microbes in soil.

Marks (2)

Q 17 Arrange the following in the decreasing order (most important first) of their importance, for the welfare of human society. Give reasons for your answers. Biogas, Citric acid, Penicillin and Curd.

Marks (3)

Q 18 In which food would you find lactic acid bacteria? Mention some of their useful applications.

Marks (3)

Q 19 How do biofertilizers enrich the fertility of the soil?

Marks (3)

Q 20 What is sewage? In which way this can be harmful for us?
Marks (3)

Q 21 Find out the role of microbes in Single Cell Protein (SCP).
Marks (3)

Most Important Questions

Q 1 What is the reason of microbes being present almost everywhere on earth?

Q 2 What are fermented beverages?

Q 3 How can you benefit from *Lactobacillus*?

Q 4 The yeast *Saccharomyces cerevisiae* has a specific metabolic activity which is beneficial to human beings. Explain.

Q 5 How do the holes in bread result?

Q 6 You have to prepare pizza. How would you make the bread fluffy?

Q 7 What is cyclosporin A?

Q 8 What does the fungus *Monascus purpureus* yield?

Q 9 Name one enzyme of microbial origin used in preparation of soap and detergents.

Q 10 Name one edible organic acid and its origin.

Q 11 What are the bluish thready things found in blue cheese?

Q 12 Name five organisms that can qualify as microbes.

Q 13 Can viruses be termed as microbes?

Q 14 A patient has urine infection. How will you identify the antibiotic for its cure?

Q 15 Give one major difference between primary and secondary sewage treatment.

Q 16 How do Cyanobacteria help nature?

Q 17 What is flocculation with respect to wastewater?

Q 18 What does biological oxygen demand signify?

Q 19 Why are biofertilizers more beneficial than chemical fertilizers?

Q 20 How do cattle digest cellulose?

Q 21 Will biogas be formed if the biogas plant is uncovered?

Q 22 Give two aspects of integrated pest management.

Q 23 What will you suggest to reduce the mosquito population in a field?

Q 24 What is the principle behind using microbial herbicides?

Q 25 What is Bt cotton?

Q 26 How does fungal association help higher plants?

Q 27 What is biological nitrogen fixation?

Q 28 What is green manuring?

BIOLOGY FOR CLASS 12 MOLECULAR BASIS OF INHERITANCE

Q 1 What are histones?

Mark (1)

Q 2 Define central dogma.

Mark (1)

Q 3 At which stage can we see “beads-on-string” structure in chromatin?

Mark (1)

Q 4 What are Non-Histone Chromosomal (NHC) Proteins?

Mark (1)

Q 5 Name the factor which was responsible for transformation of R-strain bacteria into infected S-form.

Mark (1)

Q 6 What is a codon?

Mark (1)

Q 7 What are two major functions of DNA?

Mark (1)

Q 8 Name the codon other than AUG which has dual function.

Mark (1)

Q 9 What will be the number of bases in mRNA which code for 1200 amino acids?

Mark (1)

Q 10 Who proposed operon model?

Mark (1)

Q 11 Who synthesised the first artificial gene without primer?

Mark (1)

Q 12 In which type of organisms does monocistronic structural gene occur?

Mark (1)

Q 13 What are UTRs?

Mark (1)

Q 14 Define negative regulation.

Mark (1)

Q 15 In Griffith's experiment, why *Streptococcus pneumoniae* with smooth shiny colonies (S strain) is virulent in nature?

Mark (1)

Q 16 In Arushi Murder Case, the criminals could be identified with the help of a special Biotechnologicaltechnique. Name the technique used and where is it carried out.

Mark (1)

Q 17 What is the role of repressor-inducer complex in Lac Operon?

Marks (2)

Q 18 What is semi- conservative mode of DNA replication.

Marks (2)

Q 19 What was the objectives of the following experiments?
a) Hershey & Chase experiment
b) Meselson & Stahl experiment

Marks (2)

Q 20 If the sequence of one strand of DNA is written as follows:

5’-ATGCATGCATGGACATGATGTACAGTAGCT-3’
write down the sequence of complementary strand in 5’-3’ direction.

Marks (2)

Q 21 If a double stranded DNA has 20% of cytosine, calculate the percentage of adenine and guanine in the DNA.

Marks (2)

Q 22 Group the following as nitrogenous bases and nucleosides.
Adenine, Cytosine, Thymine, Cytidine, Uracil, Guanosine, Guanine, Adenosine

Marks (2)

Q 23 What properties of DNA make it more suitable for being the main genetic material than RNA?

Marks (2)

Q 24 (a) Enlist the function of histone proteins?
(b)Why histones are positively charged?

Marks (2)

Q 25 Justify the statement "DNA fingerprinting is a technique to find out variations at DNA level among individuals of population".

Marks (2)

Q 26 (a) Write the specific term given to the flow of information from RNA to DNA in certain viruses.

(b) (i) Write the sequence of mRNA transcribed from the DNA segment with the base sequence :

TAC TAG TCG ACT

(ii) How many amino acids will there be in the oligopeptide translated by the mRNA?

Marks (2)

Q 27 (a) Select the untransalated areas from the given mRNA:

5' ACG UCG AUG GCG CCC UUU UAG GAG GAA 3'

(b) Why is mRNA of eukaryotic cells said to be monocistronic, while that of prokaryotic cell is polycistronic?

Marks (2)

Q 28 If the total number of base pairs is multiplied with distance between the two consecutive bases, the length of DNA comes out to be approximately 2.2 metres. How is the packaging of DNA helix done in a tiny nucleus of dimensions of approximately 10^{-6} m?

Marks (2)

Q 29 How Oswald Avery, Colin Macleod and Mc Carty while determining the biochemical nature of transforming principle in Griffith's experiment proved that DNA is the heredity material?

Marks (2)

Q 30 Hershey & Chase selected radioactive ^{35}S and ^{32}P and decided to include the radiation studies in their experiments. What was the logic behind this decision?

Marks (2)

Q 31 In a Forensic Laboratory, a scientist during his research stared cutting the nucleotide polymer with the help of scissors. Name the special type of scissors used by him and also the material that was cut.

Marks (2)

Q 32 Give reasons:
i) The DNA strand with Polarity 3'- 5' acts as a template during transcription.
ii) The other strand with polarity 5'- 3' is called coding strand.

Marks (2)

Q 33 List two essential roles of ribosome during translation.

Marks (2)

Q 34 Depending upon the chemical nature of the template (DNA or RNA) and the nature of nucleic acids synthesised from it (DNA or RNA), list the types of nucleic acid polymerases.

Marks (2)

Q 35 What are the goals of Human Genome Project (HGP)?

Marks (3)

Q 36 Why are both the strands not copied during transcription?

Marks (3)

Q 37 Briefly describe the following.
a) Transcription
b) Polymorphism
c) Translation

Marks (3)

Q 38 Name three different types of RNA molecules & mention their role in translation (formation of proteins).

Marks (3)

Q 39 Justify the fact that "In Human beings, sex of the child is determined by father, not by mother".

Marks (3)

Q 40 (a) Expand SNPs. What are they?
(b) Explain VNTR as the basis of DNA fingerprinting?

Marks (3)

Q 41 (a) What is ESTs?
(b) (i) A point mutation leads to adverse change in the function of haemoglobin (ß-globin chain). Identify the disease that may occur due to this mutation.
(ii) Mention the change of amino acids in the polypeptide due to mutation.

Marks (3)

Q 42 (a) Lac operon is negatively regulated. What is meant by this?
(b) Why is lactose called the inducer of lac operon in E.coli?

Marks (3)

Q 43 Give the technical term for:
(a) Region of DNA that helps in initiating the process of transcription and serves as the binding site for RNA polymerase.
(b) A small RNA that reads the genetic code present on mRNA.
(c) Coding sequences of DNA in eukaryotes that transcribe for proteins.

Marks (3)

Q 44 Which property of DNA double helix led Watson and Crick to hypothesise semi-conservative mode of DNA replication? Explain.

Marks (3)

Q 45 Why is the "Human Genome Project" called as the mega project?

Marks (3)

Q 46 "RNA was the first genetic material". Justify the statement.

Marks (3)

Q 47 a. Give the scientific term for the process of copying genetic message from one strand of DNA into RNA.
b. Only one strand of DNA is used during transcription. Why?

Marks (3)

Q 48 What is DNA Fingerprinting? Mention its applications?

Marks (3)

Q 49 a. Why did Meselson and Stahl grow *E.coli* in a medium containing $^{15}NH_4Cl$ for many generations?
b. In which medium were they transferred later on?
c. What were their observations?

Marks (3)

Q 50 Who developed the technique of finger printing? Write its different steps?

Marks (5)

Q 51 What are the salient features of genetic code?

Marks (5)

Q 52 Discuss the salient features of the double helical structure of DNA.

Marks (5)

Q 53 (a) The accessibility of promoter region of prokaryotic DNA is regulated by the interaction of a protein with a definite sequence of DNA. What name is given to such a DNA sequence?
(b) State the function of DNA polymerase in prokaryotes excluding the polymerising of DNA during DNA synthesis.
(c) DNA is unzipped twice in a cell. Mention the two events and the enzyme responsible for it.

Marks (5)

Q 54 (a) One student has drawn mRNA but he has made some mistakes in writing the codons.

UGAU UUU AGA AUG
5′ | | | | ___ _ _ _ _____| | |___ 3′

i) Identify the mistakes made by him in codons.
ii) Correct the mistake.
(b) What are constitutive genes?
(c) Explain the idea expressed in the following representation:
DNA $\rightarrow$ RNA $\rightarrow$ Protein

Marks (5)

Q 55 (a) Two men filed a case against a woman declaring to be the father of her only daughter. Which technique can be used to find the real biological father?
(b) Which mRNA molecule is called as an adaptor molecule? And why so?
(c) Depending upon the chemical nature of the template (DNA or RNA) and the nature of nucleic acids synthesised from it (DNA or RNA), list the types of nucleic acid polymerases.

Marks (5)

Q 56 In the medium where *E. coli* was growing, lactose was added, which induced the *lac* operon. Then, why did lac operon shut down some time after the addition of lactose in the medium?

Marks (5)

Q 57 a. What will happen if a cell fails to divide after DNA replication?
b. Name the main enzyme for the process of replication. This enzyme catalyses polymerisation only in one direction that is 5'- 3'. What happens due to this enzyme during replication?
c. What is the role of DNA ligase and origin of replication in DNA replication?

Marks (5)

Q 58 State the qualities of a genetic material. Out of DNA & RNA, which one fulfills all the pre-requisites of being a genetic material? Give reasons.

Marks (5)

Q 59
Study the RNA segment given below which is completely translated into a polypeptide chain.

(i) Identify the bases a and b.
(ii) What do the codon 'aUG' and 'UAb' code for?

(iii) How is peptide bond formed between two amino acids in the ribosome?

Marks (5)

Most Important Questions

Q 1 Under electron microscope, chromatin appears like beads-on-a-string. What are those beads and the string?

Q 2 How did Mendelian 'factors' help in the initiation of the science of genetics?

Q 3 How can you say that the two strands of DNA are antiparallel to each other?

Q 4 Why does a purine always bond with a pyrimidine and vice versa in a DNA double helix?

Q 5 What is a nucleoside? Name one pyrimidine nucleoside.

Q 6 What was the proof of transformation in Griffith's experiment?

Q 7 Name the scientists who first provided the final proof for the genetic material to be DNA. Which was the other biomolecule that was doubted to the genetic material?

Q 8 Can RNA act as a genetic material? Name a few living things which have RNA as the genetic material.

Q 9 Draw the chemical structure of thymine and uracil molecule also explain the advantage of having thymine instead of uracil in DNA?

Q 10 What do you understand by RNA world? What is its significance?

Q 11 What is transcription in terms of molecular biology?

Q 12 Give another name for the tRNA.

Q 13 Describe the structure of one transcription unit.

Q 14 What are split genes?

Q 15 Name the enzyme that plays key role in RNA transcription, which is its direction of action?

Q 16 What are the raw materials for RNA transcription?

Q 17 How does the final RNA transcript differ from the primary nascent RNA?

Q 18 What are exons and introns?

Q 19 How is the self-coiled DNA double helix separated during transcription?

Q 20 Give one similarity and one difference between the nascent RNA and DNA coding strand?

Q 21 How many DNA bases are involved in coding for one amino acid?

Q 22 What is an anticodon? Define its relation with codon.

Q 23 What is the function of rRNA?

Q 24 Will protein synthesis be affected if one base in the DNA is altered? How?

Q 25 What does a poly-U mRNA yield on translation. Explain.

Q 26 How can you say that genetic codes are degenerate?

Q 27 Give the two spatial structures of tRNA.

Q 28 Describe the central dogma of molecular biology.

Q 29 Name the chemical bond between two amino acids and the functional groups participating in this.

Q 30 What is the significance of the A-site and P-site in a ribosome?

Q 31 Who discovered lac operon and where?

Q 32 What happens to tryptophan operon when there is enough tryptophan in the medium?

Q 33 Describe the structure of the lactose operon.

Q 34 Where does the repressor generally bind to in the lac operon?

Q 35 Name the two methods used to sequence human genome.

Q 36 How can YAC be synthesized?

Q 37 What are restriction endonucleases?

Q 38 What is the function of the regulatory gene in an operon?

Q 39 What are constitutive enzymes?

BIOLOGY FOR CLASS 12 ORGANISMS AND POPULATIONS

Q 1 What are the key elements that lead to so much variation in the physical and chemical conditions of different habitats?

Mark (1)

Q 2 What happen when excessive discharge of fertilisers into water bodies take place?

Mark (1)

Q 3 If natality is low, then what will happen to population density?

Mark (1)

Q 4 Name the term used when number of individuals of the population leave a particular habitat temporarily for the time under consideration?

Mark (1)

Q 5 What is Darwinian fitness?

Mark (1)

Q 6 What is ecology?

Mark (1)

Q 7 What is the ecological principle behind the biological control method of managing with pest insects?

Mark (1)

Q 8 Give the reasons for believing evolutionary biologists that mammals are able to survive successfully in any environment.

Mark (1)

Q 9 Name the interaction shown by Sea anemone and Clown fish?

Mark (1)

Q 10 Define age pyramid?

Marks (2)

Q 11 Explain Allen's rule?

Marks (2)

Q 12 What type of interaction has been shown by the algae and fungi in Lichen?

Marks (2)

Q 13 How is diapause different from hibernation?

Marks (2)

Q 14 If a marine fish is placed in a fresh water aquarium, will the fish be able to survive? Why or why not?

Marks (2)

Q 15 An orchid plant is growing on the branch of mango tree. How do you describe this interaction between an orchid and the mango tree?

Marks (2)

Q 16 Define phenotypic adaptation. Give one example.

Marks (2)

Q 17 Most living organisms can not survive at temperatures exceeding 100^{o} C. Why ?

Marks (2)

Q 18 Name important defense mechanisms in plants against herbivory.

Marks (2)

Q 19 Represent the age pyramids for human population.

Marks (3)

Q 20 Write the characteristic features of:
(a) Age distribution
(b) Population size
(c) Population density

Marks (3)

Q 21 Distinguish between the following:
(a) Hibernation and Aestivation
(b) Ectotherms and Endotherms

Marks (3)

Q 22 List the attributes that populations but not individuals possess.

Marks (3)

Q 23 Discuss about the importance of light to plants.

Marks (3)

Q 24 How does the pseudo-copulation help in pollination? Explain with an example.

Marks (3)

Q 25 With the help of suitable diagram describe the logistic population growth curve.

Marks (5)

Q 26 Define the following terms and give one example for each:
(a) Commensalism
(b) Parasitism
(c) Camouflage
(d) Mutualism
(e) Interspecific competiton

Marks (5)

Q 27 List and explain any three important characteristics of a population.

Marks (5)

Q 28 Write a short note on
(a) Adaptations of desert animals
(b) Adaptations of plants to water scarcity
(c) Behavioural adaptations in animals

Marks (5)

Most Important Questions

Q 1 How can you differentiate one biome from another?

Q 2 In a state in India, the population was 3 lakhs during the year 2004. if by 2007 the population becomes 5.4 lakhs calculate the natality of the state.

Q 3 What is Allen’s rule?

Q 4 How do sunken stomata help in xerophytic adaptation?

Q 5 Name one sexually produced entity which keeps its metabolic activities on hold and later can become active on availability of favourable conditions.

Q 6 Describe the two general responses of organisms towards its environmental signals.

Q 7 Why do we sweat when it is very hot and humid outside?

Q 8 What is cold-bloodedness?

Q 9 What is the difference between habitat and niche?

Q 10 What are euryhaline organisms?

Q 11 What is an age pyramid?

Q 12 What are the factors that govern change in population density?

Q 13 Name the major biomes of the world.

Q 14 How do fishes in polar regions survive the freezing temperatures?

Q 15 When you visited mount Kailash, your pulse rate had gone very high and your fingers became numb. Will these be inherited in your progeny?

Q 16 What reproductive strategy is taken by anemophilous flowers?

Q 17 Define ectoparasites with an example.

Q 18 Why are herbivores not called predators?

Q 19 A tree secretes a chemical from its stem which kills weeds of that area. What will you call this relationship?

Q 20 How does *Cuscuta* derive its nutrients from its host?

Q 21 Explain competitive release with an example.

Q 22 What is commensalism?

Q 23 What kind of natural relationship do lichens exhibit?

Q 24 How can an orchid use insects to pollinate it?

Q 25 How is a closed flower of fig pollinated?

Q 26 Name a human endoparasite.

Q 27 What is meant by niche partitioning?

Q 28 What is the difference between camouflage and mimicry?

Q 29 Are thorns of *Opuntia* meant for defense or as a xerophytic adaptation?

Q 30 What are phytophagous insects?

BIOLOGY FOR CLASS 12 PRINCIPLES OF INHERITANCE AND VARIATION

Q 1 Who rediscovered Mendel's laws of heredity?

Mark (1)

Q 2 What does monogenic inheritance deal with?
Mark (1)

Q 3 What is the cause of Down’s syndrome?
Mark (1)

Q 4 How does sickle cell anemia occur?
Mark (1)

Q 5 Define dominance?
Mark (1)

Q 6 What was the basis on which Mendel formulated the law of purity of gametes?
Mark (1)

Q 7 Give one example of co-dominance.
Mark (1)

Q 8 Define mutation.
Mark (1)

Q 9 Which sex-determining mechanism does exist in humans?
Mark (1)

Q 10 Why was the term linkage coined by Morgan?
Mark (1)

Q 11 Who gave the chromosomal theory of inheritance?
Mark (1)

Q 12 Define test cross. What is its significance?
Marks (2)

Q 13 What are Polyploids? How are they produced?
Marks (2)

Q 14 Explain the law of dominance using a monohybrid cross.
Marks (2)

Q 15 What are Mendel's monohybrid and dihybrid phenotypic ratios?
Marks (2)

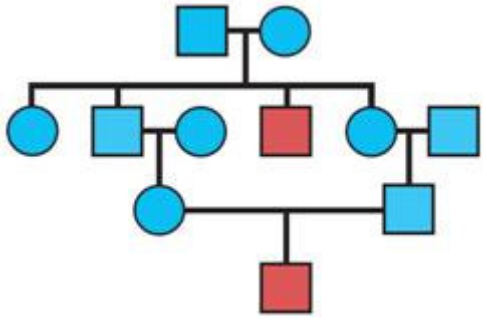
Q 16 A cross between two plants heterozygous for a single locus was made. The progeny contained the following:
(i) Round seeds, large starch grains : 1
(ii) Round seeds, intermediate starch grains : 2
(iii) Wrinkled seeds, small starch grains : 1
State the phenomenon exhibited by the above result? Work out the genotype of the parents and offspring using a punnet square.
Marks (2)

Q 17 (a) How is the child affected if it has developed from the zygote produced by an XX–egg fertilised by a Y-carrying sperm? What is the term given to this abnormality?
(b) What proportion of individuals produced in the progeny of a cross

between two individuals with genotype TtSs will be TtSs and ttss respectively.

Marks (2)

Q 18 Is the trait that is segregating in the below given pedigree due to a dominant or a recessive allele?



Marks (2)

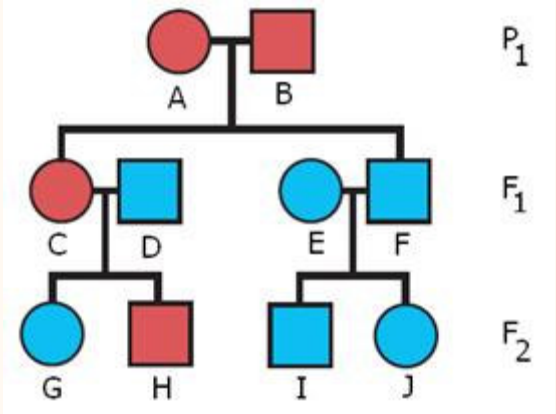
Q 19 A woman has an uncommon defect of the eyelids called Ptosis, which prevents her from opening her eyes completely. This condition is caused by a dominant allele, 'P'. The woman's father had Ptosis, but her mother had normal eyelids. Her father's mother had normal eyelids.

(a) What are the genotypes of the woman, her father, and her mother?

(b) What proportion of the woman's children will have Ptosis if she marries a man with normal eyelids?

Marks (2)

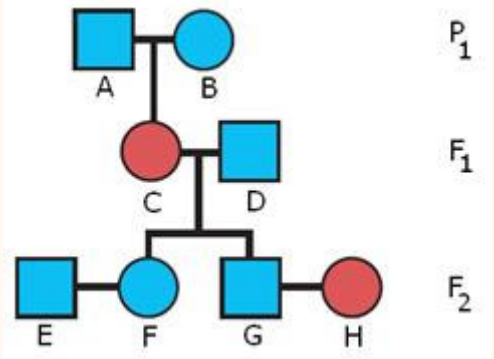
Q 20 The pedigree below shows the inheritance of a dominant trait (R).



What is the possibility that the offspring of the following matings will show the trait:
(a) G X I
(b) H X J

Marks (2)

Q 21 The pedigree below shows the inheritance of a recessive trait (r).



What is the chance that the couple G and H of F_2 generation will have an affected child?

Marks (2)

Q 22 In shorthorn cattle, the genotype RR causes a red coat, the genotype rr causes a white coat and the genotype Rr causes a roan coat. A breeder has red, white and roan cows and bulls.
What phenotypes might be expected from the following matings and in what proportions?
(a) red X red
(b) red X roan
(c) red X white
(d) roan X roan

Marks (2)

Q 23 What would be the phenotype ratio of pea plants obtained on crossing two Tt plants, if the gene for tall (T) plants was incompletely dominant over the gene for short (t) plants. What would be the result of crossing two Tt plants?

Marks (2)

Q 24 A genetic cross of red flowered snapdragons with pure white flowered variety, resulted in offspring with pink flowers. When the plants were self-crossed, the resulting plants had a phenotypic ratio of 1 red: 2 pink: 1 white. Give the most likely explanation.

Marks (2)

Q 25
A bison herd in the dry grasslands has begun to show a genetic defect. Some of the males exhibit "rabbit hock" in which the knee of the back leg is malformed slightly. If it is due to sex linked recessive gene and the herd bull who is normal (X^N) mates with a cow that is a carrier for rabbit hock, what are his chances of producing a normal son?

Marks (2)

Q 26 Haemophilia victims are mostly men, very rarely women are affected. Why?

Marks (3)

Q 27 Explain the phenomenon of co-dominance by taking example of blood groups in human beings.

Marks (3)

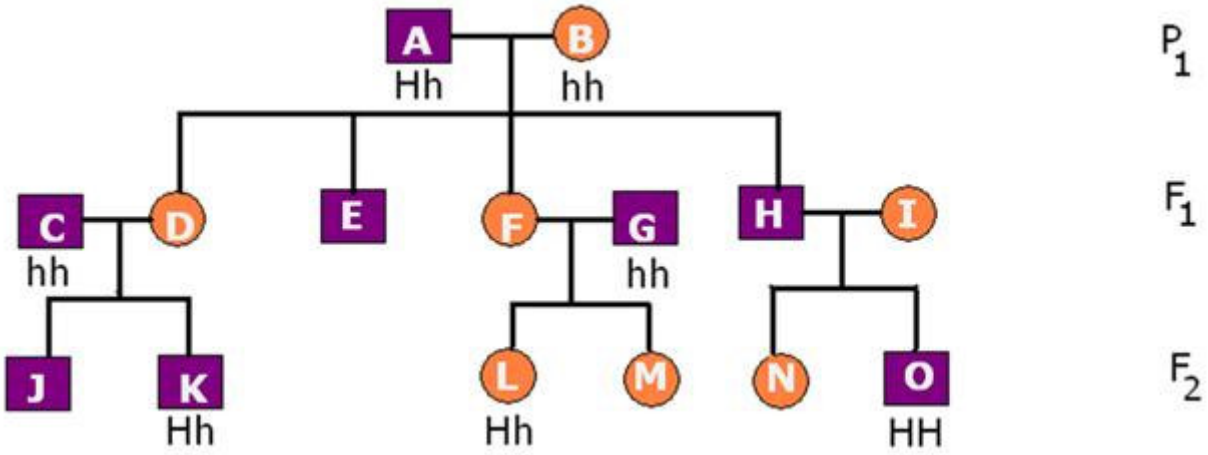
Q 28 Justify the fact that "In human beings, sex of the child is determined by father, not by mother".

Marks (3)

Q 29 "In incomplete dominance inheritance pattern, genotypic and phenotypic ratios in F2 generations are same". Explain.

Marks (3)

Q 30 Huntington's disease, a disease of the nervous system, is autosomal dominant. The pedigree below shows the inheritance of the disease in three generations of a family. Observe the pedigree carefully and answer the questions that follow:



(a) What is the probable genotype of individual D? How do you know?
(b) What is the probability that individual N will not have Huntington's disease?

Marks (3)

Q 31 In wild, a type of male lizard courts females by bobbing his head up and down while displaying a colorful throat patch. Now, suppose that males prefer to mate with lizards who bob their heads fast (F) and have red throat patches (R) to females that are slow in bobbing and have yellow throats. A male lizard heterozygous for head bobbing and homozygous dominant for the red throat patch mates with a female who is also heterozygous for head bobbing but is homozygous recessive for yellow throat patches.

a) How many of the F1 offspring have the preferred fast bobbing/red throat (assume 16 young)?
b) What percentage of the offspring will lack mates because they have both slow head bobbing and yellow throats?

Marks (3)

Q 32 Normal spots (X^N) on a leopard are a dominant, sex-linked trait compared to dark spots. Suppose as a Biologist, you are involved in the leopard breeding program. One year you cross a male with dark spots and a female with normal spots. She delivers four cubs, out of which two are male and two female. One each of the male and female cubs have normal spots and one each have dark spots.
a)What could be genotype of the mother?
b)Suppose a few years later, you cross the female cub that has normal spots with a male that also has normal spots. How many of each genotype will be found in the cubs (assume 4)?

Marks (3)

Q 33 A variety of wild beetles have been observed to lay their eggs in dead animals and then they their eggs in the ground until they hatch. Assuming that the preference for fresh meat (F) and tendency to bury the meat shallow (S) are dominant traits.
a) What will be the genotype of the offspring if a female carrion beetle homozygous dominant for both traits mates with a male homozygous recessive for both traits.
b) What will be the expected genotypic ratio of the F2 generation (FFSS : FFSs : FFss : FfSS : FfSs : Ffss : ffSS : ffSs : ffss)?

Marks (3)

Q 34 State IIIrd law of inheritance given by Mendel. Explain it by taking an example of a dihybrid cross.

Marks (5)

Q 35 (a) Name the law that explains the expression of only one of the parental characters in the F1 generation of a monohybrid cross?
(b) Not all characters show true dominance. What are the two other

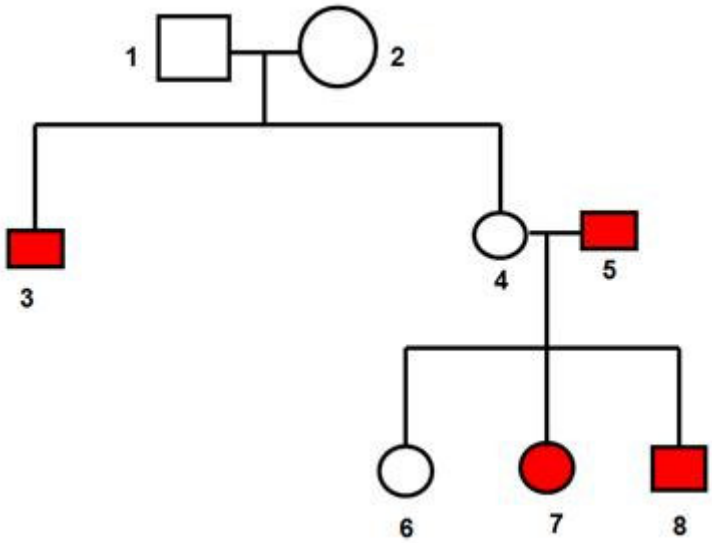
possible types of dominance? Give an example of each.
(c) A male child was born with 47 chromosomes. Write any two possible combinations of chromosomal abnormalities and write one important symptom of each?

Marks (5)

Q 36 Wolves have been seen with black coats and blue eyes. If normal coat colour (N) is dominant to black (n) and brown eyes (B) are dominant to blue (b). Suppose the breeding male and female are black with blue eyes and normal coloured with brown eyes respectively and female is also heterozygous for both traits. How many of the offspring (assume 16) living in the pack will have each of the following genotypes?
a) 1)nnBB 2)Nnbb
b)What percent of the offspring will be normal coloured with blue eyes?
c)What percent of the offspring will be brown with brown eyes?

Marks (5)

Q 37 (a) A colour blind man marries a woman with normal vision whose father was colour blind. Work out a cross to demonstrate the genotype of the new couple and their future sons?
(b) Answer the following questions with reference to the given pedigree.



i) Is the trait autosomal dominant, autosomal recessive or sex-linked? Justify your answer.
ii) Give the genotypes of the parents (individual 1 and 2).
iii) Give the genotype of the daughter in the first generation and the son and the daughters in the second generation.

Marks (5)

Q 38 (a) "Dominance is not an autonomous feature of a gene or the product it codes for. It depends on the gene product and the production of a particular phenotype from the gene product". Justify the statement.
(b) In humans, "unattached" earlobes are dominant over "attached" earlobes. "Widows peak" hairline is dominant over "non-widows peak" hairline. Use E and e for the earlobe phenotype alleles, and W and w for the hairline phenotype alleles.A female and a male, both with genotype EeWw have a child. What is the probability it will be a boy, and have attached earlobes and a widows peak hairline?

Marks (5)

Q 39 A woman with normal vision gives birth to a daughter with red-green colour-blindness. Knowing that colour-blindness is a sex-linked recessive gene,
a) what is father's genotype?
b)The woman marries a man with normal vision. What is the probability they will have sons who are red-green colour-blind
c)What is the probability the above couple will have daughters who are red-green colour-blind?

Marks (5)

Most Important Questions

Q 1 In a cross performed between two heterozygous inflated pod-bearing plants, a progeny crop of 568 individuals is obtained. Give the ratio and actual number of inflated and constricted pod-bearing plants in progeny.

Q 2 In a cross between a Negro with very dark skin and an individual with very fair skin will yield children with brown skin. What does this indicate?

Q 3 The gene coding for production of antigens on blood corpuscles have three alleles. If the alleles coding for antigen-A and antigen-B are co-dominant, what is the phenotype of heterozygous individuals?

Q 4 In nature, the character free earlobe is more prevalent than jointed earlobes. If in a cross between a man with jointed earlobes and a woman with free earlobes yields all children with free earlobes, what can you say about the relationship between the two characters?

Q 5 In a monohybrid cross, which of Mendel's' findings are justified and tested?

Q 6 If in a cross between a homozygous plant with purple flowers and a homozygous plant with white flowers, all progeny flowers are white flowered. What can you say about the two alleles?

Q 7 The stem colour of tomato plant is governed by two alleles, dominant purple (P) and recessive green (p). Two plants with purple stems are crossed with each other and a progeny of 72 plants were obtained. Among those, 18 plants had green stems. Comment on the genotype of the parents.

Q 8 Why did Mendel choose garden pea for his experiments?

Q 9 What is an allele? How does it relate to a gene?

Q 10 What do you understand by the phenotype and genotype of a particular gene?

Q 11 If the dominant allele is unable to dominate the recessive allele completely, what will be the phenotypic ratio of F1 in across between homozygous dominant and homozygous recessive?

Q 12 How many types of gametes are produced by a heterozygous individual showing green pods? How does it justify Mendel's law of segregation?

Q 13 What is a Punnett square? How can it help you to detect the probability of occurrence of a particular phenotype?

Q 14 If curly hairs is a dominant allele and both the parents are heterozygous for the trait, what is the probability that their off springs will have straight hair?

Q 15 What do you understand by crossing over? What is its significance?

Q 16 How can you test the zygosity of an individual with dominant phenotype for two traits? Give one example.

Q 17 In a heterozygous individual for two traits A and B, what are the different types of gametes produced?

Q 18 A marriage between a man with jointed earlobes and a woman with free earlobes and a rolling tongue produced children all of which had free earlobes and rolling tongue. Comment on the genotypes of parents.

Q 19 Two pea plants were crossed and the fraction of individuals were 9/16 round-yellow seeds, 3/16 round green seeds, 3/16 wrinkled yellow seeds and 1/16 wrinkled green seeds. Comment on the genotype and phenotype of parents.

Q 20 List the gametes to be produced by the following individuals: AABb, aaBb, Aabb and AaBBCc.

Q 21 The famous actor Hrithik Roshan has six fingers in right palm. Did you know this is a dominant trait? Two individuals are married one with an extra finger and one without. If the one with extra finger is heterozygous for the trait, what is the probability of their children having an extra finger?

Q 22 In a cross between two tall plants bearing axial flowers, one individual of the progeny is dwarf and has terminal flowers. Three individuals are tall having terminal flowers and three are dwarf with axial flowers. The rest tall plants have axial flowers. If there were total 16 progeny individuals, comment on the genotype of the parents with reasons.

Q 23 Why did Mendel always observe independent assortment between a pair of alleles?

Q 24 Give the similarities between chromosomes and genes that helped to formulate the chromosomal theory of inheritance.

Q 25 Give one cross that shows sex-linked inheritance.

Q 26 In magpie moth, a cross was performed between light-winged female and dark-winged male. In another cross, dark-winged females were crossed with light-winged males. How are the two related and what is their significance?

Q 27 Who was Morgan? How did he enrich the science of genetics?

Q 28 What is the genotypic ratio in F2 of the individuals in a cross between two heterozygous individuals?

Q 29 Give the method of sex determination in cockroach. Comment on the gametes of both sexes.

Q 30 You know that Y-chromosome is a reduced chromosome and contains no functional genes. Then why is it important for human males to have it?

Q 31 What is homogametic sex? Give two examples.

Q 32 How can you say that in humans, males are responsible for deciding the sex of the progeny?

Q 33 How do the RBCs of individuals affected with sickle-cell anemia become crescent-shaped?

Q 34 What is transition in case of DNA molecule? How can it affect a gene?

Q 35
If a cell at the anaphase stage of mitotic cell division fails to synthesize the spindle fibres and enters telophase as such, what will happen to its chromosomes?

Q 36 What is the difference between nullisomy and double monosomy?

Q 37 Give an example of an autosomal trisomy. How can you diagnose it?

Q 38 How will you predict the possible occurrence of hemophilia in a family if you know a history of two generations?

Q 39
Many African natives are carriers of sickle-cell anemia. These individuals are less prone to get malaria than the healthy individuals. What might be the reason?

Q 40 At what stage of cellular machinery does the mutation occur in case of sickle-cell anemia and at what stage is it manifested?

Q 41 How does deletion affect the genes and how does it differ from inversion?

Q 42 Give two important reasons why fruit fly could be used as test organisms for genetic analyses and human beings cannot?

Q 43 A gene causing a particular genetic disorder is located on the X-chromosome of human female. Explain why it would be definitely inherited by the progeny males but may or may not, by the females.

BIOLOGY FOR CLASS 12 REPRODUCTION IN ORGANISMS

Q 1 Which flower parts develop into fruit and seeds after fertilization?
Mark (1)

Q 2 Which events take place in pre-fertilization process ?
Mark (1)

Q 3 The meiocyte of a potato plant contains 48 chromosomes. Workout the number of chromosomes found in its mesophyll cells.
Mark (1)

Q 4 Why does the process of cell differentiation occur in the organisms during embryogenesis?
Mark (1)

Q 5 How will you define the term embryogenesis?
Mark (1)

Q 6 Name the terms used for male and female sex organs in Marchantia.

Mark (1)

Q 7 Which vegetative part is responsible for the formation of new plant in Bryophyllum?

Mark (1)

Q 8 What is the mode to form new individuals in Protistans and Monerans?

Mark (1)

Q 9 In a pond, you see green coloured long filaments, which is a type of algae consisting of single layer aggregation of vertically arranged cells. What sort of strategy can this type of cellular aggregation adopt for multiplication?

Mark (1)

Q 10 What is the terminology for the concept of group immortality?

Mark (1)

Q 11 "Any organic material kept in moist and dark conditions gets infected with fungus, although there was no sign of fungus prior to it." How does fungus makes it possible?

Mark (1)

Q 12 "Sexual reproduction generally involves fusion of gametes from two different parents belonging to a species, but this is not always true." What explanation can you give in support of the statement?

Mark (1)

Q 13 The principle of life states that every form of life has to die; still amoeba is called as immortal. Give specific reason for it.

Mark (1)

Q 14 'In single celled organisms, the offspring are similar to one another and are the exact copies of the parent'. Would it be correct to call them clones?

Mark (1)

Q 15 What is the terminology used for asexual multiplications when a single celled organism divides into two equal halves or when it divides into two unequal parts?

Mark (1)

Q 16 The changes in the body that are observed during the attainment of reproductive maturity are broadly categorised into two categories. Name these categories.

Mark (1)

Q 17 Both vegetative and asexual reproductions do not involve any sexual method so they come under a common category, yet they are different in one specific point. Elaborate that specific point.

Mark (1)

Q 18 The chromosome number in meiocyte of a butterfly is 380. What is the number of chromosomes in its gamete?

Mark (1)

Q 19 In case of a monoecious species having bisexual flowers with self-fertilisation, is there any need of a mediator for pollination?

Mark (1)

Q 20 A student while crossing across a papaya orchard observed that some papaya plants had flowers with a very small papaya like structure at its base, while there were other papaya plants that had flowers without such a swollen portion. What information do you get concerning the type of plant and the flower from the above data?

Mark (1)

Q 21 What is vegetative reproduction?

Mark (1)

Q 22 Name vegetative propagules in the following plants:-

i) Potato
ii) Banana
iii) Guava
iv) Sugarcane
v) Bryophyllum
vi) Onion

Marks (2)

Q 23 By which name male gametophyte is known in plants? What is the significance of germ pore in male gametophyte?

Marks (2)

Q 24 Define Hermaphrodites. What is the difference in the reproductive strategy of earthworm and tapeworm?

Marks (2)

Q 25 Name the cell division responsible for gametogenesis. Give one morphological difference between the two types of gametes in a heterogametic organism.

Marks (2)

Q 26 Define senescent phase. List some changes in the organisms during this phase.

Marks (2)

Q 27 Differentiate between seasonal and continuous breeders?

Marks (2)

Q 28 Sexual reproduction is the favoured mode of reproduction under unfavorable conditions. Explain.

Marks (2)

Q 29 Name some common structures through which asexual reproduction takes place in various organisms.

Marks (2)

Q 30 What term is given to asexual reproduction in plants?

Marks (2)

Q 31 Define clone. How are they produced?

Marks (2)

Q 32 Mention any two differences between sexual and asexual reproduction?

Marks (2)

Q 33 Water hyacinth is one of the most invasive aquatic weeds, resulting in the degradation of aquatic ecosystem and thereby in the

death of fishes. Does it directly damage the fish life? Give your answer with proper justification.

Marks (2)

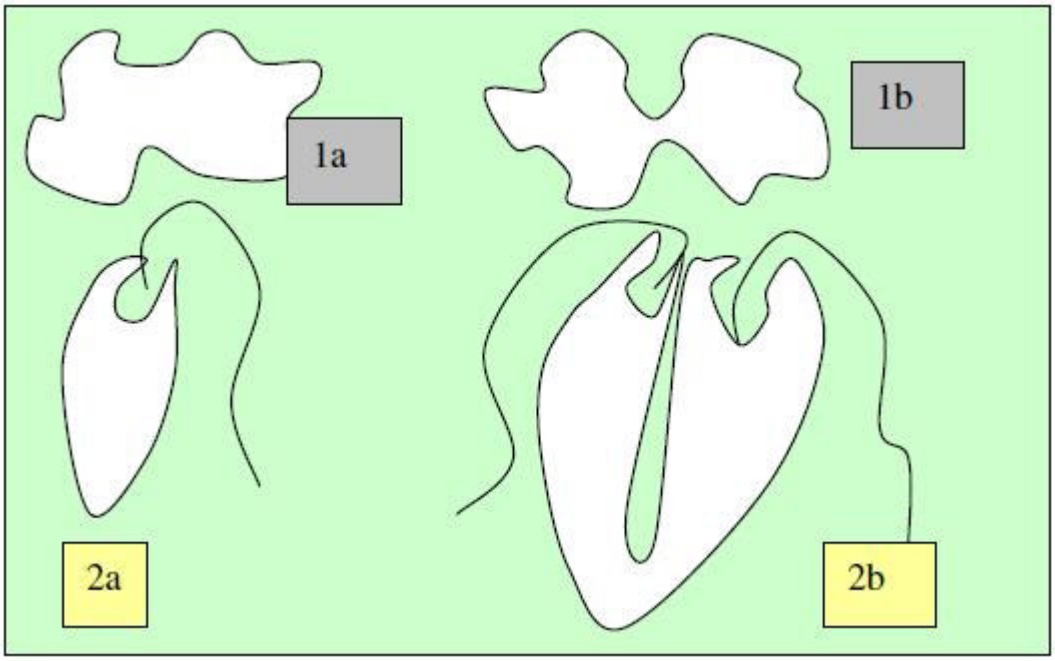
Q 34 Why runners, suckers, tubers, offsets and bulbs are called as vegetative propagules?

Marks (2)

Q 35 Potato is a food source but small potatoes are generally called as potato seeds, so they are directly used for cropping purposes. How does a farmer get a new plant from such a potato seed?

Marks (2)

Q 36 Differentiate the following diagrams based on the process shown.



Marks (2)

Q 37 When multiplication of species can occur with the help of asexual methods, then why do the organisms adapt sexual methods of multiplication?

Marks (2)

Q 38 The population of humans on this earth would not have been much if humans had oestrus cycle rather than the menstrual cycle. Give reasons for your justification?

Marks (2)

Q 39 Both the prefixes (Uni and Mono) have the same meaning i.e. one in number. Does it mean that unisexual and monoecious species are the same?

Marks (2)

Q 40 In case of sexual reproduction, the number of female gametes is generally limited, but that of the male gametes is innumerable. Give reason for this observation.

Marks (2)

Q 41 Why is internal fertilisation considered to be more advanced method than external fertilisation?

Marks (2)

Q 42 What is the difference between the type of gametes and their transfer from male to female organisms of higher animals and higher plants?

Marks (2)

Q 43 “Zygote is a vital link that ensures continuity of species between organisms of one generation to its next.” Justify.

Marks (2)

Q 44 Which one is more recent in origin- Ovipary or Vivipary? Support your answer with a valid reason?

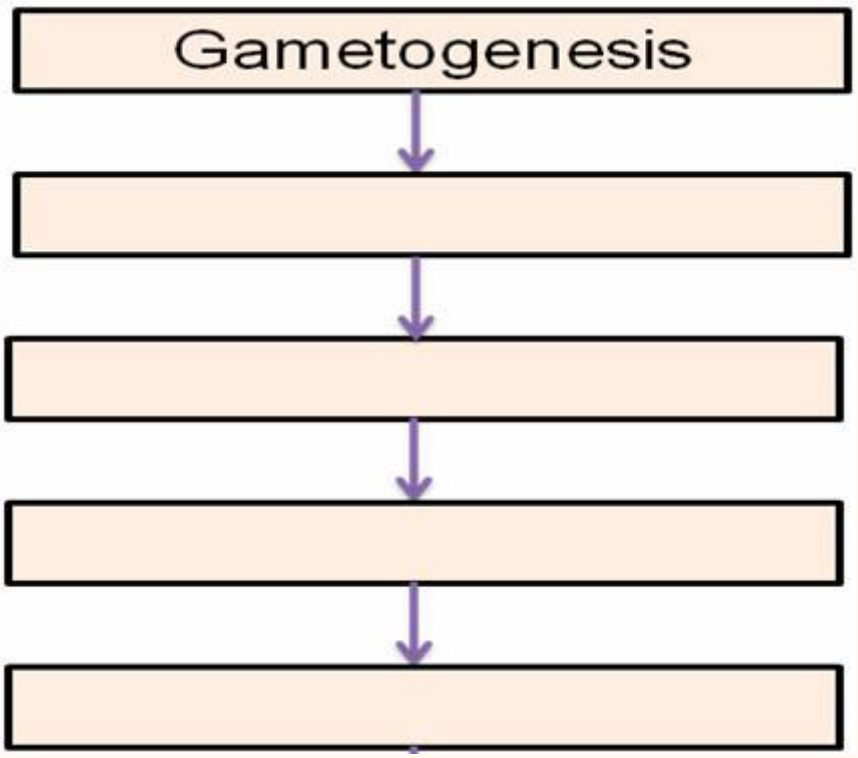
Marks (2)

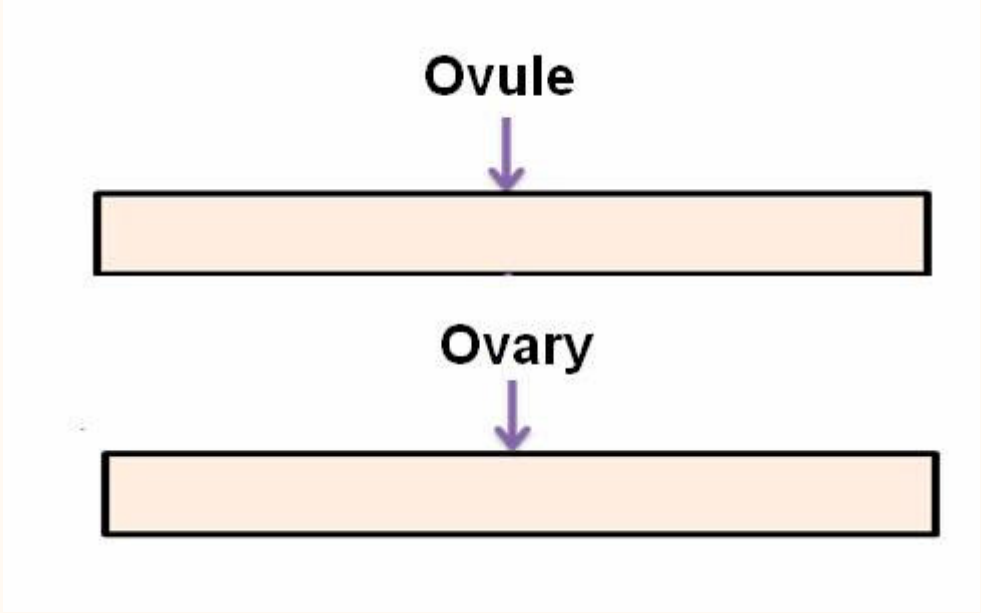
Q 45 Fill in the vacant columns with reference to asexual reproduction.

Column A	Column B
Paramecium	
Penicillium	
	Bulbil
	Leaf buds
	Gemmules
Water hyacinth	

Marks (3)

Q 46 Complete the flow chart with reference to the reproduction in flowers.





Marks (3)

Q 47

A

B

(i) Identify the given plants.
(ii) How are they different from each other with respect to their sexuality?

Marks (3)

Q 48 Both amphibians and reptiles are oviparous animals, yet they differ in certain aspects of reproduction. What are the differences? What is the disadvantage to oviparous animals?

Marks (3)

Q 49 Fill in the column B whether the structures given in column A are haploid, diploid, triploid or polyploid.

Column A	Column B
Sperm	
Ovum	
Zygote	
Endosperm	
Pollen	
Embryo	

Marks (3)

Q 50 What are the advantages and disadvantages of asexual reproduction?

Marks (3)

Q 51 "Terror of Bengal", a most invasive aquatic weed, is widely spread and expands rapidly in the growing season.
a. Name the weed.
b. Which multiplication strategy would you attribute to this type of observation?
c. How does it affect the aquatic life?

Marks (3)

Q 52 Sexual reproduction involves syngamy (fusion of male and female gametes), thereby forming a zygote which develops into next generation.

a. What can happen if syngamy fails?
b. Is there any possibility of any exception to this principle?

Marks (3)

Q 53 In oogamy, female gamete is large and non-motile but the male gamete is reverse in its properties. Why such type of adjustment is there in higher organisms?

Marks (3)

Q 54 "Successful gamete transfer and fusion of gametes is essential for the most critical event in sexual reproduction".
i. Give the technical term for the fusion of gametes.
ii. What are the events that occur during gamete transfer in plants?
iii. What is formed as a result of fusion of gametes/syngamy?
iv. How will you categorise syngamy based on the fusion of gametes inside or outside the female body?
v. What would happen if syngamy does not occur?

Marks (5)

Q 55 Distinguish between oestrus cycle and menstrual cycle.

Marks (5)

Q 56 What is asexual reproduction? Discuss briefly the forms of asexual reproduction in animals.

Marks (5)

BIOLOGY FOR CLASS 12 REPRODUCTIVE HEALTH

Q 1 How does emergency contraception work?

Mark (1)

Q 2 Does giving sex education to adolescents encourage sexual activity?

Mark (1)

Q 3 Name two not curable STDs.
Mark (1)

Q 4 What is reproductive health?
Mark (1)

Q 5 Expand the term MTP.
Mark (1)

Q 6 What is the GIFT (Gamete Intra Fallopian Transfe)?
Mark (1)

Q 7 Give the full form of ART.
Mark (1)

Q 8 What happens in Intra Cytoplasmic Sperm Injection?
Mark (1)

Q 9 What do you understand by infertility?
Mark (1)

Q 10 What do you understant by space between pregnancies?
Mark (1)

Q 11 When is World Population Day observed?
Mark (1)

Q 12 What is meant by Lactational Amenorrhea?

Marks (2)

Q 13 Write any four features of an ideal contraceptive.

Marks (2)

Q 14 What is meant by amniocentesis? What is main reason of it being banned in India?

Marks (2)

Q 15 What are the main objectives of the RCH programs?

Marks (2)

Q 16 Mention any four reasons for population explosion.

Marks (2)

Q 17 Describe the popular Test tube baby method to overcome the problem of infertility.

Marks (3)

Q 18 Name any four completely curable STDs and the general symptoms of the STDs.

Marks (3)

Q 19 Name any two types of intra uterine contraceptive devices and the mechanism by which they prevent conception.

Marks (3)

Q 20 Name different categories of contraceptive methods and give one example of each.

Marks (3)

Q 21 Enlist a few measures to improve reproductive health of the society.

Marks (5)

Most Important Questions

Q 1 When was family planning initiated in India?

Q 2 What is the definition of reproductive health given by WHO?

Q 3 What does RCH stand for?

Q 4 What are the main objectives of RCH?

Q 5 Expand CDRI. Write its contribution in birth control.

Q 6 What are the major causes behind exponential rise of human population?

Q 7 How is population growth rate calculated?

Q 8 What is the population growth rate of India?

Q 9 What is legal age for marriage for males & females in India?

Q 10 What are the properties of an ideal contraceptive?

Q 11 What do you mean by birth control?

Q 12 Why is it necessary to control population?

Q 13 What is the principle behind natural methods of contraception?

Q 14 Which is the fertile phase in a reproductive female?

Q 15 Which days can be considered as the safe period in a reproductive female?

Q 16 Why is the failure rate high in case of coitus interruptus?

Q 17 Lactational amenorrhea can provide contraception up to 6 months only. Why?

Q 18 Out of natural methods, barriers, IUDs which one protects against STDs?

Q 19 What is the composition of combination pill?

Q 20 How is pregnancy avoided by use of oral pills?

Q 21 Name the contraceptive methods most commonly used in our country?

Q 22 What is surgical sterilization in males and females known as?

Q 23 How are MTP and amniocentesis misused?

Q 24 When does a MTP become essential?

Q 25 Name two incurable STDs?

Q 26 Name two curable STDs?

Q 27 Why are STDS more common in persons who abuse drugs?

Q 28 What are the steps involved in IVF-ET?

Q 29 Expand GIFT and ZIFT.

Q 30 What kind of infertility can be treated by artificial insemination?

Q 31 What kind of infertility can be treated by ICSI?

Q 32 Which ART would be beneficial for an infertile couple where the fallopian tubes of the female are blocked?

Q 33 Why is amniocentesis for sex-determination banned in our country?

Q 34 Upto which week of gestation is MTP considered safe?

Q 35 Name the barrier contraceptives available for females.

BIOLOGY FOR CLASS 12 SEXUAL REPRODUCTION IN FLOWERING PLANTS

Q 1 What are the characteristics of insect pollinated flowers?

Mark (1)

Q 2 Name the term used when pollen tube enters through the micropyle?

Mark (1)

Q 3 Give the name of a plant which causes pollen allergy.

Mark (1)

Q 4 Name the substance which forms the exine of the pollen grain.
Mark (1)

Q 5 Can we preserve the pollen grains?
Mark (1)

Q 6 Which condition does refer to apocarpy?
Mark (1)

Q 7 In which part of the flower is embryo sac found?
Mark (1)

Q 8 How will you define megasporogenesis?
Mark (1)

Q 9 At what stage of embryo sac does the fertilization take place in a flower?
Mark (1)

Q 10 Give two examples of water-pollinated flowers.
Mark (1)

Q 11 What is the use of filiform apparatus of synergids?
Mark (1)

Q 12 Define emasculation.

Mark (1)

Q 13 What is Apomixis?

Mark (1)

Q 14 What are chasmogamous flowers?

Mark (1)

Q 15 Name the tissue located inside the ovarian cavity on which the ovule develops.

Mark (1)

Q 16 It is the process of formation of megaspores from megaspore mother cell by meiotic division in anther. Name the process.

Mark (1)

Q 17 Holding a flower, the teacher asked Heena to show the part of a flower which has four-sided (tetragonal) structure consisting of four sporangia, grouped as a pair in each lobe. What would be the part of the flower?

Mark (1)

Q 18 Pineapples and grapes are developed from an unfertilised ovary and further resulting in seedless fruit. Can you name the developmental process?

Mark (1)

Q 19 Vijaya started sneezing and developed some rashes on her hand after returning from her school garden. What causes such type of reaction?

Mark (1)

Q 20 It is made of sporopollenin, which can withstand high temperature and action of strong acids or alkalis, no enzymes can degrade it and hence the pollen grains are well preserved as fossils. Name the layer.

Mark (1)

Q 21 If favorable conditions like adequate moisture, oxygen and suitable temperature are not available, then the embryo may enter a state of inactivity. Name this state of inactivity.

Mark (1)

Q 22 A flower is large in size, colourful and rich in nectar. This type of adaptation corresponds to which pollination strategy?

Mark (1)

Q 23 A general mechanism to prevent the self pollen from fertilising the ovules by inhibiting the pollen germination or pollen tube growth on the pistil. Name the mechanism.

Mark (1)

Q 24 Differentiate between a false and a true fruit.

Marks (2)

Q 25 Define perisperm. Where is it found?

Marks (2)

Q 26 What is the most common type of endosperm development? What is meant by non-endospermous seed?

Marks (2)

Q 27 Mention the fate of the following structures of the ovule after fertilisation.

a) Integuments
b) Synergids
c) Polar nuclei
d) Egg cell

Marks (2)

Q 28 Mention any two characteristics of pollen grains produced by hydrophillous flower.

Marks (2)

Q 29 Name any water pollinating plant and explain how pollination is accomplished in it?

Marks (2)

Q 30 Cleistogamous flowers are strictly self pollinating," Explain. What is the disadvantage of this phenomenon?

Marks (2)

Q 31 Differentiate between exine and intine.

Marks (2)

Q 32 Define polyembryony. Give one example of it.

Marks (2)

Q 33 "Apomictic genes" are trying to be inserted in hybrid varieties", Explain.

Marks (2)

Q 34 ‘Dehydration of seed during its maturation increases its shelf life’. Explain.

Marks (2)

Q 35 Fruits are developed from the ovary but in few species such as apple, strawberry, cashew etc., other parts of the flower also contribute to fruit formation. Name the floral part and the name given to such fruits.

Marks (2)

Q 36 What similarities do you find in seed bank and pollen bank? Write their importance.

Marks (2)

Q 37 Draw a labelled diagram of longitudinal section of an embryo of grass showing its various parts.

Marks (3)

Q 38 Define inbreeding depression. Mention any four natural mechanisms in the plants to avoid inbreeding depression.

Marks (3)

Q 39 Define anemophily. Give any four characteristics of anemophilous flowers.

Marks (3)

Q 40 Mention the significance of following structures in the megasporangium of the plant
a) Funicle
b) Micropyle
c) Integuments.

Marks (3)

Q 41
(i) What do you understand by double fertilisation?
(ii) Mention the ploidy of following structures:
a) Cells of endosperm
b) Synergids

Marks (3)

Q 42 Differentiate among autogamy, geitonogamy and xenogamy.

Marks (3)

Q 43 Draw labelled enlarged view of transverse section of a mature anther showing different layers of tissues.

Marks (3)

Q 44 Enlist the main steps in the development of a three-celled pollen grain.

Marks (3)

Q 45 Unisexual flowers have pollen grains which are small, dry and non-sticky. Stigma and style of such flowers are well exposed and

hairy. Name the pollinating agent. How do such adaptations help in pollination?

Marks (3)

Q 46 It is a major approach of crop improvement programme. In such crossing experiment, it is important to make sure that only the desired pollen grains are used for pollination and the stigma is protected from contamination. How can it be achieved?

Marks (3)

Q 47 "Spermatophytes are characterized by the ability to produce seeds". Discuss the advantages of producing seeds.

Marks (5)

Q 48 Enlist all the main steps in the development of female gametophyte with labeled diagrams of the different stages of the development.

Marks (5)

Q 49 Name the following and give the function of any two:
a. Three cells present at the chalazal end in the embryo sac.
b. A small pore in the ovule through which the pollen tube enters.
c. Wall of fruit having mesocarp, endocarp and epicarp.
d. Two cells present on either side of the egg cell in an embryo sac.
e. Mass of parental cells enclosed within the integument.

Marks (5)

Most Important Questions

Q 1 Name the parts of an angiosperm flower in which male and female gametophyte is developed.

Q 2 Name the organs that can regenerate in a plant. What is this property known as?

Q 3 What is the ploidy level of the male and female gametes and how is it possible?

Q 4 How is fruit formed in flowering plants?

Q 5 Describe the development of female gametophyte in angiosperms.

Q 6 What are monoecious plants?

Q 7 Describe a typical embryo sac in angiosperms.

Q 8 What are the differences between sexual and asexual reproduction?

Q 9 How is the chromosome number maintained through generations in sexual reproduction?

Q 10 What, do you think, is the advantage of having one mobile and one immobile gamete?

Q 11 When are the pollen grains shed from the anther?

Q 12 Which are the two essential whorls of a flower?

Q 13 Name a plant which reproduce vegetatively just like *Kalanchoe.*

Q 14 Where from do the plantlets originate in case of the plant known as *Kalanchoe*?

Q 15 Where does the male gamete develop in case of angiosperms? Describe the process.

Q 16 Draw the vertical section through a flower.

Q 17 Which is the most common type of embryo sac in angiosperms? Draw and label it.

Q 18 What are megasporophyll, microsporophyll, megasporangium and microsporangium in context of angiosperms?

Q 19 What is Tapetum? What is its function in angiosperms?

Q 20 Can you derive the ploidy level of the endosperm that arises due to the process of triple fusion?

Q 21 What are pseudocarps? Give three examples.

Q 22 How is artificial hybridization important for crop improvement?

Q 23 What is inbreeding depression? How can it be minimized?

Q 24 What is emasculation? Why is it mandatory for artificial hybridization?

Q 25 What is sporopollenin? What is its utility?

Q 26 Give some characteristics of anemophilous flowers. Justify each characteristic.

Q 27 What is adventive embryony?

Q 28 Describe the male gametophyte in angiosperms.

Q 29 How is Geitonogamy similar to autogamy?

Q 30
What are the differences between a dicot embryo and monocot embryo?

Q 31 What is Polyembryony? How does it arise?

Q 32 Can you call the embryos arising from apomixis as clones? Why or why not?

BIOLOGY FOR CLASS 12 STRATEGIES FOR ENHANCEMENT IN FOOD PRODUCTION

Q 1 What is the major advantage of producing plants by micro-propagation?

Mark (1)

Q 2 What is animal husbandry?

Mark (1)

Q 3
What does a fishery include?

Mark (1)

Q 4 How much livestock population of the total world do India and China hold?

Mark (1)

Q 5 What do you mean by dairying?

Mark (1)

Q 6 What are somaclones?

Mark (1)

Q 7 What is mutation? How can it be induced?

Marks (2)

Q 8 What is totipotency?

Marks (2)

Q 9 Write two new technologies which are going to play a pivotal role in further enhancing food production.

Marks (2)

Q 10 What is meant by the term ‘breed’? What are the objectives of animal breeding?

Marks (2)

Q 11 Which part of the plant is best suited for making virus-free plants and why?

Marks (2)

Q 12 Find out what are the various components of the medium used for propagation of an explant in *vitro*?

Marks (2)

Q 13 What are somatic hybrids?

Marks (2)

Q 14

Name any three hybrid varieties of crop plants which are resistant to diseases and have been developed in India. Also name the diseases against which they are resistant.

Marks (3)

Q 15 Explain in brief the role of animal husbandry in human welfare.
Marks (3)

Q 16 If your family owned a dairy farm, what measures would you undertake to improve the quality and quantity of milk production?
Marks (3)

Q 17 Name the methods employed in animal breeding. According to you which of the methods is best and why?
Marks (3)

Q 18
What is apiculture? How is it important in our life?

Marks (3)

Q 19 Discuss the role of fishery in enhancement of food production.
Marks (3)

Q 20 Explain what is meant by biofortification?
Marks (3)

Q 21 Write a short note on Single Cell Protein.
Marks (3)

Q 22 Briefly describe various steps involved in plant breeding.

Marks (5)

Most Important Questions

Q 1 Define animal husbandry.

Q 2 What comprises livestock?

Q 3 What should a good cattle feed consist of?

Q 4 What is poultry farming?

Q 5 What is dairy farming?

Q 6 Name two indigenous breeds of cattle.

Q 7 Name two indigenous breeds of buffalo.

Q 8 Name two indigenous breeds of poultry.

Q 9 Differentiate between inbreeding and outbreeding.

Q 10 What is mutation? How can it be used in improved breeding?

Q 11 What are the different types of outbreeding?

Q 12 What is inbreeding depression?

Q 13 What is Hisardale?

Q 14 Expand MOET.

Q 15 Differentiate between pisciculture and aquaculture.

Q 16 How can artificial insemination overcome the problems of normal mating?

Q 17 What are the three castes in a honey bee colony?

Q 18 Name 2 edible fresh water fishes of India.

Q 19 Name 2 edible marine fish.

Q 20 What cross leads to the production of mule?

Q 21 Why is calcium necessary in the feed of poultry?

Q 22 What do you understand by Green Revolution?

Q 23 What is Biofortification?

Q 24 What are somaclones?

Q 25 What is the advantage of producing plants by micropropagation?

Q 26 What is germplasm collection?

Q 27 Name two hybrids of wheat.

Q 28 Name two hybrids of rice.

Q 29 Name two hybrids of sugarcane.

Q 30 What is cultivar and cultigens?

Q 31
What is mutation breeding?

Q 32 Why is it necessary to breed plants with improved food quality?

Q 33 What is somatic hybridization?

Q 34 Define totipotency.

Q 35 Name two sources of SCP.

Q 36 What are the components of the culture medium used in tissue culture?

Q 37 Which amino acids are normally lacking in maize?