Solution

CET25B6 EVOLUTION

Class 12 - Biology

1.

(b) Pinna muscles
Explanation: Pinna muscles

2. **(a)** O_2
Explanation: O_2

3. **(a)** Speciation through reproductive isolation
Explanation: Speciation through reproductive isolation

4.

(d) Empedocles
Explanation: Empedocles

5.

(d) Darwin
Explanation: Darwin

6. **(a)** Free oxygen
Explanation: Free oxygen

7.

(b) Discontinuous variations
Explanation: Discontinuous variations

8.

(b) Protobionts having polysaccharides + proteins + water.
Explanation: Protobionts having polysaccharides + proteins + water.

9.

(c) Prof-Birbal Sahni
Explanation: Prof-Birbal Sahni

10.

(b) Greater variation in Asia than in Africa.
Explanation: Greater variation in Asia than in Africa.

11.

(d) Darwin
Explanation: Darwin

12.

(b) Lack of random mating
Explanation: The tendency of population to remain in genetic equilibrium may be disturbed by a lack of random mating due to ethics and geographical or other barriers.

13.

(d) Both Colloidal droplets and Contain nucleoproteins
Explanation: Both Colloidal droplets and Contain nucleoproteins

14.

(c) Variations
Explanation: Variations

15. **(a)** Homologous organs
Explanation: Homologous organs

16.

(d) Hutchinson

Explanation: Hutchinson

17.

(c) Ice age between 75000-10,000 years ago

Explanation: Homo sapiens arose in Africa and moved across continents and developed into distinct races. During ice age between 75,000-10,000 years ago, modern Homo sapiens arose. Pre-historic cave art developed about 18,000 years ago. Agriculture came around 10,000 years back and human settlements started.

18.

(c) Vegetative propagation

Explanation: Hardy-Weinberg equilibrium cannot be disturbed by vegetative propagation as the all-new offspring are a clone of each other having the same gene. Migration, genetic drift, mutation, and natural selection affect the equilibrium of alleles in a population.

19. **(a)** Survival of the fittest

Explanation: Survival of the fittest

20.

(b) Evolution

Explanation: Disturbance in genetic equilibrium in a population is due to evolution. Evolution occurs due to variation and natural selection. Variation is due to the change in alleles.

21.

(b) Inheritance of acquired characters

Explanation: Inheritance of acquired characters

22.

(b) CH_4, NH_3, H_2 and H_2O

Explanation: CH_4, NH_3, H_2 and H_2O

23.

(c) Pteranodon

Explanation: Pteranodon

24.

(d) 350

Explanation: 350

25.

(b) Mutation

Explanation: Mutation

26. **(a)** 800 - 1300 c.c.

Explanation: 800 - 1300 c.c.

27.

(b) Lamarck

Explanation: Lamarck

28.

(b) Nails

Explanation: Vestigial organs are those organs which were functional in our ancestor but become functionless in the present form of human beings.

Nail is not a vestigial organ of man as our fingernails are proportionately the same size as our wild counterparts, they are Not reduced structures. They still maintain their original function so they are Not atrophied or functionless.

29. **(a)** Annelida and Arthropoda

Explanation: Annelida and Arthropoda

30. **(a)** Homologous organs

Explanation: Homologous organs

31.

(c) Reptiles

Explanation: Reptiles

32.

(c) Swell Wright
Explanation: Swell Wright

33.

(c) Constant from generation to generation
Explanation: The Hardy–Weinberg principle, also known as the Hardy–Weinberg equilibrium, model, theorem, or law, states that allele and genotype frequencies in a population will remain constant from generation to generation in the absence of other evolutionary influences.

34.

(b) Natural selection
Explanation: Darwin published his intellectual bombshell, the "Origin of Species," later in 1859. He speculated that birds, resembling starlings, came to the Galapagos Islands by the wind. Evolution took over and different groups developed different diets. When he wrote, "an immigrant first settled on one of the islands, it would undoubtedly be exposed to different conditions in the different islands (where) it would have to compete with a different set of organisms. Then, natural selection would probably favor different varieties in different islands."

35.

(d) Embryological evidences
Explanation: Embryological evidences

36.

(d) 900 cc
Explanation: 900 cc

37.

(c) Fossils
Explanation: Fossils

38. **(a)** 1200-1600 cc^3
Explanation: 1200-1600 cc^3

39. **(a)** Chromosomes
Explanation: The common origin of man and chimpanzee is best shown by chromosomes. Both human beings and chimpanzee shows similar kinds of chromosome in terms of number and size.

40.

(b) Haeckel
Explanation: Haeckel

41.

(d) Environmental variations
Explanation: Environmental variations

42.

(c) 900 c.c.
Explanation: 900 c.c.

43. **(a)** Neanderthal human
Explanation: Neanderthals are recognizably human but have distinctive facial features and a stocky build that were evolutionary adaptations to cold, dry environments.
This species lived between 28,000 and 300,000 years ago.
Key physical features :

i. **Body size and shape:** Neanderthals were generally shorter and had more robust skeletons and muscular bodies than modern humans.
ii. **Brain size** was larger than the average modern human brain and averaged 1500 cubic centimetres.
iii. **Skull:** Distinctive skull shape that was long and low, with a rounded braincase. The mid-face region showed a characteristic forward projection (this resulted in a face that looked like it had been 'pulled' forward by the nose). Orbits (eye sockets) were large and rounded. The nose was broad and very large

iv. **Jaws and teeth**: jaws were larger and more robust than those of modern humans and had a gap called the retromolar space, behind the third molars (wisdom teeth) at the back of the jaw. Jaw lacked the projecting bony chin that is found in Homo sapiens. Teeth were larger than those of modern humans.

44. **(a)** Homologous organs
Explanation: Homologous organs

45. **(a)** Neanderthal man
Explanation: Neanderthal man uses hides to protect their bodies and buried their dead.

46. **(d)** H_2, NH_3, CH_4 and water vapours
Explanation: H_2, NH_3, CH_4 and water vapours

47. **(d)** water to land
Explanation: We are told that the first organisms that invaded land were plants. They were widespread on land when animals invaded land. Fish with stout and strong fins could move on land and go back to water. This was about 350 mya. Thus we can say that life forms had a trend of moving from water to land.

48. **(c)** Biogenesis theory
Explanation: Biogenesis theory

49. **(b)** Life comes only from pre-existing life
Explanation: Life comes only from pre-existing life

50. **(c)** Amino acids
Explanation: Amino acids

51. **(b)** Weak muscles in son of a wrestler.
Explanation: Weak muscles in son of a wrestler.

52. **(c)** All of these
Explanation: All of these

53. **(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.

54. **(b)** Artificial selection
Explanation: Animal husbandry and plant breeding programmes are examples of artificial selection. The artificial selection is the modification of species by selective breeding. Animals or plants with desirable characteristics are interbred with the aim of altering the genotype and producing a new strain of the organism for a specific purpose.

55. **(c)** Cretaceous
Explanation: Cretaceous

56. **(d)** Natural selection
Explanation: The organism surviving in the industrial areas having polluted soil, air and water undergo changes in skin colour and other traits to adjust in given surroundings. This is a type of natural selection.

57. **(a)** 4.5 bya
Explanation: 4.5 bya

58. **(c)** Primata

Explanation: Primata

59. **(a)** Reptiles
Explanation: Reptiles

60. **(c)** Homo sapiens
Explanation: Human belongs to a species of Homo sapiens, where Homo represents genus and sapiens represent specific epithet under the class Mammalia.

61. **(b)** random and directionless
Explanation: Hugo de Vries (1901) put forward a theory of evolution, called mutation theory. The theory states that evolution is a jerky process where new varieties and species are formed by mutations (discontinuous variations) that function as raw material of evolution. Mutations appear all of a sudden. Mutations are random and directionless.

62. **(d)** Pangenesis theory
Explanation: Pangenesis theory

63. **(d)** Atavism
Explanation: Atavism

64. **(c)** Neanderthal man
Explanation: The Neanderthal man with a brain size of 1400cc lived in the near east and central Asia between 1,00,000-40,000 years back. They used hides to protect their body and buried their dead.

65. **(d)** life comes from pre-existing life
Explanation: life comes from pre-existing life

66. **(d)** Thom of Bougainvillea and tendril of Cucurbita.
Explanation: Thom of Bougainvillea and tendril of Cucurbita.

67. **(b)** Lichens
Explanation: Lichens are a good pollution indicator as they do not grow in a polluted environment.

68. **(c)** Common descendant
Explanation: Common descendant

69. **(a)** Sexual selection is a type of natural selection
Explanation: Natural selection is the survival of members of species having some new traits that may help the organism in given surroundings. Sexual selection is a kind of natural selection as mating between similar organisms only leads to reproduction.

70. **(b)** Biogeography (or Geographic distribution)
Explanation: Biogeography (or Geographic distribution)

71. **(d)** Oenothera lamarckiana
Explanation: Oenothera lamarckiana

72. **(d)** Miocene
Explanation: Miocene

73. **(c)** in water environment

Explanation: in water environment

74.

(d) Phylogenetic trees

Explanation: Phylogenetic trees show links between organisms that show a branching patterns of evolutionary relationships. In this pattern, the organism that evolves earlier is shown below and further sub branching represents newly evolved organisms.

75.

(b) Species

Explanation: Species