SC/BIOL 2010.040 Plant Biology
Second Term Test

NAME:_____KEY_____

[01] Which one of the following terms does not describe a common trait, structure or characteristic of either the Ascomycota or the Basidiomycota?

A. hymenium B. mycorrhizae C. dolipore D. zygotic meiosis
E. conidia F. septate G. haustoria
H. all describe a common trait, structure or characteristic

All of the traits and structures are found in either of the two fungal groups, including zygotic meiosis: ***H****.*

[02] Amongst the Ascomycota and Basidiomycota, which of the following characteristics are unique to only one of the two phyla (choose the best answer)?

A. crozier B. haustoria C. mycelia D. clamp connections
E. persistent dikaryotic stage F. A and B G. A and D H. A, D and E

Crozier is specific to ascomycota, clamp connections play a role in the persistent dikaryotic state of basidiomycota, all others are found in both. The answer is ***H****.*

Match the following terms with the most appropriate definition (Choose the best answer)?
[03] conidium *pl*. conidia **H** **[04]** haustorium *pl*. haustoria **F** **[05]** appressorium **C**

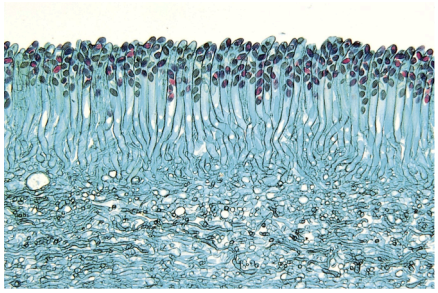
A. None of the below
B. A small mass of vegetative tissue; an outgrowth of the thallus, for example in liverworts or certain fungi.
C. A flattened, hyphal organ, from which a minute infection peg grows and enters the host.
D. The strips of tissue on the underside of the cap of many hymenomycetes.
E. A single tubular filament of a fungus, oomycete, or chytrid.
F. A projection of a fungal hypha that functions as a penetrating and absorbing organ.
G. A tough, resistant, resistant, nitrogen-containing polysaccharide forming the cell walls of certain fungi.
H. An asexual fungal spore not contained within a sporangium; it may be produced singly or in chains; it is often multinucleate.

The definitions come from your textbook.

Match the following images with the most appropriate fungal group (Choose the best answer)

[06]

[07]

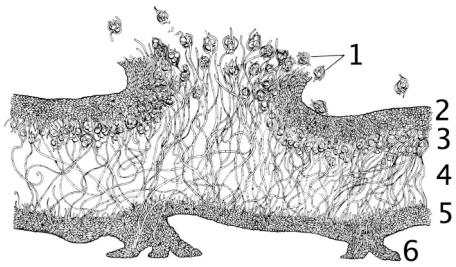


A. Ascomycete B. Ustilago C. Hymenomycete D. Gasteromycete
E. Basidiomycete F. Zygomycete G. Lichens H. Teliomycete

Both are ascomycota.

Questions ***8*** *and* ***9*** *were not in the test due to a numbering error and are blank in the key.*

[10] Identify the most appropriate group on the basis of the vegetative and reproductive structures diagrammed in the figure (Choose the best answer)?



A. Gasteromycete B. Ustomycete C. Teliomycete
D. Basidiomycete E. Lichens F. Hymenomycete
G. Ascomycete H. Deuteromycete (Fungi Imperfecti)

Directly from your textbook, it is a lichen: ***E***.

[11] Which of the labeled regions identifies the location of the mycobiont in the vegetative structure (Choose the best answer)?

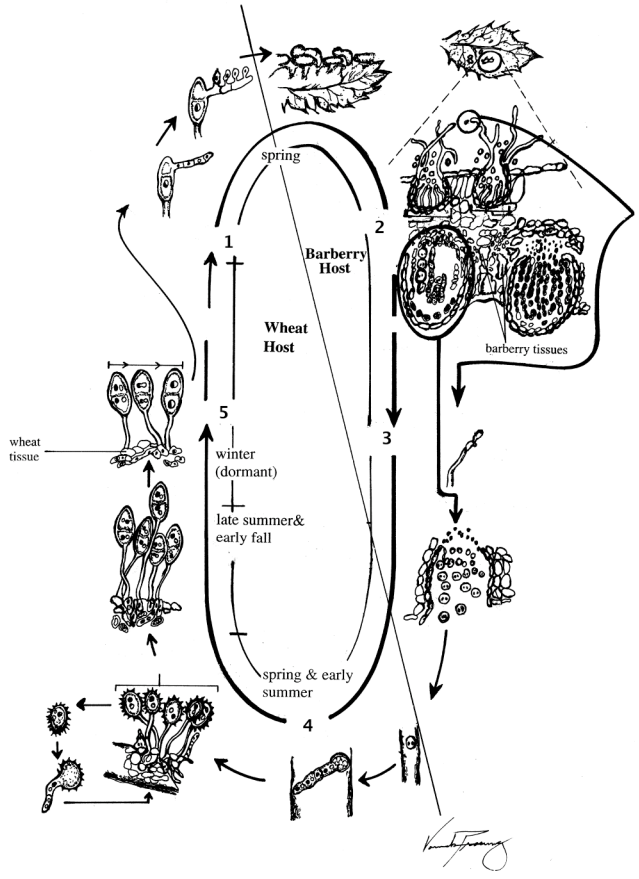
A. None of the regions B. All of the regions C. 3, 4 and 5 D. 2, 5 and 6
E. 1 and 6 F. Only 6 G. 2 and 4 H. 2 and 5

The fungal symbiont forms the epidermis and invades algal cells wherever they are, so all regions contain the mycobiont: ***B***.

[12] Which of the following is/are propagules of lichens —containing both the mycobiont and algal or cyanobacterial photobiont— that serve to disseminate this unusual example of a symbiotic organism (Choose the best answer)?

A. soredia B. ascospore C. gemma D. operculum
E. isidia F. peristome G. sclerotia H. none of the above

Soredia are the propagules of lichens (isidia are small outgrowths): ***A***.



[13] Identify the numbered stage(s) in the wheat rust ((*Puccinia graminis* var *tritici*) when the wheat rust is a stable dikaryon

A. 1 B. 2 C. 3
D. 4 E. 5 F. 1 and 2
G. 2 and 3 H. 3 and 5

The persistent dikaryotic state corresponds to 4 in the life cycle diagram (3 is where plasmogamy occurs, 5 is where karyogamy occurs): ***D*** *is the correct answer.*

[14] Place the following groups in order of increasing complexity of their adaptations to survival on land, or appearance in the fossil record?

1. Cycadales 2. Liverworts 3. Hornworts 4. Bryidae 5. Gymnosperms

A. 1,2,3,4,5 B. 2,1,4,3,5 C. 3,1,5,4,2 D. 2,3,4,1,5
E. 5,4,3,2,1 F. 4,5,3,2,1 G. 3,4,5,1,2 H. none of the above

In order of increasing complexity: liverworts, hornworts, Bryidae, Cycads and Gymnosperms: ***D***.

[15] For non-seed plant groups only, which one of the following groups of non-vascular or vascular plants exhibits heterospory?

A. Hepatophyta (Liverworts)
B. Anthocerophyta (Hornworts)
C. Selaginellaceae (Lycophyta)
D. Bryidae (Bryophyta - true mosses)
E. Lycopodiaceae (Lycophyta)
F. Equisetum (Sphenophyta)
G. Andreaeidae (Brytophyta - granite mosses)
H. Sphagnidae (Bryophyta - sphagnum mosses)

It is Sellaginaceae: ***C***.

[16] What specialized cell, functioning as a component of adaptation to terrestrial environments, is usually lacking in Anthocerophyta (hornworts) but present in the Bryophytes (mosses)?

A. phloem B. stomates C. leptoids D. non-motile sperm
E. rhizoids F. root hairs G. haustoria H. none of the above

The mosses have leptoids to transport photosynthate: ***B***.

[17] Which of the following characteristics are key <u>adaptive</u> component(s) of the successful invasion of land by plants (Choose the best answer)?

1. stomata
2. chlorophylls a and b
3. vascular tissue
4. embryophyta
5. determinate growth of the gametophyte
6. indeterminate growth of the gametophyte
7. heterospory
8. phycoplastic cell division
9. archegonium and antheridium

A. 1, 2, 3, 4 and 5 B. 1, 3, 4, 7 and 8
C. 2, 3, 4, 5 and 6 D. 2, 3, 4, 6 and 7
E. 1, 3, 4, 6 and 9 F. 1, 2, 4, 5 and 7
G. 1, 3, 5, 6 and 9 H. 3, 4, 6, 7 and 8

Stomata to regulate water loss (and carbon dioxide uptake), vascular tissue to transport water and photosynthate, protection of the diploid embryo in the parent, aggressive vegetative growth, and protection of gametes in the archegonium and antheridium: ***E***.

Match the following divisions of the 'lower' land plants with the characteristic that <u>uniquely distinguishes</u> it from the other 'lower' plant groups listed. Choose the best answer.

[18] Anthocerophyta (Hornworts)
[19] Hepatophyta (Liverworts)
[20] Bryophyta (Mosses)

A. protonemata B. stomates
C. hydroids D. gemma
E. motile sperm F. archegonial head
G. rhizoids H. none of the above

Mosses have hydroids, the only unique trait amongst the three groups: ***H, H and C***.

[21] What is/are the characteristic(s) that distinguish liverworts from hornworts?

A. None of the below
B. silica walls in the liverworts
C. eustelar anatomy in the hornworts
D. eustelar anatomy in the liverworts
E. stomates in the liverworts
F. stomates in the hornworts
G. B and D
H. C and E

Hornworts have stomates, liverworts do not: ***F***.

[22] Which of the following is not true of microgametogenesis in angiosperms (choose the best answer)?

A. All of the below are not true
B. All of the below are true
C. meiosis results in the formation of four spores in a tetrad
D. tapetal tissue is haploid
E. pollen exine is produced soon after spores are released from the tetrad
F. the initial haploid nuclei of the microspore undergoes 2 cycles of mitosis to form three nuclei: two generative (sperm cells) and one vegetative.
G. pollen enter domancy during maturation, prior to release from the anther.
H. the mother pollen cell is haploid
~~G. the tapetal initial cell is diploid~~

All are true (even the struck-out extra 'G') except that tapetal tissue is not haploid: ***D***.

[23] Which of the following is not true of megagametogenesis in angiosperms (choose the best answer)?

A. None of the below are true
B. All of the below are true
C. meiosis results in the formation of one (monosporus), two (bisporus) or four (tetrasporus) haploid megaspore(s)
D. nucellus tissue is diploid
E. the two nuclei of the central cell of the embryo sac will fuse with one of the sperm cell nuclei to form the triploid endosperm
F. the megaspore undergoes 5 cycles of mitosis to form eight haploid nuclei in the embryo sac
G. the antipodal cells do not fuse with one of the sperm cell nuclei.
H. the synergid cells are located near the micropyle with the egg cell

Three cycles of mitosis are required to produce 8 haploid nuclei: ***F***.

[24] Which of the following are limitations to the height of a tree (Choose the best answer)?

A. None of the below.
B. All of the below
C. Mechanical support.
D. Tensile strength of water.
E. Xylem vessel diameter
F. Gravity
G. C, D and E
H. C, D and F

Students tell me the answer is 'all of the below': ***B***.

[25] Which is the most important limitation?

A. None of the below.
B. All of the below
C. Mechanical support.
D. Tensile strength of water.
E. Xylem vessel diameter
F. Gravity
G. C, D and E
H. C, D and F

Students tell me the answer is ***D***.

[26] Solitary (non-eusocial) bees will collect both nectar and pollen from the flowers of visited plants. What is a common use of the pollen and nectar (Choose the best answer)?

A. They don't use the pollen, it is only collected inadvertently when they visit a flower to feed on nectar.
B. The nectar is used for energy —it's a high carbohydrate diet for the insect.
C. The solitary bees collect pollen and form it into pollen balls (mixed with nectar). They lay an egg on the pollen ball. When the larvae hatch, they feed on the pollen ball.
D. The solitary bees collect nectar and bring it to the hives to produce honey in the honey comb.
E. A and B
F. B and C
G. C and D
H. A and D

Solitary bees uses pollen and nectar to make pollen balls, on which they lay their eggs. To do so, they need food (from nectar): ***F***.

[27] Pollen tube growth arrest occurs in which of the following incompatibility systems?

A. Gametophytic
B. Sporophytic

Students tell me the answer is ***A***.

[28] Which of the following are mechanisms to ensure out-crossing (Choose the best answer)?

A. Insect pollination
B. Pin and thrum floral morphologies
C. Sporophytic incompatibility
D. Gametophytic incompatibility
E. All of the above
F. None of the above

Students tell me the answer is ***E***.