

Biology Sample Paper

Section-1

Q 1. Cell Division is synonymous with reproduction in

- a) Plants and Fungus b) Animal & Plant c) Protista and Monera d) Monera and Algae

Q 2. Which among the following is a bacterial STD?

- a) AIDS b) Genital Herpes c) Gonorrhea d) Genital Warts

Q 3. Correct representation of central dogma is as follows

- a) DNA $\xrightarrow{\text{Transcription}}$ mRNA $\xrightarrow{\text{Translation}}$ Proteins
- b) DNA $\xrightarrow{\text{Transcription}}$ mRNA $\xrightarrow{\text{Transformation}}$ Proteins
- c) Replication $\rightarrow$ DNA $\xrightarrow{\text{Transcription}}$ mRNA $\xrightarrow{\text{Transformation}}$ Proteins
- d) Replication $\rightarrow$ DNA $\xrightarrow{\text{Transcription}}$ mRNA $\xrightarrow{\text{Translation}}$ Proteins

Q 4.

Match the following

Column I	Column II
(A) Haemophilia	I. Broad palm with palm crease
(B) Down's syndrome	II. Delayed clotting of blood
(C) Klinefelter's syndrome	III. Feminine development
(D) Turner's syndrome	IV. Rudimentary ovaries

- a) A B C D
I III II IV
- b) A B C D
II I III IV
- c) A B C D
IV II I III
- d) A B C D
I II III IV

Q 5. Statement I: In birds, the chromosome composition of the sperm determines the sex.

Statement II : Male birds are heterogametic.

In the light of above statements, choose the most appropriate answer from the options given below-

- a) Both statement I and II are correct. b) Both statement I and II are incorrect.
- c) Statement I is correct but statement II is incorrect. d) Statement I is incorrect but statement II is correct.

Q 6. Genotype of Blood group 'A' will be

- a) Methionine, Arginine b) Lysine, Arginine c) Lysine, Proline d) Methionine, Lysine

Q 19. 'Swiss cheese' bears large holes due to the production of CO₂ by which microbe ?

- a) Lactobacillus b) Saccharomyces cerevisiae c) Propionibacterium shermanii d) Aspergillus niger

Q 20. Statement I - Crack is potent stimulant on CNS, producing sense of euphoria and increased energy.

Statement II - It interfere with the transport of neurotransmitter dopamine.

In the light of the above statement, choose the most appropriate answer from the options give below

- a) Both statement I and II are correct b) Both statement I and II are incorrect
c) Statement I is correct but II is incorrect d) Statement I is incorrect but II is correct

Q 21. Interspecific hybridization means

- a) Mating of animals within the same breed.
b) Superior male of one breed mated with superior female of another breed.
c) Male and female animals of two different related species are mated.
d) All of the above.

Q 22. The amount of biomass or organic matter produced per unit area over a period of time by plants during photosynthesis is known as

- a) Primary production b) Secondary production c) Net primary production d) Net secondary production

Q 23. Sequential steps for breeding are

I. Screening germplasm for resistance sources

II. Selection and evaluation of hybrids

III. Hybridization of selected parents

IV. Testing and release of new varieties

- a) IV, III, II, I b) I, II, III, IV c) I, III, II, IV d) I, III, IV, II

Q 24. The graffian follicle release

- a) Secondary oocyte b) Primary oocyte c) Ovum d) Both (a) and (b)

Q 25. Statement I - Haploid- diploid type of sex determination is seen in honeybees.

Statement II- XX/XO type sex determination is seen in birds.

In the light of above statement, choose the most appropriate answer from the options given below.

- a) Both statement I and II are correct. b) Both statement I and II are incorrect.
c) Statement I is correct but II is incorrect. d) Statement I is incorrect but II is correct.

Q 26.

Match each disease with its correct type of vaccine

- | | |
|--------------------|------------------------|
| (A) Tuberculosis | (I) Harmless virus |
| (B) Whooping cough | (II) Inactivated toxin |
| (C) Diphtheria | (III) Killed bacteria |
| (D) Polio | (IV) Harmless bacteria |

- a) A B C D
II I III IV

- b) A B C D
III II IV I

- c)

A	B	C	D
IV	III	II	I
- d)

A	B	C	D
I	II	IV	III

Q 27. Loss of biodiversity in a region leads to increase in variability in certain ecosystem processes like

- a) Plant productivity b) Water use c) Pest & disease cycle d) All of these

Q 28. The immunity conferred by T-lymphocytes is known as

- a) Humoral mediated b) Tissue mediated c) Cell mediated d) Neural mediated

Q 29. Which of these is the largest chromosome ?

- a) 1st b) X c) Y d) 3rd

Q 30. Statement I -Sexual reproduction is simple and fast process.

Statement II - A sexual reproduction is complex and slow process.

In the light of above statements, choose the most appropriate answer from the options given below

- a) Statement I and II are correct b) Statement I and II are incorrect
c) Statement I is correct II is incorrect d) Statement I is incorrect II is correct

Q 31. What is BOD ?

- a) Bacterial oxygen demand b) Biological organic debris c) d)
Biochemical organic demand Biochemical oxygen demand.

Q 32. Correct order is

- a) Palaeozoic → Mesozoic → Cenozoic
b) Mesozoic → Archaeozoic → Proterozoic
c) Palaeozoic → Archaeozoic → Cenozoic
d) Archaeozoic → Palaeozoic → Proterozoic

Q 33. Select incorrect matching

- a) Thorn - citrus - bougainvillea
b) Flattened stem - opuntia
c) Underground stem - turmeric
d) Stem tendrils - colocasia

Q 34. pBR 322 is most extensively studied

- a) Plasmid DNA of E. coli b) Foreign gene
c) r-DNA d) Clone

Q 35. The technique of _____ was discovered by Alec Jeffrey's.

- a) DNA culture b) DNA modification c) DNA mutation d) DNA finger printing

Q 36. Restriction enzymes breaks

- a) Glycosidic linkage b) H-bond c) Sugar-phosphate linkage d) All of these

Q 37. Typhoid could be confirmed using

a) PCR

b) Electrophoresis

c) ELISA

d) Widal test

Q 38. Pollen grains are shed in 2-celled stage in

a) > 90% angiosperms

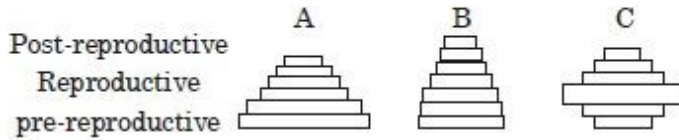
b) < 50% angiosperms

c) > 60% angiosperms

d) < 40% angiosperms

Q 39.

Identify A, B and C in below figure of age pyramid for human population ?



- a) A Declining B Stable C Expanding
- b) A Stable B Expanding C Declining
- c) A Expanding B Stable C Declining
- d) A Stable B Declining C Expanding

Q 40.

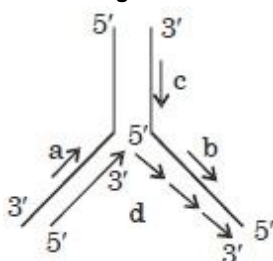
Fill in the blanks A,B,C and D

Species A	Species B	Name of interaction
+	+	Mutualism
-	-	A
+	-	B
+	-	Parasitism
+	0	C
-	0	D

(+) Beneficial (-) Detrimental (0) Neutral

- a) A Commensalism B Predation C Amensalism D Competition
- b) A Predation B Parasitism C Commensalism D Amensalism
- c) A Competition B Predation C Commensalism D Amensalism
- d) A Competition B Predation C Amensalism D Commensalism

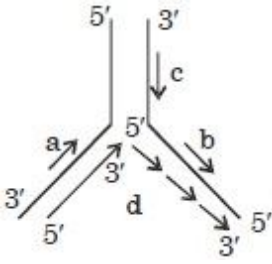
Based on given information / diagram, answer the questions (41 to 45)



Q 41. What is indicated by 'd' in figure

- a) Continuous synthesis b) Newly synthesized strands c) Template DNA d) Discontinuous synthesis

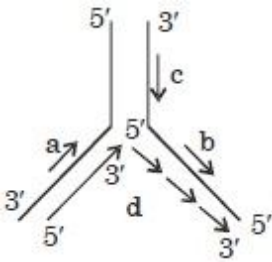
Based on given information / diagram, answer the questions (41 to 45)



Q 42. Synthesis of new strand of DNA takes place in which direction ?

- a) 3'-5' b) 5'-3' c) Both 5'-3' & 3'-5' d) None of these

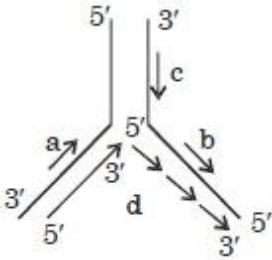
Based on given information / diagram, answer the questions (41 to 45)



Q 43. What is indicated by 'a' in the figure ?

- a) Newly synthesized strands b) Discontinuous synthesis c) Template DNA d) Continuous synthesis

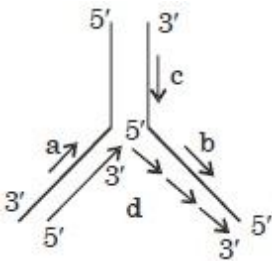
Based on given information / diagram, answer the questions (41 to 45)



Q 44. What is indicated as 'c' in the diagram ?

- a) Template DNA b) Continuous synthesis c) Discontinuous synthesis d) Newly synthesized

Based on given information / diagram, answer the questions (41 to 45)



Q 45. What does 'b' represent in figure ?

- a) Template DNA b) Continuous synthesis c) Discontinuous synthesis d) Newly synthesized strands

Read the given information and answer questions 46 to 50.

Comparative anatomy and morphology shows similarities and differences among organisms of today and those that existed years ago. Such similarities can be interpreted to understand whether common ancestors were shared or not. For example whales, bats, Cheetah and human (all mammals) share similarities in the pattern of bones of forelimbs. Though these forelimbs perform different

functions in these animals, they have similar anatomical structure - all of them have humerus, radius, ulna, carpals, metacarpals and phalanges in their fore limbs. Hence, in these animals, the same structure developed along different directions due to adaptations to different needs. This is **divergent evolution** and these structures are **homologous**. Homology indicates common ancestry. Other examples are vertebrate hearts or brains. In plants also, the thorn and tendrils of Bougainvillea and Cucurbita represent homology. Homology is based on divergent evolution whereas analogy refers to a situation exactly opposite. Wings of butterfly and of birds look alike. They are not anatomically similar structures though they perform similar functions. Hence, analogous structures are a result of **convergent evolution** - different structures evolving for the same function and hence having similarity. Other examples of analogy are the eye of the octopus and of mammals or the flippers of Penguins and Dolphins. One can say that it is the similar habitat that has resulted in selection of similar adaptive features in different groups of organisms but toward the same function: Sweet potato (root modification) and potato (stem modification) is another example for analogy.

Q 46. Organs which are structurally similar but functionally different are known as

- a) Vestigial organs b) Analogous organs c) Homologous organs d) None of these

Q 47. Which type of evolution is found in homologous organs ?

- a) Convergent evolution b) Multidirectional evolution c) Unidirectional evolution d) Divergent evolution

Read the given information and answer questions 47 to 50.

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Q 48. Convergent evolution is seen in

- a) Sweet potato and potato b) Eye of octopus & mammals
c) Both (a) and (b) d) Thorns & Tendrils of Bougainvillea and cucurbita.

Q 49. Flippers of Penguin and Dolphin could be considered as the examples for

- a) Analogous organs b) Divergent evolution c) Homologous organs d) Both (b) & (c).

Q 50. Potato stores food and shows vegetative propagation. It is a _____ modification.

- a) Root b) Stem c) Leaf d) Fruit

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