Unit two

Multiple Choice Questions: Characteristics of Animals

1. What is the primary characteristic that distinguishes invertebrates from vertebrates?
A) The ability to fly B) The presence of a backbone
C) Living in water D) Being warm-blooded

2. Which of the following is a characteristic unique to all mammals?
A) They lay eggs.
B) They have feathers.
C) They feed their young with milk produced by mammary glands.
D) They have gills to breathe.

3. Birds are well-adapted for flight. Which of the following is NOT one of their key adaptations?
A) Hollow bones B) A streamlined body
C) Heavy, solid skeletons D) Feathers.

4. What is the main purpose of camouflage in animals like chameleons and stick insects?
A) To attract a mate B) To help them hunt prey
C) For protection and defense against predators D) To regulate their body temperature

5. Which group of animals is characterized by having moist skin, living both in water and on land, and typically undergoing metamorphosis?
A) Reptiles B) Fish C) Amphibians D) Mammals

6. What is the primary function of a fish's gills?
A) To digest food B) To extract oxygen from water
C) To help with swimming D) To excrete waste

7. Animals like snakes and lizards, which are cold-blooded, have scaly skin, and typically lay eggs on land, are classified as:
A) Amphibians B) Reptiles C) Birds D) Insects

8. What is the process called when an animal like a butterfly undergoes a dramatic change in body form from larva to adult?
A) Hibernation B) Migration C) Metamorphosis D) Camouflage

9. Which characteristic is common to all arthropods, such as insects, spiders, and crabs?
A) Six legs B) Wings C) An exoskeleton D) The ability to live on land

10. Hibernation is an adaptation that allows animals like bears to:
A) Find a mate during the winter.
B) Survive long periods of cold weather when food is scarce.
C) Migrate to warmer climates.
D) Give birth to their young.

11. Which of the following is a characteristic shared by ALL arthropods?
A) Wings B) Three body segments
C) An exoskeleton made of chitin D) Ability to live on land

12. A marine biologist finds an animal with a soft body, a muscular foot, and a hard, calcareous shell. This animal most likely belongs to which phylum?
A) Cnidaria B) Annelida C) Mollusca D) Echinodermata

13. Jellyfish, corals, and sea anemones belong to the phylum Cnidaria. What is their primary distinguishing feature?
A) A segmented body B) Stinging cells called cnidocytes
C) A radula for feeding D) A water vascular system

14. An earthworm is an example of a segmented worm from the phylum Annelida. What is the main function of its segments?
A) To allow for specialized body regions B) To aid in reproduction
C) To provide a rigid support structure D) To create a water-proof barrier

15. Which group of invertebrates is most closely related to vertebrates, based on embryonic development and molecular evidence?
A) Arthropoda B) Mollusca C) Echinodermata D) Cnidaria

16. What is the primary role of the water vascular system in echinoderms like the starfish?
A) Digestion B) Respiration C) Movement and feeding D) Excretion

17. Spiders, scorpions, and ticks belong to the subphylum Chelicerata. What are their specialized mouthparts called?
A) Antenna B) Mandibles C) Chelipeds D) Chelicerae

18. The process by which arthropods shed their exoskeleton to grow is known as:
A) Metamorphosis B) Ecdysis C) Segmentation D) Osmosis

19. Which of the following invertebrates is known for its remarkable ability to regenerate lost body parts?
A) Jellyfish B) Planarian (flatworm) C) Mosquito D) Clam

20. What is the main anatomical feature that defines an animal as an invertebrate?
A) Cold-blooded metabolism B) Lack of a backbone
C) An external skeleton D) Living in water

21. What is the single key distinguishing feature that defines all vertebrate animals?
A) Presence of lungs B) A backbone or vertebral column
C) Four limbs D) Living on land

22. Which of the following is a characteristic unique to all mammals?
A) They give live birth. B) They have hair or fur at some stage of their life.
C) They are warm-blooded. D) They have four-chambered hearts.

23. A biologist finds a vertebrate animal with moist, scale-less skin that lays its eggs in water. This animal most likely belongs to which class?
A) Reptilia B) Amphibia C) Osteichthyes D) Aves

24. Birds are highly adapted for flight. Which of the following is a key anatomical feature that helps reduce their weight?
A) Hollow bones B) A gizzard C) Feathers D) A keel-shaped sternum

25. What is the primary function of the lateral line system in most fish and aquatic amphibians?
A) Digestion B) Detecting vibrations and movement in the water
C) Osmoregulation D) Respiration

26. Which of the following is a key difference between reptiles and birds?
A) Reptiles are cold-blooded, while birds are warm-blooded.
B) Reptiles lay eggs, while birds give live birth.
C) Reptiles have scales, while birds have skin.
D) Reptiles have lungs, while birds have gills.

27. Sharks, rays, and skates belong to which class of fish?
A) Osteichthyes B) Agnatha C) Chondrichthyes D) Reptilia

28. What is the main evolutionary adaptation that allowed reptiles to reproduce completely independently of water?
A) Internal fertilization B) The amniotic egg C) Scaly skin D) More efficient lungs

29. Which group of mammals is characterized by a short gestation period, with the young completing their development in an external pouch?
A) Placental mammals B) Monotremes C) Marsupials D) Primates

30. Which vertebrate group is considered the most diverse, with the greatest number of species?
A) Mammals B) Reptiles C) Birds D) Bony Fish (Osteichthyes)

31. What is the primary characteristic of asexual reproduction?
A) It requires two parents.
B) It involves the fusion of gametes.
C) It produces offspring that are genetically identical to the parent.
D) It increases genetic diversity in a population.

32. In which of the following organisms is binary fission a common method of asexual reproduction?
A) Yeast B) Bacteria C) Hydra D) Starfish

33. A starfish can regenerate a lost arm, and in some cases, that arm can grow into a completely new starfish. This process is called:
A) Budding B) Sporulation C) Fragmentation D) Parthenogenesis

34. A hydra develops a small outgrowth on its side that enlarges, develops tentacles, and eventually detaches to live independently. This process is known as:
A) Binary Fission B) Spore Formation C) Budding D) Vegetative Propagation

35. What is a major disadvantage of asexual reproduction for a species?
A) It requires a mate.
B) It produces a small number of offspring.
C) It leads to low genetic diversity, making the population vulnerable to disease or environmental change.
D) It is a very slow process.

36. The production of offspring from unfertilized eggs is called:
A) Fragmentation B) Binary Fission C) Parthenogenesis D) Budding

37. What is a significant advantage of asexual reproduction?
A) It increases genetic diversity.
B) It allows for adaptation to new environments quickly.
C) It enables a single individual to colonize a new area and produce a large population rapidly.
D) It helps eliminate harmful mutations from a population.

38. Which of the following statements is TRUE regarding asexual reproduction?
A) It involves meiosis to produce gametes.
B) It is only found in simple, single-celled organisms.
C) It is common in stable, unchanging environments.
D) It is always better than sexual reproduction.

39. What is the fundamental defining event of sexual reproduction?
A) The division of a single cell into two identical cells.
B) The fusion of two haploid gametes to form a diploid zygote.
C) The growth and development of an embryo.
D) The production of spores.

40. The process that produces gametes (sperm and egg cells) with half the number of chromosomes is called:
A) Mitosis B) Binary Fission C) Meiosis D) Budding

41. What is the primary advantage of sexual reproduction over asexual reproduction?
A) It requires less energy and time.
B) It produces a larger number of offspring more quickly.
C) It increases genetic diversity within a population.
D) It does not require the search for a mate.

42. What is the name of the cell formed immediately after the sperm nucleus fuses with the egg nucleus?
A) Gamete B) Embryo C) Zygote D) Spore

43. Which of the following is a key difference between male and female gametes in many organisms?
A) Female gametes are always motile.
B) Male gametes are typically larger and contain more nutrients.
C) Female gametes are usually larger and non-motile.
D) Male gametes are produced in smaller quantities.

44. In mammals, the organ where the fertilized egg implants and the embryo develops is the:
A) Ovary B) Oviduct (Fallopian tube) C) Uterus (Womb) D) Vagina

45. What is the biological term for the production of sperm cells?
A) Oogenesis B) Spermatogenesis C) Gametogenesis D) Mitosis

46. A key event in meiosis that contributes to genetic variation is "crossing over." What happens during crossing over?
A) The separation of homologous chromosomes.
B) The exchange of genetic material between homologous chromosomes.
C) The doubling of the chromosome number.
D) The division of the cell cytoplasm.

47. Which of the following statements about sexual reproduction is TRUE?
A) It requires only one parent.
B) It produces offspring that are genetically identical to the parent.
C) It involves two parents, each contributing genetic material.
D) It is found only in animal species.

48. What is the typical mode of fertilization for most insects?
A) External fertilization in water B) Internal fertilization
C) Asexual reproduction D) Wind pollination

49. What is the name of the process where a female insect lays eggs?
A) Ovulation B) Gestation C) Oviposition D) Parturition

50. Aphids are famous for a type of asexual reproduction where females produce offspring from unfertilized eggs. What is this process called?
A) Binary Fission B) Fragmentation C) Parthenogenesis
D) Budding

51. In insects like butterflies and beetles, which undergo a complete metamorphosis, what is the name of the dormant, non-feeding stage between the larva and the adult?
A) Nymph B) Pupa C) Instar D) Maggot

52. What is the main function of the spermatheca in a female insect?
A) To produce eggs B) To lay eggs C) To store sperm D) To attract mates

53. In insects like grasshoppers and cockroaches that undergo incomplete metamorphosis, what is the name of the young stage that resembles the adult but lacks wings and is not sexually mature?
A) Pupa B) Larva C) Nymph D) Naiad

54. The silkworm moth (*Bombyx mori*) produces a chemical signal to attract a mate from a long distance. What is this type of signal called?
A) A pheromone B) A hormone C) An enzyme D) A neurotransmitter

55. In species like the honeybee, what determines whether a fertilized egg develops into a worker (female) or a queen (female)?
A) The size of the egg B) The time of year it is laid
C) The diet provided to the developing larva D) The amount of sperm that fertilizes it

56. What is the term for the shed exoskeleton left behind after a young insect molts?
A) Chrysalis B) Exuviae C) Cocoon D) Cuticle

57. Male dragonflies and damselflies have a unique anatomical feature for reproduction. What is it?
A) They transfer sperm to the female using pedipalps.
B) They have a penis on their head.
C) Their genital opening is at the tip of their abdomen, but they transfer sperm from a secondary organ at the base of the abdomen.
D) They produce spermatophores that are left on the ground for the female to find.

58. What is the specific term for the way most frogs fertilize their eggs?
A) Internal Fertilization B) External Fertilization
C) Self-Fertilization D) Asexual Fertilization

59. During frog mating, the male climbs onto the female's back in a posture known as:
A) Copulation B) Amplexus C) Metamorphosis D) Spawning

60. What is the primary function of the jelly-like substance that surrounds frog eggs?
A) To provide nutrients for the embryo B) To make the eggs taste bad to predators
C) To protect the eggs and keep them moist D) To help the eggs sink to the bottom

61. What is the name of the stage that hatches from the frog egg and has gills for breathing underwater?
A) Froglet B) Embryo C) Tadpole D) Larvae

62. The process of a tadpole transforming into an adult frog is a classic example of:
A) Photosynthesis B) Metamorphosis C) Osmosis D) Regeneration

63. Which of the following is the correct sequence of stages in a frog's life cycle?
A) Egg -> Froglet -> Tadpole -> Adult B) Tadpole -> Egg -> Adult -> Froglet
C) Egg -> Tadpole -> Froglet -> Adult D) Adult -> Egg -> Froglet -> Tadpole

64. What major change occurs in the circulatory system of a frog during metamorphosis?
A) A two-chambered heart develops into a three-chambered heart.
B) A three-chambered heart develops into a four-chambered heart.
C) The heart stops beating.
D) Gills are replaced by lungs.

65. The common opening for the digestive, excretory, and reproductive systems in a frog is called the:
A) Ventricle B) Cloaca C) Nare D) Tympanum

66. What is the main purpose of the male frog's loud croaking, especially during the rainy season?
A) To warn other frogs of danger B) To attract a female mate and establish territory
C) To communicate with its tadpoles D) To scare away aquatic predators

67. Which of the following is an example of parental care in some frog species?
A) The male carrying the fertilized eggs in his mouth. B) The female giving live birth to froglets.
C) The female laying thousands of eggs in a pond. D) Tadpoles feeding on algae.

68. What is the mode of reproduction for crocodiles?
A) Ovoviviparity (eggs hatch inside the mother) B) Viviparity (live birth)
C) Oviparity (egg-laying) D) Asexual reproduction

69. What is the primary function of the "egg tooth" on a crocodile hatchling?
A) For defending itself against predators B) For catching small insects
C) For piercing the leathery eggshell during hatching D) For chewing vegetation

70. Which of the following best describes crocodilian parental care?
A) No parental care; hatchlings are independent immediately.
B) Only the mother provides protection for the hatchlings.
C) Both the mother and sometimes the father provide protection for the hatchlings.
D) Only the father provides protection for the hatchlings.

71. The common chamber used for the release of waste and reproductive products in crocodiles is called the:
A) Vent B) Cloaca C) Urethra D) Anus

72. Where does fertilization occur in crocodiles?
A) Externally, in the water B) Internally, inside the female's body
C) In the nest, after the eggs are laid D) Inside the egg, after it is laid

73. What is the term for the common opening in birds used for waste elimination and reproduction?
A) Vent B) Urethra C) Cloaca D) Oviduct

74. Where does fertilization of the egg cell (ovum) typically occur in a female bird?
A) In the ovary B) In the nest after the egg is laid
C) In the upper part of the oviduct D) In the cloaca

75. Which part of a bird's egg provides the primary source of nutrition for the developing embryo?
A) The albumen (egg white) B) The shell C) The yolk D) The chalazae

76. What is the primary function of the albumen (the egg white)?
A) To provide a hard protective layer B) To supply most of the food for the embryo
C) To provide water and protein and cushion the embryo D) To allow for gas exchange

77. The process by which a parent bird sits on its eggs to maintain the proper temperature for embryonic development is called:

A) Brooding B) Hatching C) Oviposition
D) Clutching

78. What is the name of the small, white, rope-like structures that anchor the yolk in the center of the egg?
A) Shell membranes B) Amnion C) Chalazae
D) Air cell

79. What is the main function of the porous shell of a bird's egg?
A) To keep the egg from drying out
B) To protect the embryo from physical damage and allow for gas exchange
C) To provide calcium for the developing embryo
D) To camouflage the egg from predators

80. What is the primary term for a rat's reproductive strategy of giving birth to live, developed young?
A) Oviparous B) Viviparous C) Ovoviviparous D) Metamorphic

81. Shortly after a female rat gives birth, she can enter estrus and become pregnant again. This period is known as:
A) Menopause B) Delayed Implantation C) Postpartum Estrus
D) Gestation

82. What is the average gestation period (length of pregnancy) for a rat?
A) 21-23 days B) 45-50 days C) 60-65 days
D) 90-100 days

83. Newborn rats are born in a very underdeveloped state. What is the term for such offspring?
A) Precocial B) Altricial C) Juvenile D) Fledgling

84. When do a rat pup's eyes typically open?
A) At birth B) Around 3-4 days old C) Around 14-17 days old D) After 4 weeks old

85. The silkworm moth (*Bombyx mori*) is the basis of the silk industry. At which life stage are the caterpillars harvested for their silk?
A) Egg B) Larva (Caterpillar) C) Pupa (inside the cocoon)
D) Adult Moth

86. Which insect is a major pest of stored grains, causing significant economic loss after harvest?
A) Housefly (*Musca domestica*) B) Weevil

(e.g., *Sitophilus* species)
C) Honeybee (*Apis mellifera*) D) Ladybug (*Coccinella septempunctata*)

87. What valuable product is derived from the lac insect (*Kerria lacca*)?
A) Honey B) Wax C) Shellac D) Venom

88. Which of the following insects is widely used as a biological control agent to manage aphid populations?
A) Termite B) Ladybug (Ladybird Beetle) C) Japanese Beetle D) Flea

89. What is the single most valuable ecological service provided by insects, which is critical for the reproduction of many flowering plants and global food production?
A) Decomposition B) Pollination C) Producing honey D) Soil aeration

90. Which insect is considered the world's most dangerous animal to humans due to its role as a disease vector?
A) Tsetse Fly B) Mosquito C) Kissing Bug D) House Fly.

91. A spider building its web, a bee performing a waggle dance to communicate the location of food, and a bird building a nest are all examples of what kind of behavior?
A) Learned Behavior B) Instinctive (Innate) Behavior
C) Operant Behavior D) Cognitive Behavior

92. In Pavlov's famous experiment, dogs learned to salivate at the sound of a bell. What is the bell in this scenario?
A) An Unconditioned Stimulus B) An Unconditioned Response
C) A Conditioned Stimulus D) A Conditioned Response

93. What type of learning occurs when an animal stops responding to a repeated, unimportant stimulus? For example, birds in a city learning to ignore constant traffic noise.
A) Sensitization B) Imprinting C) Habituation D) Insight Learning

94. A goose will automatically roll a displaced egg back into its nest using its beak. This unlearned, stereotypical sequence, once started, continues to completion. This is an example of a(n):
A) Imprinted behavior B) Conditioned response

C) Fixed Action Pattern (FAP) D) Habituation

95. A rat in a Skinner Presses a lever and receives a food pellet. As a result, the rat presses the lever more frequently. This pattern of learning is called:
A) Classical conditioning B) Operant conditioning C) Imprinting D) Insight learning

96. Birds in a city park eventually stop flying away when people walk by on a nearby path. This decrease in response to a repeated, harmless stimulus is called:
A) Sensitization B) Imprinting C) Habituation D) Conditioning

97. What is the best definition of homeostasis?
A) The process of growth and development in an organism
B) The maintenance of a stable internal environment despite external changes
C) The ability to reproduce and create offspring
D) The breakdown of nutrients to create energy

98. Which of the following is an example of a negative feedback loop in the human body?
A) The release of oxytocin during childbirth B) Blood clotting after an injury
C) The regulation of body temperature D) The secretion of stomach acid after eating

98. Which organ plays a central role in maintaining water balance (osmoregulation) in the body?
A) The Liver B) The Heart C) The Kidney D) The Stomach

99. The hormone insulin is released to lower blood glucose levels. This is a part of a:
A) Positive feedback loop B) Negative feedback loop
C)Homeostatic failure mechanism D) Symbiotic relationship

100. The part of the brain that acts as the body's thermostat, coordinating the response to changes in temperature, is the:
A) Cerebellum B) Hypothalamus C) Thalamus D) Cerebrum