

**CUET (UG)**  
**Biology Sample Paper - 5**  
**Solved**

**Time Allowed: 45 minutes**

**Maximum Marks: 200**

**General Instructions:**

1. The test is of 45 Minutes duration.
2. The test contains 50 questions out of which 40 questions need to be attempted.
3. Marking Scheme of the test:
  - a. Correct answer or the most appropriate answer: Five marks (+5).
  - b. Any incorrectly marked option will be given minus one mark (-1).
  - c. Unanswered/Marked for Review will be given zero mark (0).

**Attempt any 40 questions**

1. In non-primitive mammals like a cow, sheep, rats, dogs, etc., such cyclical changes during reproduction are called: **[5]**
  - a) Menstrual cycle
  - b) Oestrus cycle
  - c) Growth cycle
  - d) Gestation period
2. Sexual reproduction does not involve: **[5]**
  - a) Haploid gametes
  - b) Generally Single parent
  - c) Faster mode of reproduction
  - d) Fusion of gametes
3. All organisms reproduce sexually after certain growth and maturity. That period of growth is called: **[5]**
  - a) Juvenile phase
  - b) Flowering phase
  - c) Reproductive phase
  - d) Growth phase
4. Outermost green leafy whorls of the flower are called: **[5]**
  - a) Stamen
  - b) Tepals
  - c) Sepals
  - d) Petals
5. Among the terms listed below, those that are not technically correct names for a floral whorl are: **[5]**
  - i. Androecium
  - ii. Carpel
  - iii. Corolla

iv. Sepal

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

6. Which nocturnal animals can transport pollen over a long distances? **[5]**
- a) Cat
  - b) Bat
  - c) Owl
  - d) Frog
7. The alternation of two different phases of the life cycle involving haploid and diploid stage is called: **[5]**
- a) Alternation of life cycle
  - b) Alternation of generation
  - c) Change of generation
  - d) Change of saprophyte
8. Which one is not correct about the function of the placenta? **[5]**
- a) Help in respiration
  - b) Help in nutrition
  - c) Release HCG hormone
  - d) Release testosterone hormone
9. The hormone responsible for milk ejection after the birth of the baby is: **[5]**
- a) Estrogens
  - b) Oxytocin
  - c) Progesterone
  - d) Prolactin
10. Finger-like projections appear on the trophoblast after implantation is called: **[5]**
- a) Chorionic villi
  - b) Chorionic gonadotropin
  - c) Placenta
  - d) Haustoria
11. Which one is called the pregnancy hormone: **[5]**
- a) Progesterone
  - b) Estrogen
  - c) Testosterone
  - d) Oxytocin
12. Name the kind of reproduction in bees in which males are produced. **[5]**
- a) Parthenogenesis
  - b) Sexual reproduction
  - c) Grafting
  - d) Asexual reproduction

13. Name the female condom introduced by Hindustan Latex and the female health company of England in India. [5]  

a) Mala-D	b) Lovenegen
c) Fermiderm	d) Femidom
14. XY chromosome that determines the sex in human beings are: [5]  

a) Heterologous	b) Heteromorphic
c) Homomorphic	d) Genologous
15. A person having genotype  $I^A I^B$  would show the blood group as AB. This is because of: [5]  

a) Incomplete dominance	b) Segregation
c) Co-dominance	d) Pleiotropy
16. Which one of the following conditions in humans is correctly matched with its chromosomal abnormality/linkage? [5]  

a) Erythroblastosis foetal is - X - linked	b) Down's syndrome - 44 autosomes + XXY
c) Colour blindness - Y - linked	d) Klinefelter's syndrome - 44 autosomes + XXY
17. Conditions of a karyotype  $2n + 1$ ,  $2n - 1$  and  $2n + 2$ ,  $2n - 2$  are called: [5]  

a) Aneuploidy	b) Polyploidy
c) Monosomy	d) Allopolyploidy
18. In human beings 99.9% of genome sequence are same in all individuals only 0.1% of genome differ that: [5]  

a) make every individual similar in phenotypic appearance.	b) make every individual genetically similar.
c) make every individual unique in phenotypic appearance.	d) make a genetic variation for evolution.
19. In lac operon, lactose is the substrate for enzyme beta-galactocidase and its regulates: [5]  

a) Only switching of OFF of the operon	b) Switching ON and OFF of the operon
--	---------------------------------------

- c) Neither switching ON or OFF of operon      d) Only switching ON of the operon
20. Which of the following steps in transcription is catalyzed by RNA polymerase? [5]
- a) Elongation      b) All of these  
c) Termination      d) Initiation
21. Genetic drift: [5]
- a) Has nothing in common with inbreeding      b) Produces greatest fluctuations in a large population  
c) Is an orderly change in gene frequency      d) Is the random change in gene frequency
22. Which of the following is an example of environmental variation? [5]
- a) Madan dyes his hair blue      b) Apu is a tongue roller, but his brother Sanjay is not  
c) Homer inherited baldness from his father's side of the family      d) Patti and Selma have hanging ear lobes
23. The theory of spontaneous generation stated that: [5]
- a) life can arise from non-living things only.      b) life arises spontaneously, neither from living nor from the non-living.  
c) life can arise from both living and non-living.      d) life arose from living forms only.
24. If you suspect a deficiency of antibodies in a person, to which of the following would you look for confirmatory evidence? [5]
- a) Serum globulins      b) Haemocytes  
c) Serum albumins      d) Fibrinogen in the plasma
25. The pathogenic bacterium that causes typhoid fever in a human being is: [5]
- a) Streptococcus typhi      b) Salmonella feverish  
c) Salmonella typhi      d) Streptococcus pneumonia

26. Many diseases can be diagnosed by observing the symptoms in the patient. Which group of symptoms are indicative of pneumonia? [5]
- |  |  |
|--|--|
| a) Nasal congestion and discharge, cough, constipation, headache         | b) Constipation, abdominal pain, cramps, blood clots         |
| c) High fever, weakness, stomach pain, loss of appetite and constipation | d) Difficulty in respiration, fever, chills, cough, headache |
27. The main barrier that prevents the entry of micro-organisms into our body is: [5]
- |               |                |
|---------------|----------------|
| a) Monocytes  | b) Macrophages |
| c) Antibodies | d) Skin        |
28. Which variety of wheat is used as a donor for high protein? [5]
- |            |             |
|------------|-------------|
| a) IR-8    | b) Atlas 66 |
| c) Himgiri | d) Sonalika |
29. Which of the following is the consequence of plant disease [5]
- i. Reduced yield.
  - ii. Lower quality of produce
  - iii. the increased cost of production
  - iv. Poisonous produce
  - v. Variation in the genome.
- |                          |                           |
|--------------------------|---------------------------|
| a) Only iii, iv and v    | b) Only i, ii, iii and iv |
| c) Only i, iii, iv and v | d) Only ii, iii, iv and v |
30. Protoplast is: [5]
- |                                     |                                |
|-------------------------------------|--------------------------------|
| a) a plant cell without a cell wall | b) an animal cell              |
| c) a plant cell                     | d) another name for protoplasm |
31. Which of the following organisms not fix atmospheric nitrogen? [5]
- |                 |             |
|-----------------|-------------|
| a) Oscillatoria | b) Nostoc   |
| c) Spirogyra    | d) Anabaena |



c) Intron splicing

d) RNAi

39. Select the statement which explains best parasitism. [5]

a) One organism is benefited.

b) One organism is benefited, other is affected

c) Both the organisms are benefited

d) One organism is benefited, other is not affected

40. Important attributes belonging to a population but not to an individual are: [5]

i. Birth rate and death rate

ii. Male and female

iii. Birth and death

iv. Sex-ratio

Select the correct option from the given options:

a) (ii) only

b) (i) only

c) (i) and (iv)

d) (ii) and (iii)

41. Phytophagous insects will be categorized as [5]

a) Parasites

b) Competitors

c) Vectors

d) Predators

42. Approximately how much of the solar energy that falls on the leaves of a plant is converted to chemical energy by photosynthesis? [5]

a) 1-5%

b) Less than 1%

c) 30%

d) 50%

43. The ecological niche of an organism will represent the following except: [5]

a) its functional role in the ecological system.

b) range of conditions that it can tolerate.

c) resources it cannot utilize.

d) its specialization.

44. In a pond ecosystem, the food chain starts with: [5]

a) Phytoplanktons

b) Small insects

c) Small fishes

d) Zooplanktons

45. The multipurpose protected area which is meant for preserving genetic diversity in the representative ecosystem is called \_\_\_\_\_. [5]

a) National parks                                      b) Protected areas

c) Biosphere reserves                                d) Sanctuaries

46. The extinction of passenger pigeon was due to: [5]

a) Bird flu virus infection                          b) Non-availability of the food

c) Increased number of predatory birds        d) Over exploitation by humans

47. Nowadays, the greatest cause for extinction or biodiversity loss is: [5]

a) habitat alteration                                  b) climate change

c) invasive or alien species                         d) overharvesting

48. The expanded form of DDT is: [5]

a) Dichloro diethyl trichloroethane            b) Dichloro diphenyl trichloroethane

c) Dichloro dipyrydyl trichloroethane        d) Dichloro diphenyl tetrachloroacetate

49. Which one of the following diseases is not caused due to contamination of water? [5]

a) Cholera    b) Typhoid

c) Hepatitis-B    d) Jaundice

50. Green house gases are: [5]

a) transparent to both solar radiations and longwave radiations from the earth.

b) transparent to emissions from the earth for passage into outer space.

c) absorbers of solar radiation for warming the atmosphere or earth.

d) absorbers of long-wave radiations from earth.



# Solutions

1.  
**(b) Oestrus cycle**  
**Explanation:** Sexual reproduction in mammals involves cyclic changes during which ovum is released. In primitive animals, it is called the oestrus cycle and in primates including human beings, it is called the menstrual cycle.
2.  
**(c) Faster mode of reproduction**  
**Explanation:** Sexual reproduction is a comparatively slower mode of reproduction than asexual reproduction. The formation of gametes, their fusion, and embryo formation takes a longer duration.
3. **(a) Juvenile phase**  
**Explanation:** Higher organism shows the well-marked change in the structure of the body during different phases of life span. After growth and maturity (juvenile phase) reproductive phase started for the continuation of species.
4.  
**(c) Sepals**  
**Explanation:** The outermost whorl of the flower is a green leafy structure, called sepals. Sepals protect the flower in the buds stage. It is generally attached to the thalamus of the flower.
5.  
**(c) ii and iv**  
**Explanation:** Gynoecium is the technical name for carpel and calyx is the technical name for the sepals.
6.  
**(b) Bat**  
**Explanation:** Bat is nocturnal mammals that also transfer pollen grain from anther to the stigma of another flower. Bat transfer pollen grain over a very long distance in comparison to other animals.
7.  
**(b) Alternation of generation**  
**Explanation:** Alternation of generation is the cyclic change in organisms involving haploid and diploid stages. Meiotic division results in the haploid stage and the fusion of haploid gametes results in the diploid stage.
8.  
**(d) Release testosterone hormone**  
**Explanation:** The placenta is a tubular structure through which the foetus and uterus of the mother are connected. It helps in the transport of nutrition, respiratory gases, and releases HCG hormones. Testosterone is a male hormone and is not produced or released in females.
9.  
**(b) Oxytocin**

**Explanation:** Lactiferous glands present inside the mammary gland start producing milk due to the release of hormone oxytocin from pituitary glands.

10. **(a)** Chorionic villi

**Explanation:** After implantation of blastocysts, finger-like projections appear on the trophoblast called chorionic villi which are surrounded by the uterine tissue and maternal blood.

11. **(a)** Progesterone

**Explanation:** Progesterone is called pregnancy hormone because it helps in maintaining pregnancy.

12. **(a)** Parthenogenesis

**Explanation: Parthenogenesis** is a type of asexual reproduction in which the offspring develops from unfertilized eggs.

13.

**(d)** Femidom

**Explanation:** Femidom is a female condom introduced by Hindustan latex and the female health company of England in India. It is quite effective and prevents unwanted pregnancy along with the sexually transmitted disease.

14.

**(b)** Heteromorphic

**Explanation:** Sex chromosomes of human beings are heteromorphic as they are of different sizes. The X chromosome is smaller than the Y chromosome in size.

15.

**(c)** Co-dominance

**Explanation:** Co-dominance is the condition when both the alleles are dominant and express their effect even in the presence of one another.

16.

**(d)** Klinefelter's syndrome - 44 autosomes +XXY

**Explanation:** Klinefelter's syndrome is due to the presence of 44 autosomes +XXY sex chromosomes. Color blindness is an X-linked recessive trait, Erythroblastosis foetal is due to O-negative blood group and down's syndrome is due to an additional copy of chromosome number 21.

17. **(a)** Aneuploidy

**Explanation:** Failure of segregation of chromatids during cell division cycle results in the gain or loss of a chromosome(s), called aneuploidy.

18.

**(c)** make every individual unique in phenotypic appearance.

**Explanation:** Genome variations are differences in the sequence of DNA from one person to the next.

In human's 99.9% of the base sequences of DNA are same and are referred to as **Bulk genomic DNA**.

The difference lies in the remaining 0.1%. It is these differences which make every individual unique in their phenotypic appearance. This DNA has small stretches of **repetitive sequences**. They are referred as Repetitive DNA.

19.  
**(b) Switching ON and OFF of the operon**  
**Explanation:** In lac operon, lactose is the substrate for enzyme beta-galactocidase and it regulates switching ON and OFF of the operon. Hence, lactose is called the inducer.
20. **(a) Elongation**  
**Explanation:** RNA polymerase catalyzes the polymerization (elongation) of the RNA molecules.
21.  
**(d) Is the random change in gene frequency**  
**Explanation:** Genetic drift is a mechanism of evolution in which allele frequencies of a population change randomly over generations due to chance (sampling error). Genetic drift occurs in all populations of non-infinite size, but its effects are strongest in small populations.
22. **(a) Madan dyes his hair blue**  
**Explanation:** Environmental variation is the change in traits due to environmental factors like temperature, humidity, soil water precipitation, etc. Dying hair colour blue or any other colour is an environmental variation.
23. **(a) life can arise from non-living things only.**  
**Explanation:** For a long time, it was also believed that life came out of decaying and rotting matter (non-living) like straw, mud, etc. This was the theory of spontaneous generation.
24. **(a) Serum globulins**  
**Explanation:** One group of gamma globulins is the immunoglobulins, which are also known as antibodies. The serum globulin electrophoresis test measures the levels of proteins called globulins in the fluid part of a blood sample. This fluid is called serum.
25.  
**(c) Salmonella typhi**  
**Explanation:** Typhoid fever in a human being is caused by Salmonella typhi. The pathogen enters the small intestine through food and contaminated water and migrates to other organs through blood.
26.  
**(d) Difficulty in respiration, fever, chills, cough, headache**  
**Explanation:** The symptoms of pneumonia include fever, chills, cough, and headache. In severe cases, the lips and fingernails may turn gray to bluish in colour. The alveoli get filled with fluid leading to severe problems in respiration.
27.  
**(d) Skin**  
**Explanation:** Skin
28.  
**(b) Atlas 66**  
**Explanation:** Plant hybridization is also done to increase in nutritive value of crop plants. Wheat variety Atlas 66 has a high protein value that is used as a donor for high protein variety.

29.

**(b)** Only i, ii, iii and iv

**Explanation:** The consequences of plant disease are reduced yield, lower quality of produce, increased cost of production, and sometimes poisonous produce. It does not produce variation in the genome.

30. **(a)** a plant cell without a cell wall

**Explanation:** Any type of cell having only plasma membrane as its outer covering is known as protoplast.

31.

**(c)** Spirogyra

**Explanation:** Spirogyra is a filamentous alga. This alga does not fix atmospheric nitrogen. Anabaena, Nostoc, and Oscillatoria can heterocyst that can fix atmospheric nitrogen.

32. **(a)** Methanogens

**Explanation:** The bacteria which grow anaerobically on cellulose material and produce a large amount of methane along with CO<sub>2</sub> and H<sub>2</sub> are collectively called Methanogens. These are autotrophic archebacteria that use anaerobic respiration for ATP synthesis.

33.

**(d)** Antibiotic

**Explanation:** Fleming, Chain, and Florey were awarded the Nobel Prize in 1945 for the discovery of antibiotics. Antibiotics prevent the growth of bacteria and fungi.

34.

**(b)** The restriction sites of their genetic material are methylated.

**Explanation:** The protection is offered by the action of the methylase. The methylase recognizes the same target site as the restriction enzyme and adds a methyl group to a specific nucleotide in the restriction site. Methylated sites are not substrates for the restriction enzyme.

The bacterial DNA is methylated immediately the following replication so it will not be a suitable substrate for restriction endonuclease cleavage.

Thus, the viral DNA is restricted in the bacterial cell by the restriction enzyme, and the bacterial DNA is modified by the methylase and is provided protection.

35.

**(b)** comparing the size of the DNA fragment.

**Explanation:** A molecular-weight size marker also referred to as a protein ladder, DNA ladder, or RNA ladder is a set of standards that are used to identify the approximate size of a molecule run on a gel during electrophoresis, using the principle that molecular weight is inversely proportional to migration rate through a gel matrix. Therefore, when used in gel electrophoresis, markers effectively provide a logarithmic scale by which to estimate the size of the other fragments (providing the fragment sizes of the marker are known).

36.

**(b)** Nucleases

**Explanation:** A restriction enzyme (or restriction endonucleases) recognizes a specific base pair sequence in DNA called a restriction site and cleaves the DNA (hydrolyses the phosphodiester backbones) within the sequence. Restriction enzymes are widely found in prokaryotes and provide protection to the host cell by destroying foreign DNA that makes

entry to it. It acts as a part of the defense mechanism.

Restriction enzymes belong to a larger class of enzymes called nucleases. They are of two types: endonucleases and exonucleases.

37.

**(b) Pseudomonas**

**Explanation:** Pseudomonas has shown a robust response to oil contamination both in vitro and in situ. A study found that Pseudomonas was able to respond to new oil contamination by increasing its abundance and changing its community structure. Microbial community differentiation was observed in the Pseudomonas genus in response to oil contamination.

38.

**(d) RNAi**

**Explanation:** FlavrSavr tomato is produced to increase its durability. For the production of this tomato by genetic engineering the sense and antisense RNA hybridize. This technique is called RNA interference that inhibits gene expression.

39.

**(b) One organism is benefited, other is affected**

**Explanation:** Parasitism is a non-mutual relationship between species, where one species, the parasite, benefits at the expense of the other, the host. Traditionally parasite (in biological usage) referred primarily to organisms visible to the naked eye, or macroparasites.

40.

**(c) (i) and (iv)**

**Explanation:** (i) and (iv)

41.

**(d) Predators**

**Explanation:** The insect that feeds on plant sap and other parts of plants are called phytophagous. Phytophagous insects will be similar to predators and plants acts like prey.

42. **(a) 1-5%**

**Explanation:** Plants capture only 2-10 percent of the photosynthetically active radiation (PAR). Hence, 1-5% of the solar energy that falls on the leaves of a plant is converted to chemical energy by photosynthesis.

43.

**(c) resources it cannot utilize.**

**Explanation:** The ecological niche is the area surrounding organisms that help them survive, grow, and reproduce.

The ecological niche of an organism represents the position and the role played by the organism in the ecosystem in which it lives.

The ecological niche of an organism will not represent resources it cannot utilize.

44. **(a) Phytoplanktons**

**Explanation:** In a pond ecosystem, the food chain starts with Phytoplanktons.

45.

**(c) Biosphere reserves**

**Explanation:** The multipurpose protected area which is meant for preserving genetic diversity in a representative ecosystem of various natural biomes and unique biological

communities is called biosphere reserves.

The total number of Biosphere reserves in India is 18.

46.

**(d)** Over exploitation by humans

**Explanation:** Many species extinctions in the last 500 years (Steller's sea cow, passenger pigeon) were due to overexploitation by humans.

47. **(a)** habitat alteration

**Explanation:** The greatest cause for extinction or biodiversity loss is the habit alteration. Deforestation causes the loss of habits of a number of wild animals. Pollution of water also alters the habitat of aquatic organisms.

48.

**(b)** Dichloro diphenyl trichloroethane

**Explanation:** DDT stands for Dichloro diphenyl trichloroethane.

49.

**(c)** Hepatitis-B

**Explanation:** Hepatitis-B is a sexually transmitted disease caused by a virus. Sewage from our homes as well as from hospitals are likely to contain many undesirable pathogenic microorganisms, and its disposal into the water without proper treatment may cause an outbreak of serious diseases, such as dysentery, typhoid, jaundice, cholera, etc.

50.

**(d)** absorbers of long-wave radiations from earth.

**Explanation:** Greenhouse gases in the atmosphere (such as water vapor and carbon dioxide) absorb most of the Earth's emitted longwave infrared radiation, which heats the lower atmosphere. In turn, the warmed atmosphere emits longwave radiation, some of which radiates toward the Earth's surface, keeping our planet warm and generally comfortable. Increasing concentrations of greenhouse gases such as carbon dioxide and methane increase the temperature of the lower atmosphere by restricting the outward passage of emitted radiation, resulting in "global warming," or, more broadly, global climate change.