

- (6) Which of the following hormone levels will cause release of ovum (ovulation) from the graafian follicle?
- (A) High concentration of Progesterone (B) Low concentration of LH
(C) Low concentration of FSH (D) High concentration of Estrogen
- (7) The first movements of the foetus and appearance of the hair on the head are usually observed in
- (A) Third month (B) Fourth month (C) Fifth month (D) Sixth month
- (8) **Statement A:** As long as the mother breast feeds the child fully, chances of conception are almost nil.
- Reason R:** During the period of intense lactation, amenorrhea does not occur.
- (A) Both Statement A and Reason R are true and Reason R is the correct explanation of Statement A.
(B) Both Statement A and Reason R are true, but Reason R is not the explanation of Statement A.
(C) Statement A is true, Reason R is false.
(D) Statement A is false, Reason R is true.
- (9) Select the hormone-releasing Intra-Uterine Devices ?
- (A) Vaults, LNG-20 (B) Multiload 375, Progestasert
(C) Progestasert, LNG-20 (D) Lippes loop, Multiload 375
- (10) "Saheli", an oral contraceptive for females, was developed by
- (A) AIIMS, Lucknow (B) AIIMS, New Delhi (C) CDRI, Lucknow (D) IICB, Kolkata
- (11) Which of the following is false regarding male sterilization ?
- (A) The vas deferens is cut and ligated (B) Sperm is secreted without spermatocytes
(C) Spermatogenesis is inhibited (D) Testes do not contain spermatozoa
- (12) Which method of IVF embryo up to 8 blastomeres are transferred into female ?
- (A) IUT (B) ZIFT (C) GIFT (D) A & B both
- (13) If a genetic disease is transferred from a phenotypically normal but carrier female to only some of the male progeny, the disease is
- (A) Autosomal dominant (B) Autosomal recessive
(C) Sex-linked dominant (D) Sex-linked recessive
- (14) If the father is giving I^B allele and mother is giving I^A allele, state the genotype & blood group of offsprings respectively.
- (A) $I^A I^B$ - B (B) $I^A I^B$ - A (C) $I^A I^B$ - AB (D) $I^A I^A$ - AB
- (15) Which of the following statements are correct about Klinefelter's Syndrome ?
- A. This disorder was first described by Langdon Down (1866).
B. Such an individual has overall masculine development. However, the feminine development is also expressed.
C. The affected individual is short statured.
D. Physical, psychomotor and mental development is retarded.
E. Such individuals are sterile.

Choose the correct answer from the options given below :

(A) A and E only (B) A and B only (C) C and D only (D) B and E only

(16) **A:** The DNA fingerprint is the same for every cell, tissue and organ of a person.

R: DNA fingerprint is used for treatment of inherited disorders like Huntigton's disease, Alzheimer's and Sickle cell anemia.

(A) A and R both are correct. R is explanation of A.

(B) A and R both are correct but R is not explanation of A.

(C) A is correct and R is wrong.

(D) A is wrong and R is correct.

(17) Match the following genes of the Lac operon with their respective products.

a. i gene i. b-galactosidase

b. z gene ii. Permease

c. a gene iii. Repressor

d. y gene iv. Transacetylase

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

(18) 5-Methyl uracil is

(A) Cytosine

(B) Uracil

(C) Adenine

(D) Thymine

(19) In Meselson and Stahl's experiment if E.coli was allowed to grow for 80 minutes then what would be the proportions of light and intermediate density of DNA molecule respectively ?

(If E.coli divides in every 20 minutes)

(A) 2:2

(B) 6:2

(C) 12:2

(D) 14:2

(20) Industrial melanism is an example of

(A) defensive adaptation of skin against ultraviolet radiations

(B) drug resistance

(C) darkening of skin due to smoke from industries

(D) protective resemblance with the surroundings

(21) De-Vries gave his mutation theory on organic evolution while working on

(A) pisum sativum

(B) drosophila melanogaster

(C) Oenothera lamarckiana

(D) althea rosea

(22) Genetic drift operates in

(A) small isolated population

(B) large isolated population

(C) non-reproductive population

(D) slow reproductive population

(23) In Gir forest out of 100 individuals 40 individuals are recessive. Calculate the percentage of heterozygous progeny by Hardy - Weinberg principle.

(A) 36%

(B) 16%

(C) 48%

(D) 24%

(24) Match the following:

Column - I

(1) Adaptive radiation

(2) Convergent development

Column - II

(p) Uncontrolled use of herbicides selection of resistance varieties

(q) Forelimb bones of humans and whales

(3) Divergent development (r) Butterfly and bird wings

(4) Anthropogenic evolution (s) Darwin Finch

(A) 1-q, 2-p, 3-s, 4-r (B) 1-r, 2-q, 3-p, 4-s (C) 1-s, 2-r, 3-q, 4-p (D) 1-p, 2-s, 3-r, 4-q

(25) Select the incorrect statement with respect to acquired immunity.

(A) Anamnestic response is due to memory of first encounter.

(B) Acquired immunity is non-specific type of defense present at the time of birth.

(C) Primary response is produced when our body encounters a pathogen for the first time.

(D) Anamnestic response is elicited on subsequent encounters with the same pathogen.

(26) Match List I with List II.

List I

List II

(a) Heroin

(i) Effect on cardiovascular system

(b) Marijuana

(ii) Slow down body function

(c) Cocaine

(iii) Painkiller

(d) Morphine

(iv) Interfere with transport of dopamine

Choose the correct answer from the options given below:

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

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

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

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

(27) **Statement 'A':** Sewage water contains large amount of organic matter and microbes.

Statement 'B': Sewage water is treated through heterotrophic bacteria and the effluents is related to rivers.

(A) Statement A and statement B are true and statement B is the correct explanation of A.

(B) Statement A is false and B is true.

(C) Statement A is true and B is false.

(D) Both statement A and B are false.

(28) Match the following and choose the correct option.

Column - A

Column - B

(i) Citric acid

(P) Acetobacter aceti

(ii) Acetic acid

(Q) Clostridium butylicum

(iii) Butyric acid

(R) Lactobacillus

(iv) Lactic acid

(S) Aspergillus niger

(A) (i-R), (ii-Q), (iii-P), (iv-S)

(B) (i-S), (ii-P), (iii-Q), (iv-R)

(C) (i-Q), (ii-R), (iii-S), (iv-P)

(D) (i-P), (ii-Q), (iii-S), (iv-R)

(29) The enzyme used to remove 'clot buster' from blood vessels of patients is produced by bacterium.

(A) Lactobacillus (B) Clostridium butylicum (C) Acetobacter acetic (D) Streptococcus

(30) Which scientists established penicillin as an antibiotic with strong potency ?

(A) Ernest Chain and Howard Florey

(B) Alexander Fleming

(C) Alfred Hershey and Martha Chase

(D) Both A & B

(31) What is true about Bt toxin ?

(A) The concerned Bacillus has antitoxins.

- (B) The inactive protoxin gets converted into active form in the insect gut
- (C) Bt protein exists as active toxin in the Bacillus
- (D) The activated toxin enters the ovaries of the pest to sterilise it and thus prevent its multiplication
- (32) Which statements are true out of the following?
- (P) Endonuclease make cuts at specific positions within the DNA.
- (Q) A stirred - tank reactor is usually square in shape.
- (R) Bacterial cells must be first be made competent to take up DNA. This is done by treating them with divalent cating Mg^{++} .
- (A) Statements P, Q are true (B) Statements Q, R are true
- (C) Statements P is true (D) Statements P, Q and R are true
- (33) Which of the following facility is not present in bioreactors ?
- (A) Foam control system (B) Preservatives
- (C) Temperature control system (D) Sampling ports
- (34) **Statement A:** General E.coli do not inhibit antibiotics.
Statement R: Tetracycline E. coli is not a selective marker.
- (A) Both A and R are true and R is the explanation of A.
- (B) Both A and R are true, but R is not an explanation of A.
- (C) A is true and R is false.
- (D) A is false and R is true.
- (35) Which one of the following is method of gene silencing ?
- (A) tRNA (B) rRNA (C) RNAi (D) mRNA
- (36) What is the permanent cure of adenosine deaminase (ADA) deficiency ?
- (A) Bone marrow transplantation
- (B) Enzyme replacement therapy in which functional ADA is given to patient by injection
- (C) Infusion of genetically engineered lymphocytes (in which functional ADA-cDNA is introduced) into the patient's blood
- (D) Introduction of gene isolated from the marrow cells which produce ADA, into the cells of the patient at early embryonic stages
- (37) **Statement-I :** ELISA is based on the principle of antigen antibody interaction.
Statement-II: Infection by pathogen can be detected by the presence of antigens or by detecting the antibodies synthesised against the pathogens.
- (A) Statement I is incorrect, but statement II is correct
- (B) Statement I is correct, but statement II is incorrect
- (C) Statement I and II both are correct
- (D) Statement I and II both are incorrect
- (38) In Rosie cow, which is nutritionally more balanced product for babies ?
- (A) Albumin (B) Alpha-lactalbumin (C) Beta-lactalbumin (D) Immunoglobulin
- (39) Biogas technology has been developed through the efforts of which organizations in India ?
- (A) IACI and KVIC (B) IARI and KVIC (C) IACI and KVCI (D) IARI and KVRI

- (40) Choose the correct option showing population interactions
 (A) Egret and grazing cattle → Competition (B) Sea-anemone and clown fish → Predation
 (C) Monarch butterfly and bird → Competition (D) Fig and wasp → Mutualism
- (41) A pond had 20 lotus plants in the previous year and 8 new plants by reproduction. If added, the birth rate of the population.
 (A) 0.4 (B) 0.1 (C) 2.5 (D) 1
- (42) What type of growth pattern should a pyramid-chart for a given human population reflect ?



- (A) A-expanded, B-stable, C-decreasing (B) A-expanded, B-decreasing, C-stable
 (C) A-stable, B-decreasing, C-expanded (D) A-decreasing B-expanded, C-stable
- (43) Which of the following ecological pyramids is generally inverted ?
 (A) Pyramid of numbers in grassland (B) Pyramid of energy
 (C) Pyramid of biomass in a forest (D) Pyramid of biomass in a sea
- (44) Correct the order of the decomposition events.
 (P) Accumulation of dark colored amorphous substance.
 (Q) Water soluble inorganic nutrients enter in the soil layer.
 (R) Breakdown of detritus into small particles.
 (S) Inorganic nutrient release.
 (A) R - P - S - Q (B) P - R - S - Q (C) R - Q - P - S (D) R - P - Q - S
- (45) For whom dead biomass acts as a source of energy ?
 (A) Producers (B) Decomposer (C) consumer (D) All of the given
- (46) What kind of environment is favorable for decomposition ?
 (A) warm-moist (B) warm-moisture free (C) dry-moist (D) none
- (47) Sacred groves are present in :
 (A) Khasi and Jaintia hills in Meghalaya (B) Aravalli hills of Rajasthan
 (C) Western Ghat Region of Karnataka and Maharashtra (D) All of above
- (48) Which one of the following areas in India is a hotspot of biodiversity ?
 (A) Eastern Ghats (B) Gangetic plain (C) Sunderbans (D) Western Ghats
- (49) For the cause of extinction or to be at verge of extinction of species, which option show correctly matched pairs ?
 (i) Over exploitation → passenger pigeon of North America
 (ii) Alien species invasion → Indigenous cat-fish
 (iii) Alien species invasion → Lion tailed macque
 (iv) Loss of Habitat - Bignonia
 (A) (i) and (iii) are correct (B) (ii), (iii) and (iv) are correct
 (C) (iii) and (iv) are correct (D) (i), (ii) and (iv) are correct

- (50) **Assertion - A** : Species diversity decreases as we move away from equator to the poles.
Reason - R : Amazonian rainforest in South America has least biodiversity on earth.
- (A) Assertion A is correct but R is incorrect
(B) A & R both are correct and R is correct explanation for A
(C) A & R both are correct but R is not correct explanation for
(D) Assertion A is incorrect but R is correct

PART :- B

[50]

SECTION :- A

[16]

◆ ○ **Answer the following questions [Any eight] : [2 marks each]**

- (1) Explain the structure of dicot embryo.
- (2) Difference : State four points of :- Biotic and abiotic pollination.
- (3) State an oral contraceptive method.
- (4) State the characteristics of an ideal contraceptive method.
- (5) Short note :- Pleiotropy.
- (6) State the main features of ds DNA structure.
- (7) Give a brief account of evolution of vertebrate.
- (8) Explain the narcotic substance obtained from the inflorescence of plant known as cannabis sativa.
- (9) Explain baculovirus as biocontrol.
- (10) Explain the factors affecting population growth.
- (11) Short note : - Pseudocopulation in orchid.
- (12) Describe the pyramid of number in ecosystem.

SECTION :- B

◆ **Answer the following questions [Any six] : [3 marks each] [18]**

- (13) Explain menstrual cycle up to ovulatory phase.
- (14) Explain the salient feature of genetic code.
- (15) Explain the experiment on origin of life with diagram supporting chemical evolution.
- (16) Explain the fungal disease in human.
- (17) Explain antibiotics.
- (18) Explain : Molecular diagnosis.
- (19) Short note : Biopiracy
- (20) Explain the steps in the process of decomposition.
- (21) Write short note : Sacred grooves.

SECTION :- C

◆ **Answer the following questions [Any four] : [4 marks each] [16]**

- (22) Explain the structure of pollen grain.
- (23) Explain the process of spermatogenesis (chart is required)
- (24) Explain the inheritance of two genes.
- (25) Describe an experiment that demonstrate that DNA is the genetic material.
- (26) Explain innate immunity
- (27) Explain isolation of genetic material.

*** Best of Luck ***

12 TH BIOLOGY ANSWER KEY 18-2-25

1	2	3	4	5	6	7	8	9	10
A	A	A	D	D	D	C	A	C	C
11	12	13	14	15	16	17	18	19	20
C	A	D	C	D	C	C	D	D	D
21	22	23	24	25	26	27	28	29	30
C	A	C	C	B	B	A	B	D	A
31	32	33	34	35	36	37	38	39	40
B	C	B	C	C	D	C	B	B	D
41	42	43	44	45	46	47	48	49	50
A	A	D	C	B	A	D	D	D	A