

أسئلة وأجوبة مادة أوليات ولافقاريات (٣٢١ ح)

(نصف ورقة إمتحانية)

جامعة: بنها
كلية: العلوم
قسم: علم الحيوان
المستوى: الثالث
شعبة: حيوان وكيمياء
الممتحن: د/ داليا سعيد حمزة

Group (B)

I- Choose the correct answer:

(12 Mark)

1. Sponges obtain food:

- A. by using their spicules to paralyze protozoa. B. with their sponging.
C. by filtering small organisms from the water. D. through photosynthesis.

2. Choanocytes of the sponges:

- A. create water currents for feeding. B. are necessary for sperms and ova formation.
C. serve food storage. D. the answers (b) and (c) are correct.

3. The larvae of the sponges:

- A. have body walls with many pores. B. use stinging cells to capture prey.
C. are active swimmers. D. are sessile.

4. The sponges have:

- A. mouth. B. digestive system. C. advanced nervous system.
D. skeletal support of spicules and/or spongin fibres.

5. The glass sponges referred to class

- A. Calcarea. B. Hexactinellida. C. Demospongiae. D. None of the previous.

6. In sponge, fertilization is _____ and the development is _____.

- A. internal, direct. B. internal, indirect. C. external, direct. D. external, indirect

7. A sponge expels wastes through its:

- A. osculum. B. spicules. C. pore cells. D. collar cells.

8. Which of these statements about coelenterates is NOT true?

- A. The body wall is triploblastic. B. Nervous system is primitive.
C. Body is almost radially symmetrical. D. Locomotion is due to smooth muscle fibrils.

9. The larva of Coelenterata called _____.

- A. Planula B. Amphiblastula C. Parenchymula D. Trochophore

10. Scyphozoa include:

- A. hydras. B. jellyfishes. C. the sponges. D. sea anemones and stony corals.

11. Planula larvae of *Aurelia*:

- A. result from fertilization of eggs by sperms. B. swim freely through the water.
C. settle to the ocean bottom and grow into scyphistoma. D. all of the previous.

12. In Coelenterata, the extracellular digestion occurs in which of the following?

- A. Epidermal cells. B. Gastrodermal cells. C. Gastrovascular cavity. D. None of the previous.

13. In coelenterates, the nervous system is.

- A. consisting of a diffuse network of polarized nerve cells. B. ganglionated.
C. consisting of a diffuse network of unpolarized nerve cells. D. well developed.

14. Stony corals belong to class:

- A. Hydrozoa. B. Scyphozoa. C. Anthozoa. D. Alcyonaria.

15. Which of the following is a function of cysts for Protozoa?

- A. Protect against adverse environments. B. Sites for nuclear reorganization and cell division.
C. Serve as a means of dispersal. D. All of the above may be a function of cysts for Protozoa.

16. Asexual reproduction that occurs in protozoa includes all of the following EXCEPT _____.

- A. budding. B. binary fission. C. multiple fission. D. conjugation.

17. In the life cycle of *Plasmodium*, the ring stage are formed in the

- A. human gut. B. mosquito gut. C. human WBCs. D. human RBCs.

18. Which of the following describes the function of a contractile vacuole?

- A. Site of digestion.
B. Contain specific enzymes that perform various functions.
C. Maintain osmotic balance by continuous water expulsion.
D. Structures that accept male gametes during sexual reproduction.

19. Which of the following describes the function of a food vacuole?

- A. Site of digestion.
B. Contain specific enzymes that perform various functions.
C. Maintain osmotic balance by continuous water expulsion.
D. Structures that accept male gametes during sexual reproduction.

20. Holozoic nutrition is characterized by _____.

- A. formation of the food in the presence of carbon dioxide and sunlight.
B. feeding by absorbing solution of decayed organic and inorganic substances.
C. feeding on other organisms.
D. none of the above.

21. The _____ are long, stiff threads made of ectoplasm.

- A. Lobopodia. B. Filopodia. C. Rhizopodia. D. Axopodia.

22. The _____ consists of 20 fibrils and an outer membranous sheath.

- A. cillium. B. flagellum. C. pseudopodium. D. The answers (a) and (b) are correct.

23. Which of the following is characteristic of protozoa?

- A. multicellular B. unicellular C. moves by tentacles D. sized from 5 to 12 cm

24. Phylum Protozoa classified into the following subphyla EXCEPT _____.

- A. Mastigophora B. Sporozoa C. Ciliophora D. Cnidospora.

II- Write about the following:

(12 Mark)

1. Asexual reproduction of sponge.
2. Nematocysts of Coelenterata.
3. Nucleus of protozoa.

(With best wishes)

Answers

I- Choose the correct answer:

1- C 2- A 3- C 4- D 5- B 6- B 7- A 8- A 9- A
10- B 11- D 12- C 13- C 14- C 15- D 16- D 17- D
18- C 19- A 20- C 21- D 22- D 23- B 24- A

II- Write about the following:

1. Asexual reproduction of sponge

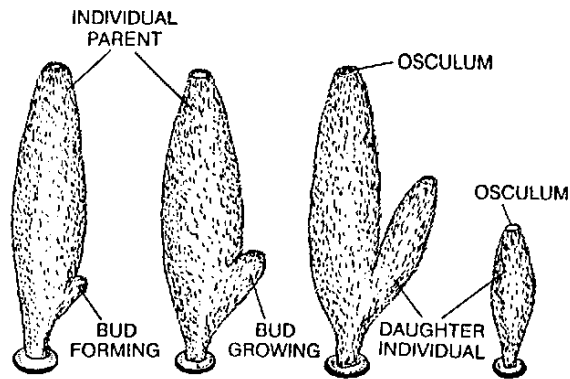
Sponges have three asexual methods of reproduction: regeneration, budding; and by producing gemmules.

Regeneration: Fragments of sponges may be detached by currents or waves. They use the mobility of their pinacocytes and choanocytes and reshaping of the mesohyl to re-attach themselves to a suitable surface and then rebuild themselves as small but functional sponges over the course of several days. The same capabilities enable sponges that have been squeezed through a fine cloth to regenerate. A sponge fragment can only regenerate if it contains both collencytes to produce mesohyl and archeocytes (amoebocytes) to produce all the other cell types.

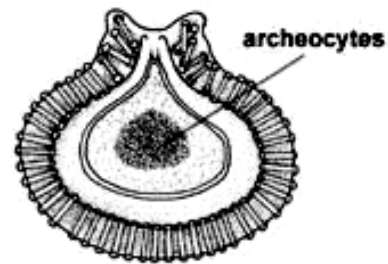
Budding: A very few species reproduce by budding, by developing external buds which grow to form new individuals. These individuals either separate or remain attached, thus increasing the mass of the sponge.

Gemmule formation: Gemmules are "survival pods" which a few marine sponges and many freshwater species produce asexually. The gemmules are formed at the onset of unfavorable seasons and serve to carry the species through unfavorable conditions such as cold or drought. They are formed from aggregations of food-filled amoebocytes (archeocytes) which become surrounded by other amoebocytes that develop a hard outer covering. Spicules are then added so that a resistant outer envelop is formed. During the unfavorable season the parent sponge dies and disintegrates, but the gemmules live. When conditions improve, the internal cells

emerge from an opening in the wall of the gemmule and develop into an adult sponge.



Budding in *Leucosolenia*



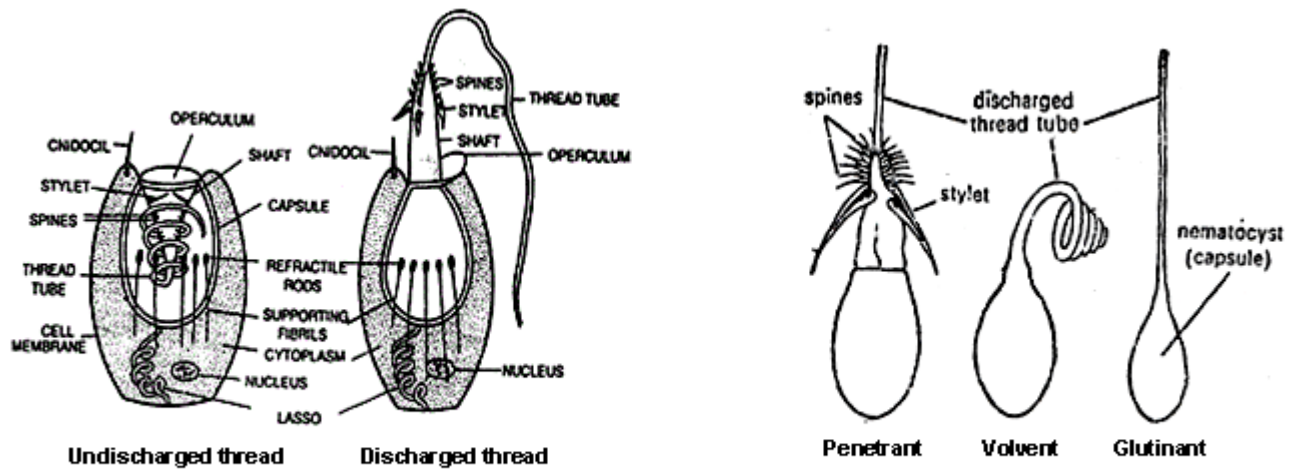
Gemmule

2. Nematocysts of Coelenterata.

Only cnidarians have stinging capsules, known as nematocysts or cnidae, which give the phylum its name. Cnidae range from only about 10 to 100 micrometers long. Each consists of a spherical or cigar-shaped capsule, hollow tubule extending from one end. In the unfired state, the tubule is coiled within the capsule. When a cnidarian contacts a predator or prey item, the capsule opens and the tubule everts. The tubule may be adhesive, or it may entangle the object. Both types serve to hold food items. A third type of tubule is armed with spines that penetrate predator or prey. Undifferentiated interstitial cells of the ectoderm and endoderm appear to be the source of the cnidoblasts (cells that produce cnidae).

There are three types of nematocysts, these are:

- a. Penetrant: With an open tube, and provided with spines. It penetrates the body of the prey and injects a toxin that has a paralyzing action.
- b. Volvent: With unarmed, coiled and closed tube. When discharged, the thread winds around the appendages of the prey.
- c. Glutinant: With sticky open threads, used in adhering the animal when it walks on its tentacles.



Nematocysts

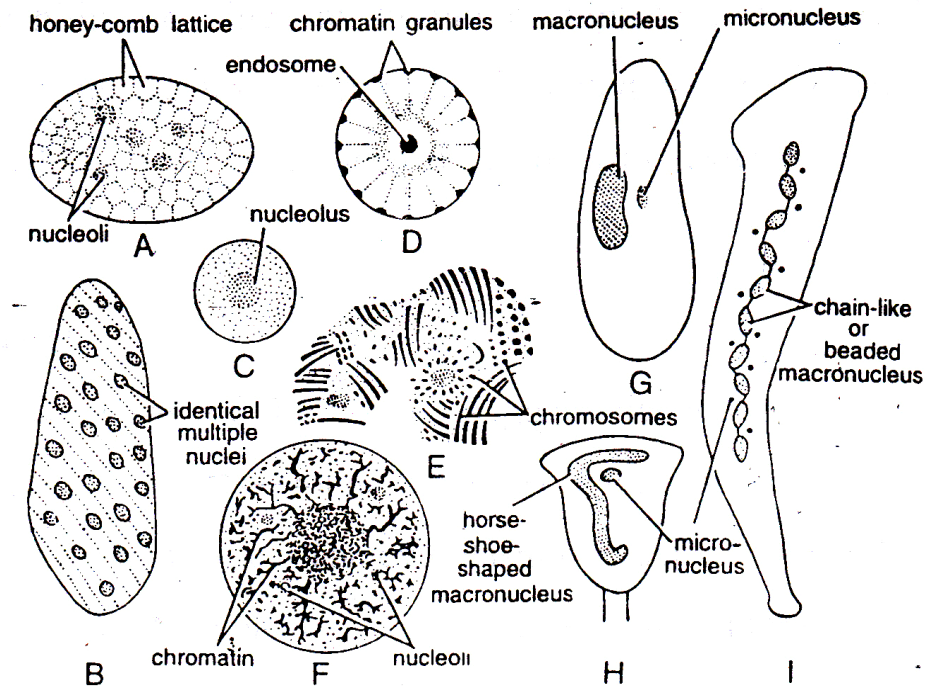
3. Nucleus of protozoa.

Nucleus is the seat of control of all the vital activities of the protozoan body. The nuclei of Protozoa exhibit a greater variety of size, shape and structure than the nuclei of Metazoan. The nucleus of protozoa has a nuclear membrane, nucleoplasm, oxychromatin, basichromatin, and there may be a nucleolus. The nuclear membrane remains intact even in cell division. The nucleus is therefore the most important organelle of every protozoan. Majority of protozoa have a single nucleus, except at the time of multiplication, when two or even more may present. Some protozoan have two similar or dissimilar nuclei for the greater part of their life & are thus, binucleate, e.g. *Paramecium*. The two nuclei differ not only in size & shape, but also in function. The large nucleus, called the macronucleus, is polyploidy & controls the vegetative activities, whereas the smaller nucleus, termed the micronucleus, is diploid & governs of sexual reproduction. This phenomenon is known as the nuclear dimorphism. A few forms carry several nuclei, & are said to be multinucleate; e.g., *Opalina*.

The nucleus is generally spherical. Macronucleus of ciliates varies considerably in form. It is rounded in *Podophrya*, ovoid in *Balantidium*, kidney-shaped in *Nyctotherus*, horse-shoe-shaped in *Vorticella*, moniliform in *Stentor* & branched in *Ephelota*.

The protozoan nucleus shows two main types of structure: vesicular & compact or granular. In a vesicular nucleus, the nuclear membrane is visible & the chromatin

material is aggregated into one or more prominent bodies, the nucleoli, also called the karyosomes or endosomes. The vesicular nucleus is usually found in Mastigophora & Sarcodina, e.g., *Euglena*, *Amoeba* & *Arcella*. In a compact nucleus, the nuclear membran is inconspicuous & the chromatin material is scattered as grains throughout the nucleus. Compact nuclei usually occur in ciliates, e.g. *Paramecium*.



Protozoan nuclei: A- Vesicular nucleus of *Amoeba proteus*, B- Multiple nuclei of *Opalina*, C- Vesicular micronucleus of *Paramecium aurelia*, D- Vesicular nucleus of *Entamoeba*, E- Chromosome nucleus of *Amoeba sphaeronucleus*, F- Polyploid nucleus of *Aulacantha scolymantha*, G- Compact macronucleus and vesicular micronucleus of *Paramecium caudatum*, H- Horse-shoe-shaped micronucleus of *Vorticella*, I- Beaded macronucleus of *Stentor*.