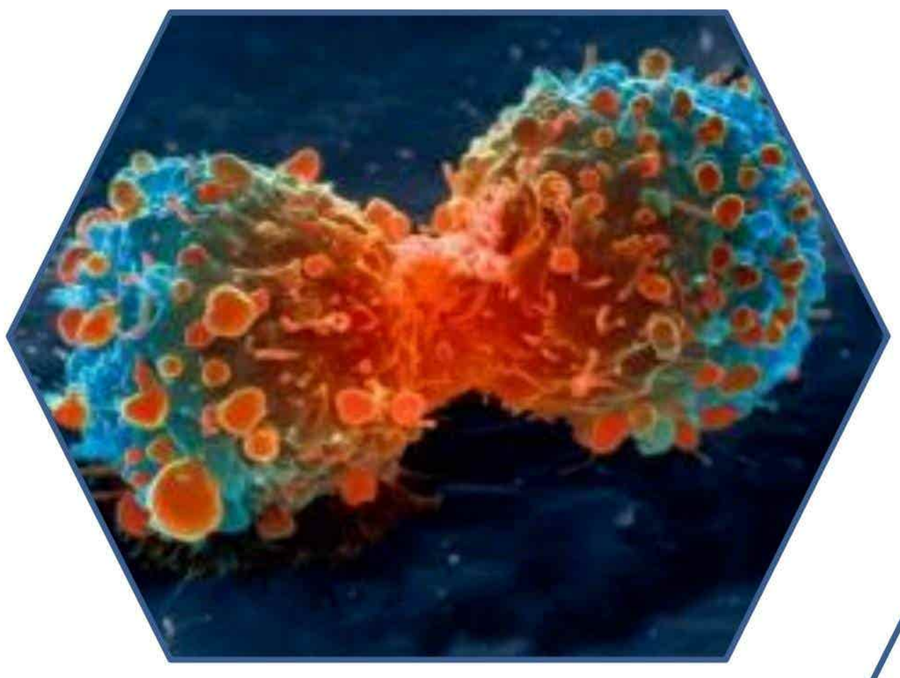
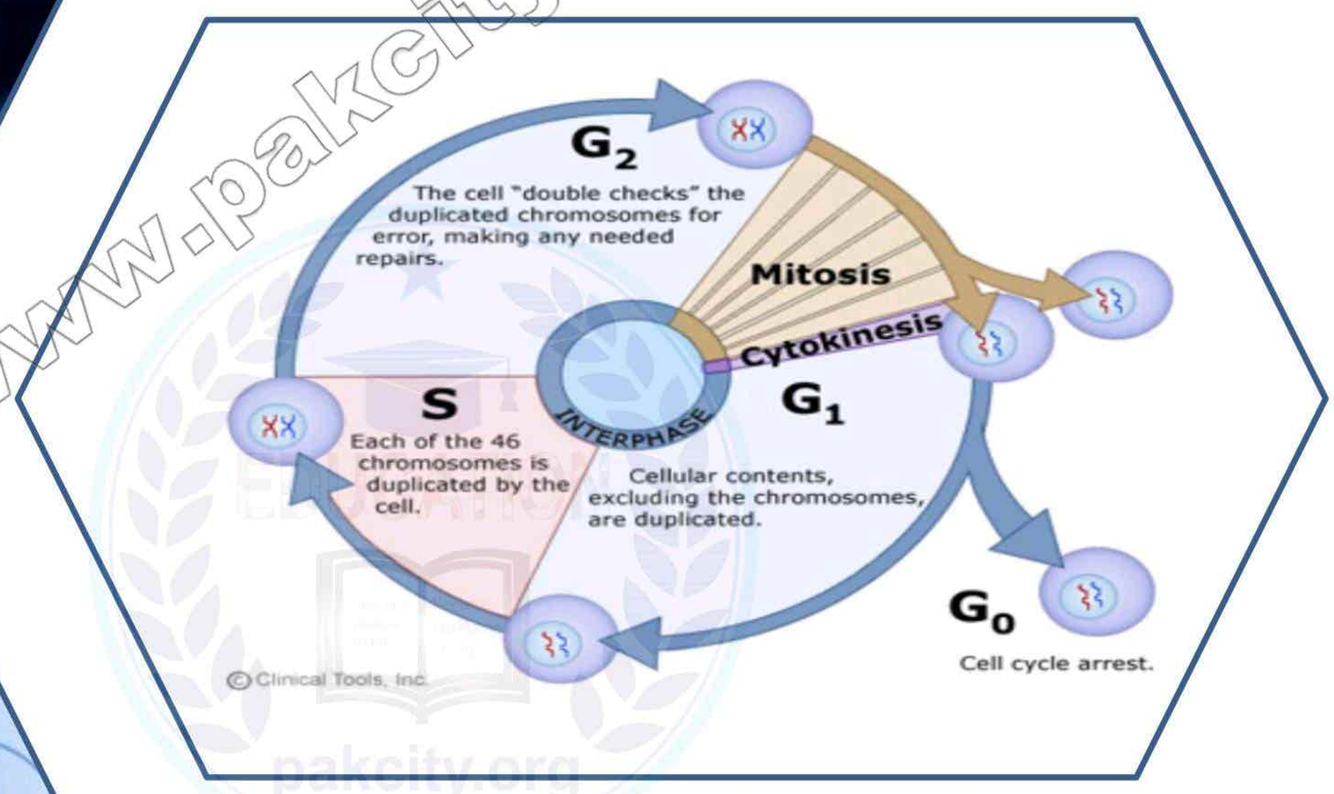
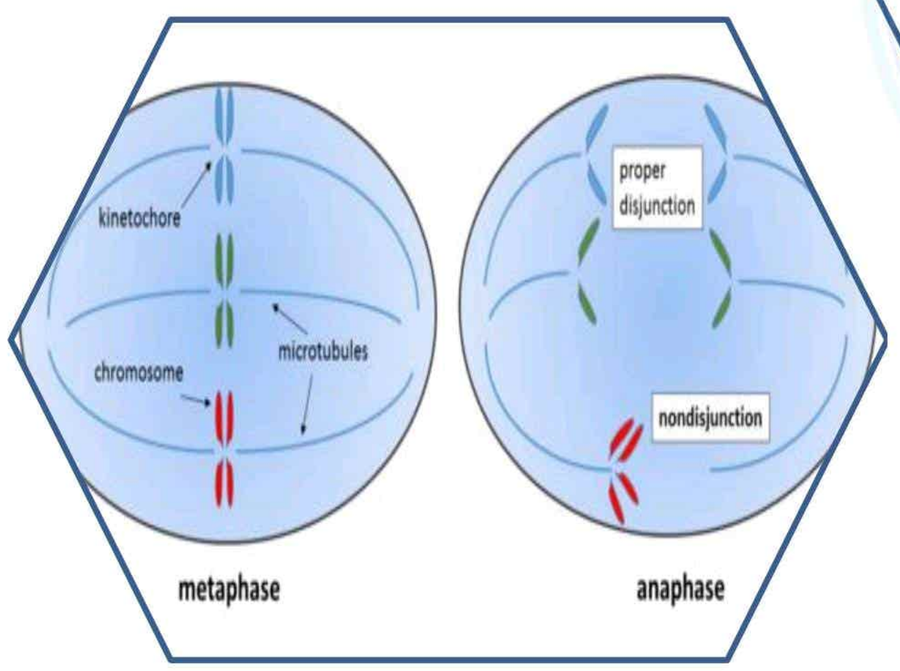
CHAPTER 8

Fungi



- **Exercise Short Answers**
- **Important Short Answers**





- Exercise MCQ's
- Important Additional MCQ's
- Past MDCAT MCQ's

Exercise MCQ's

❖ **Encircle the correct answer from the multiple choices.**

1) **Which statement about fungal nutrition is not true……..:**
   a) Some fungi are active predators
   b) Some fungi are mutualists
   c) Facultative parasitic fungi can grow only on their specific host
   d) All fungi require mineral nutrients
2) **The absorptive nutrition of fungi is aided by:**
   a) Spore Formation
   b) Their larger surface area volume ratio
   c) They are all parasites
   d) They form fruiting bodies
3) **The zygomycetes:**
   a) Have hyphae without regularly occurring cross walls
   b) Produce motile gametes
   c) Are haploid throughout their life
   d) A and B both are correct
4) **Which of the following cells/structures are associated with sexual reproduction in fungi?**
   a) Ascospores b) Conidia c) Zygospores d) Basidiospores
5) **The closest relatives of fungi are probably:**
   a) Animals b) Slime molds c) Brown algae d) Vascular plants
6) **E.coli of fungi is the:**
   a) Rusts b) Brown molds c) Green mold d) Yesat
7) **An ascus is to ascomycetes as is a …….. to basidiomycetes.**
   a) Basidiospores b) Basidiocarp c) Basidium d) Haustorium
8) **Which statement is not true about Deuteromycetes?**
   a) They are also called imperfect fungi
   b) Their sexual spores are called conidia
   c) It is a heterogeneous polyphyletic group
   d) They have both sexual and asexual reproduction

Answer:

1	c	**2**	b	**3**	a	**4**	b	**5**	b
6	d	**7**	c	**8**	d				

Most important MCQ's

❖ **Encircle the correct answer from the multiple choices.**

Fungi, body structure and taxonomic position

1) The closest relatives of fungi are probably:
a) Vascular plants b) Slime molds c) Brown algae d) Animals

2) Which one of the following is a major structural component of fungus cell wall:
a) Cellulose b) Peptidoglycan c) Chitin d) Lignin

3) Fungi are heterotrophs lack cellulose in their cell wall & contain a chemical found in skeleton of arthropods:
a) Cutin b) Lignin c) Pectin d) Chitin

4) The skeleton of Arthropoda is made of:
a) Cellulose b) Chitin c) Polysaccharide d) Lignin

5) Which is absent in fungi?
a) Chlorophyll b) Hyphae c) Glycogen d) Chitin

6) Fungi show a characteristic type of Mitosis called nuclear mitosis. Which one is related to this process?
a) Nuclear envelop does not break
b) Mitosis apparatus is formed within nucleus
c) Nuclear membrane constricts between the two clusters of daughter chromosomes
d) All of these

7) A single mycelium may produce up to a kilometer of new hyphae in only:
a) One day b) Five days c) Fifteen days d) Twenty days

8) How many species of fungi are known till now:
a) 10000 b) 100000 c) 10000000 d) 1000

9) Which of the following group represent pathological fungi?
a) Mushrooms morels and truffles b) Rusts smuts and molds c) Penicillium d) All of these

10) Which one of the following is different from all the rest regarding the number of cells in its body?
a) Rusts b) Mushrooms c) Molds d) Yeasts

11) Root like structure in saprotrophic fungi are called:
a) Rhizoids b) Haustoria c) Hyphae d) Constricting rings

12) According to two kingdom classification fungi were placed in kingdom:
a) Plantae b) Animalia c) Protista d) Fungi

13) Coenocytic hyphae are also known as:
a) Septate b) Perforated hyphae c) Aseptate d) Uninucleate hyphae

14) Unicellular fungi which is non-hyphal is:
a) Mushroom b) Yeast c) Penicillium d) Mold

Nutrition of Fungi

15) The fungi which obtain their food from organic matter are called:
a) Saprotrophs b) Autotrophs c) Heterotrophs d) Parasites

16) **Parasitic fungi directly absorb nutrients from living host cytoplasm by:**
a) Haustoria b) Roots c) Rhizoids d) Gametangia

17) Example of soil dwelling carnivorous fungus is:
a) Arthrobotrys b) Armillaria c) Pleurotus d) Penicillium

18) Arthrobortrys is a/an…….:
a) Carnivorous fungus b) Decomposer c) Symbionts d) Active predator

19) The predatory Oyster mushroom paralyses the following organism:
a) Algae b) Bacteria c) Nematode d) Snails

20) Mutualistic association between certain fungi and roots of vascular plants is:
a) Lichen b) Mycorrhizae c) Arthrobotrys d) None

21) The role of Fungi in Mycorrhizae association to…….:
a) Produce necessary nutrients
b) Increase the absorptive surface of plant roots
c) Provide a substitutes of plant leaves
d) Increase the absorption of plant shoots

22) Most of the visible part of the lichen consists of:
a) Fungi b) Algae c) Roots d) Bacteria

23) These are ecologically important as bio-indicators of air pollution:
a) Lichen b) Mycorrhizae c) Yeasts d) Viruses

24) Reindeer moss is a:
a) Moss b) Mycorrhizae c) Algae d) Lichen

25) One example of Fruticose lichens is:

a) Parmelia b) Basidia c) Lecanor d) Ramalina

26) Those fungi which can grow only on their living host and cannot be grown on available defined growth culture medium e.g. various mildews and most rust species are called:

a) Parasitic fungi b) Obligate parasitic fungi c) Facultative parasitic fungi d) All of these

27) Fungi which get their food directly from dead organic matter are called?

a) Parasitic fungi b) Predators c) Mutualists d) Decomposers

28) Oyster mushroom is an example of predator fungi which attack on:

a) Pin warms b) Tape worms c) Round worms d) Platyhelminthes

29) Lichen is a symbiotic mutualistic association of fungi with:

a) Autotrophs
b) Roots of vascular plants
c) Green algae and cyanobacterium
d) Leguminous plants

30) Foliose lichen are:

a) Stem like b) Branching c) Leaf like d) Crust like

31) An association in which fungal hyphae penetrate the outer cells of the plant root forming coils swellings and minute branches and also extend out into surrounding soil is called:

a) Mycorrhizae association b) Endomycorrhizae c) Ectomycorrhizae d) Lichen

32) Parasitic fungi absorb nutrients directly from the living host cytoplasm with the help of special hyphal tips called:

a) Mildew b) Constricting ring c) Haustoria d) All of these

33) Constricting ring around nematode is formed by:

a) Arthrobotrys b) Pleurotus ostreatus c) Mildews d) All of these

34) Type of lichen which tightly attaches to rocks is:

a) Parmelia b) Fruticose c) Foliose d) Crustose

35) Mycorrhizae are found in about _____ vascular plants:

a) 90% b) 95% c) 98% d) 96%

36) How many species of ascomycota occur in lichen symbiotic association?

a) 30% b) 40% c) 50% d) 60%

Reproduction in Fungi and Classification of Fungi

37) In fungi, spores are produced inside the reproductive structures called:

a) Conidia b) Sporangia c) Basidia d) Ascocarps

38) Following structures are associated with asexual reproduction in fungi:

a) Ascospores b) Basidiospores c) Zygospores d) Conidia

39) Which of the following statement is incorrect about asexual reproduction by spores in fungi?

a) Spores are haploid structures
b) They are dispersed via wind water and insects
c) On falling to a suitable place they germinate
d) These are produced through fruiting bodies like ascocarps and basidiocarps

40) Simple breaking of mycelium resulting in formation of a new mycelium from each broken segments is called:

a) Sporing b) Conidiation c) Budding d) Fragmentation

41) Rhizopus belong to which of the following groups:

a) Ascomycota b) Deuteromycota c) Zygomycota d) Basidiomycota

42) In ascomycetes, each ascus comprises Ascospores:

a) 4 b) 8 c) 12 d) 3

43) Which fungi phylum has septate, dikaryotic hyphae & produce sexual spores by meiosis inside sac-like structure?

a) Zygomycota b) Ascomycota c) Basidiomycota d) Deuteromycota

44) Unicellular yeasts fungi reproduce asexually by:

a) Zygospores b) Conidia c) Spore formation d) Budding

45) Yeast are unicellular:

a) Protists b) Protozoans c) Algae d) Fungi

46) Members are Basidiomycota are commonly called:

a) Spitting fungi b) Morels c) Mushrooms d) Molds

47) The most common smut fungi are:

a) Ustilago b) Puccinia c) Penicillium d) Yeast

48) Ustilago specie is most common:

a) Rust fungi b) Smut fungi c) Yeast d) Mold

49) Rust disease is caused by:

a) Puccinia b) Aspergillus c) Yeast d) Ustilago

50) Rust fungi belong to genus:

a) Ustilago b) Aspergillus c) Puccinia d) Yeasts

51) Loose smut of wheat is caused by:

a) Ustilago b) Aspergillus c) Puccinia d) Yeast

52) The imperfect fungi is also called:

a) Basidiomycetes b) Basidiospores c) Deuteromycota d) Ascomyctes

53) Sexual reproduction is absent in:

a) Deuteromycota b) Basidiomycota c) Ascomycota d) Zygomycota

54) In which phylum has the sexual phase not been observed:

a) Ascomycota b) Deuteromycota c) Basidiomycota d) Zygomycota

55) In general asexual reproduction is common in:

a) Human b) Deuteromycota c) Basidiomycota d) Basidiospores

56) Branched and septate mycelium of penicillium containing spores at the tips, What is the name given to these spores:

a) Asci b) Conidia c) Basidia d) Zygospores

57) Alternaria is an example of:

a) Zygomycota b) Ascomycota c) Basidiomycota d) Deuteromycota

58) Brush like arrangement of conidia is found in:

a) Mushrooms b) Ustilago c) Penicillium d) Yeast

Land adaptation of Fungi

59) Fungi can tolerate a wide range of pH from:

a) 2-9 b) 3-10 c) 4-11 d) 1-13

Beneficial effect of Fungi

60) Ecological role of fungi as decomposers is parallel only by:

a) Arthropod b) Bacteria c) Algae d) Bryophytes

61) Second to fungi as decomposers are:

a) Diatoms b) Red algae c) Bacteria d) Euglena

62) Principal decomposers of cellulose and lignin are:

a) Bacteria b) Viruses c) Fungi d) Protozoans

63) Reindeer moss is:

a) Moss b) Fungi c) Lichen d) Algae

64) The number of edible mushroom species are about:

a) 100 b) 200 c) 300 d) 400

65) The deadly poisonous fungus is:

a) Agaricus b) Armillaria c) Morchella d) Amanita

66) Poisonous mushrooms are called:

a) Truffles b) Morels c) Toad stools d) Agaricus

67) Which one of the following fungus is non-edible:

a) Mushrooms b) Morels c) Toad stools d) Truffles

68) First discovered antibiotics is:

a) Lovastatin b) Cyclosporine c) Penicillin d) Ergotine

69) Lovastatin is medicine obtained from a fungus. It is used for …….:

a) Sino-Ventricular node
b) Relieving Migraine
c) Lowering blood cholesterol
d) Inhibiting fungi growth

70) Which one of the following is used lowering blood cholesterol?

a) Griseofulvin b) Penicillin c) Cyclosporine d) Lovastatin

71) Lovastatin is fungal product which lowers the blood:

a) Sugar b) Urea c) Ca^{++} d) Cholesterol

72) Which is used to inhibit fungal growth?

a) Lovastatin b) Cyclosporine c) Griseofulvin d) Ergotin

73) Antibiotics obtained from soil fungus and used in organic transplantation for preventing tissue rejection is:

a) Griseofulvin b) Penicillin c) Cuclosphorine d) Lovastatin

74) Chemical, citric acid is also obtained from some species of fungi called:

a) Agaricus b) Aspergillus c) Yeast d) Penicillium

75) Which is used to give flavor, aroma and characteristics color to the cheese?

a) Penicillium b) Aspergillus c) Yeast d) Neurospora

76) Which of the following types of fungi is used in the production of bread and liquor?

a) Penicillium b) Yeast c) Neurospora d) Aspergillus

77) Saccharomyces cervicae is the most exploited:

a) Rust b) Brown mold c) Green mold d) Yeast

78) The Kingdom of recyclers is known as kingdom:

a) Algae b) Bacteria c) Fungi d) Embryophata

79) Ecological role of fungi as decomposers is only paralleled by:

a) Cyanobacteria b) Blue green algae c) Bacteria d) Virus

Harmful effects of Fungi

80) The disease cause by fungus is:

a) Ring worm b) Tetanus c) Polio d) Small pox

81) Histoplasmosis is a disease of:

a) Eyes b) Stomach c) Lungs d) None

82) Carcinogenic mycotoxins called aflatoxins are produced by:

a) Aspergillus b) Penicillium c) Neurospora d) Ustilago

83) Which of the following is a not symptom of Ergotsim?

a) Convulsion b) Psychotic delusion c) Gangrene d) Indigestion

Answer Key:

1	b	**2**	c	**3**	d	**4**	b	**5**	a	**6**	d	**7**	a	**8**	b	**9**	b	**10**	d
11	a	**12**	a	**13**	c	**14**	b	**15**	a	**16**	a	**17**	a	**18**	d	**19**	c	**20**	b
21	b	**22**	a	**23**	a	**24**	d	**25**	d	**26**	b	**27**	d	**28**	c	**29**	c	**30**	c
31	c	**32**	c	**33**	a	**34**	d	**35**	b	**36**	c	**37**	c	**38**	d	**39**	d	**40**	d
41	c	**42**	b	**43**	b	**44**	d	**45**	d	**46**	c	**47**	a	**48**	b	**49**	a	**50**	c
51	a	**52**	c	**53**	a	**54**	b	**55**	b	**56**	b	**57**	d	**58**	c	**59**	a	**60**	b
61	c	**62**	c	**63**	c	**64**	b	**65**	d	**66**	b	**67**	c	**68**	c	**69**	c	**70**	d
71	d	**72**	c	**73**	c	**74**	b	**75**	a	**76**	b	**77**	d	**78**	c	**79**	c	**80**	a
81	c	**82**	a	**83**	d														

MDCAT MCQ's

pakcity.org

2008

1) **In general, asexual reproduction is common in:**
   a) Humans b) Deuteromycota c) Basidiomycota d) Basidiospores
2) **Which of the following is used for lowering blood cholesterol?**
   a) Neurospora b) Aspergillus c) Griseofulvin d) Lovastatin
3) **Name the nutrition resulted by feeding on dead and decaying matter:**
   a) Saprophytic b) Symbiotic. c) Parasitic d) Both b & c

2009

4) **Name the nutrition resulted by feeding on dead and decaying matter:**
   a) Saprophytic b) Symbiotic c) Parasitic d) Both b & c
5) **Which of the following components is less resistant to decay?**
   a) Lignin b) Chitin c) Starch d) Cellulose
6) **_____ are bio indicators of air pollution:**
   a) Cyanobacteria b) Mycorrhiza c) Fungi d) Lichens

2010

7) **Drug obtained from fungus used for lowing blood cholesterol is:**
   a) Lovastatin b) Ergotin c) Cyclosporine d) Griseofulvin
8) **Fungi store surplus food in the form of:**
   a) Cellulose b) Starch c) Glycogen d) Both b & c
9) **The ecological role of fungi as decomposers is paralleled only by:**
   a) Prions b) Bacteria c) Algae d) Viruses

2011

10) **Which of the following component is found in the cell wall of fungi?**
   a) Cellulose b) Proteins c) Chitin d) Glycerol
11) **Bacteria and fungi are examples of:**
   a) Producers b) Consumers c) Decomposers d) Denvers

2013

12) **Antibiotics are produced by fungi and certain bacteria of group:**
   a) Actinomycetes b) Ascomycetes c) Oomycetes d) Basidiomycetes
13) **Fungi which cause thrush in humans:**
   a) Sarcomeres b) Lovastatin c) Candidiasis d) Aspergillus

2014

14) **Athlete's Foot is a disease caused by:**
   a) Bacteria b) Fungus c) Virus d) Arthropod

2015

15) **In rhizopus, zygote forms temporary, dormant, thick-walled resistant structure called:**
   a) Zygospore b) Sporangia c) Spore d) Hydra

2017

16) **Chitin, a chemical found in exoskeleton of arthropods is also found in cell wall of:**
   a) Bacteria b) Cyanobacteria c) Fungi d) Algae

Answer Key:

1	b	**2**	d	**3**	a	**4**	a	**5**	b	**6**	d	**7**	a	**8**	c	**9**	b	**10**	c
11	c	**12**	a	**13**	c	**14**	b	**15**	a	**16**	c								

Exercise Short Answers

Q:1 What are Hyphae? What is the advantage of having incomplete septa?

Ans. Hyphae:

Mycelium consists of long slender, branched, tubular, thread like filaments called hyphae.

- Hyphae spread extensively over the surface of substratum.
- Their cell walls are composed of chitin, so their wall is highly resistant to decay.
- Hyphae may be septate or non-septate.

Advantage of having incomplete Septa:

Cytoplasm flow from cell to cell, carrying the materials to growing tips and enabling the hyphae to grow rapidly when food and water are abundant and temperature is favorable.

Q:2 What is the composition of fungal cell wall and how it is this composition advantageous to fungi?

Ans: Composition of fungal cell wall:

Fungal cell walls are composed of chitin. It is advantageous because it is more resistant to decay than cellulose and lignin which make up plant cell wall.

Q:3 To which phyla do the yeasts belong? How they differ from other fungi?

Ans: Yeasts are unicellular microscopic fungi, derived from all the three different groups of fungi but mostly Ascomycetes, and reproducing mostly asexually by budding. However, yeasts reproduce sexually by forming asci / ascospores or basidia / basidiospores. They ferment carbohydrate to ethanol and carbon dioxide. They are non-hyphal.

Q:4 Name sexual and asexual spores of ascomycetes.

Ans: Sexual spores of Ascomycetes are Ascospores and asexual spores of Ascospores are called conidia.

Q:5 What are mycorrhizae?

Ans: Mycorrhizae:

Mycorrhizae are mutualistic association between certain fungi and roots of vascular plants.

- The fungal hyphae dramatically increase the amount of soil contact and the total surface area for absorption and help in the direct absorption of phosphorus, zinc, copper and other nutrients from the soil into the roots. Such plants show better growth than those without this association. The plant, on the other hand, supplies organic carbon to fungal hyphae.

Q:6 By what means can individuals in imperfect fungi be classified?

Ans: Individuals in imperfect fungi can be classified on the basis of DNA sequence, though sexual structures may not be found.

Q:7 Give a single characteristic that differentiates Zygomycota from Basidiomycota.

Ans: In Zygomycota, non-septate, multinucleate hyphae are present while in Basidiomycota, septate dikaryotic hyphae are found.

Q:8 Why is green mold more likely to contaminate an orange kept in refrigerator than the bacteria?

Ans: Fungi can tolerate temperature extremes 5-6 C below freezing and hence are more likely to contaminate an orange kept in a refrigerator than the bacteria.

Q:9 What is a Fungus?

Ans: Fungus:

A fungus is eukaryotic heterotrophic, spore bearing usually filamentous plant like organisms without chlorophyll having also absorptive mode of nutrition. Yeasts are unicellular fungi.

Q:10 State two paralleled characteristic of ascomycete and Basidiomycetes.

Ans: Paralleled characteristic of ascomycete and Basidiomycetes:

- Septate hyphae
- Both produce haploid sexual spores
- Lengthy dikaryotic phase

Important Short Answers

Q:1 Write two similarities and dissimilarities of plants with fungi?

Ans: Fungi resemble plants in some respects i.e.

1) They have cell wall.
2) They lack centrioles and are non-motile.

Fungi differ from plants as:

1) Fungi are heterotrophs.
2) They lack cellulose in their cell walls and contain chitin.

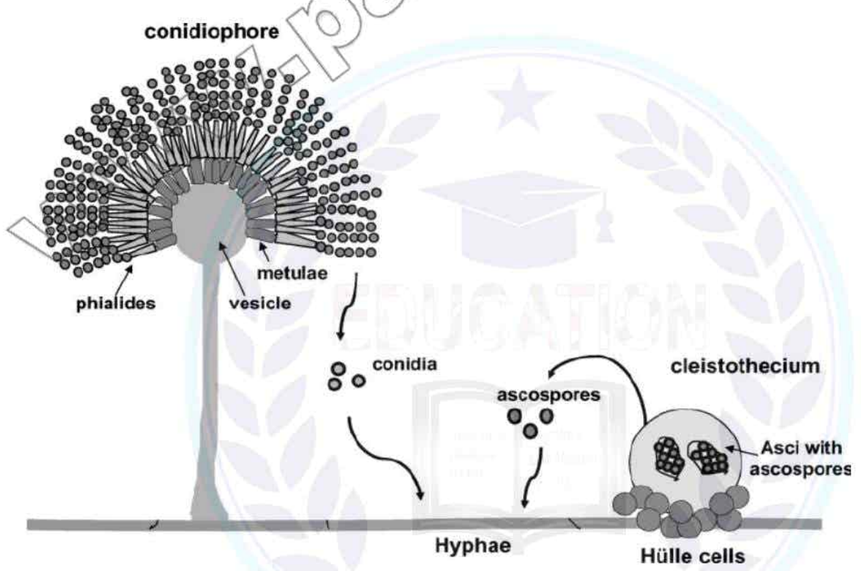
Q:2 How fungi gets its nutrients?

Ans: Nutrition in Fungi:

1) Most fungi are decomposers i.e., obtain food from dead organisms. e.g., Yeast, Agaricus.
2) Some fungi are parasites i.e., obtain food from living host. e.g., rust and smut.
3) Some are predators e.g. Arthrobotrys.

Q:3 Differentiate between the members of Spore and Conidia.

Spore	Conidia
• These are small, haploid and non-motile structures covered by hard wall.	• Conidia are naked, non-motile, asexual spores which are cut off at the end of modified hyphae called conidiophores.
• Spores are produced inside the reproductive structures called sporangia	• Conidia are not produced inside the sporangium.
• The hyphae on which sporangium of spores is produced is called sporangium.	• The hyphae on which conidia are cut off is called conidiophores.
• These are produced in Zygomycota.	• These are produced in Aschomycota, Zygomycota and Deuteromycota.



Q:4 Differentiate between Lichen and Mycorrhizae.

Lichen	Mycorrhizae
• Lichen is a mutualistic association between fungi and certain photoautotrophs like algae or blue, green algae.	• Mycorrhizae are mutualistic association between certain fungi and roots of vascular plants.
• In lichens, algae prepare food and fungi absorb water and other nutrients.	• Plants prepare food. Fungi help in plants in absorption of water and minerals.
• Lichens grow at harsh places like bare rock. Algae or fungi cannot grow alone in such places.	• Such plants how better growth than the plants without this association.
• It is found above the soil.	• It is found below the soil.

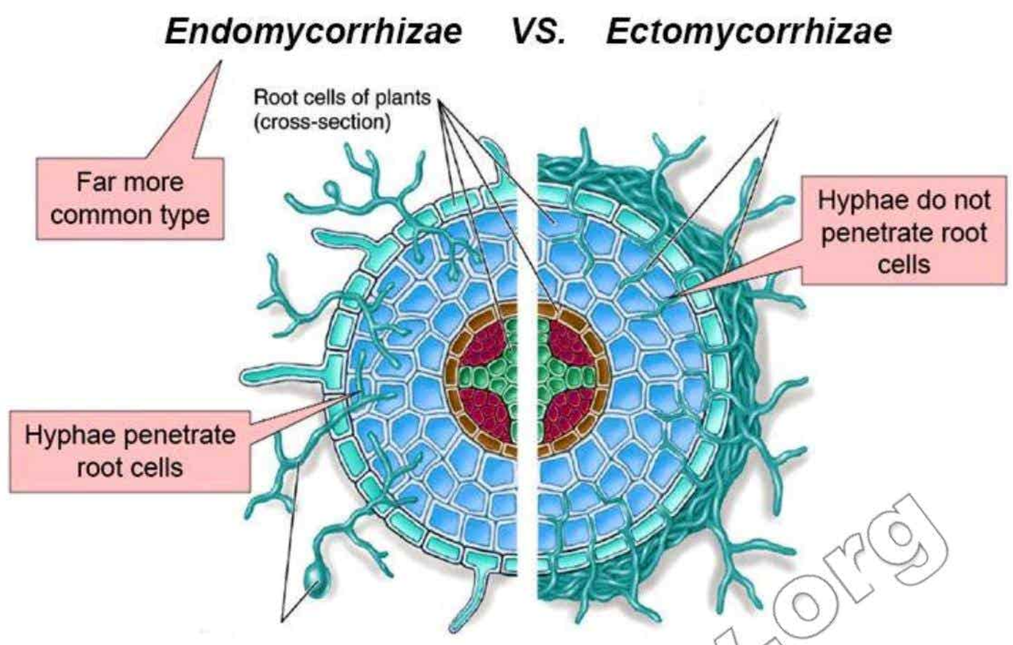
Q:5 Differentiate between Rust and Smut.

Rust	Smut
• They release brick or rust red spores (that's why they are named so).	• They produce black dusty mass of spores (that's why they are named so).

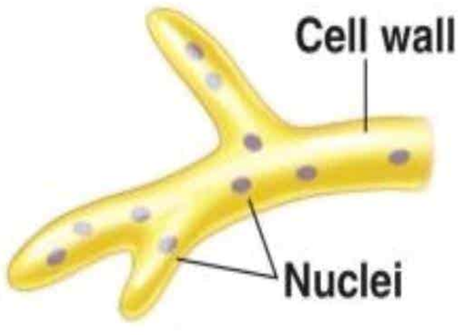
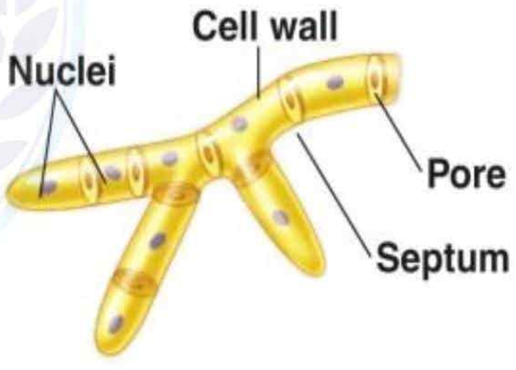
• It attacks the plants surface like stem and leaves.	• It attacks the flower and kernel of seed of wheat.
• Puccinia species is most common rust fungi.	• Ustilago species are most common smut fungi.

Q:6 Differentiate between the members of Endomycorrhizae / Ectomycorrhizae.

Endomycorrhizae	Ectomycorrhizae
• Fungal hyphae penetrate the outer cells of the plant root.	• The fungal hyphae do not penetrate the cell walls of the roots.
• The fungal hyphae forming coils, swellings and minute branches.	• The fungal hyphae simply grow around and extend between the cells.
• These are mostly formed with angiosperms etc.	• These are mostly formed with pines, firs etc.



Q:7 Differentiate between Coenocytes/ Non-septate Hyphae and Septate Hyphae.

Coenocytes/ Non-septate Hyphae	Septate Hyphae
• Coencytic hyphae lack septa or cross walls.	• Hyphae are divided by cross walls called septa.
• Hyphae are in the form of an elongated multinucleated large cell.	• Hyphae are separated into individual cells containing one or more nuclei.
• In such hyphae cytoplasm moves effectively, distributing the materials throughout.	• In such hyphae, septa have pores but cytoplasm does not move so effectively.
	

Q:8 Differentiate between the members of Plasmogamy and Karyogamy.

Plasmogamy	Karyogamy
• The fusion of cytoplasm is called plasmogamy.	• The fusion of nuclei is called karyogamy.
• It occurs first in sexual reproduction of fungi.	• It occurs after plasmogamy in sexual reproduction of fungi.
• Plasmogamy is the first step of syngamy in fungi.	• Karyogamy is the second step in syngamy of fungi.
• Karyogamy is the second step in syngamy of fungi.	• Karyogamy produces a cell containing a diploid nucleus.
• Plasmogamy generates a cell containing two haploid nuclei.	• Karyogamy generates a cell containing a single diploid nucleus.
• Plasmogamy is followed by karyogamy.	• Karyogamy is followed by meiosis.

Q:9 Differentiate between the members of Obligate parasite and Facultative parasite.

Obligate parasite	Facultative parasite
• Obligate parasites can grow only on their living host and cannot be grown on available defined growth culture medium	• Facultative parasite can grow parasitically on their host as well as by themselves on artificial growth media
• Example: Various mildews and most rust species.	• Example: Aspergillus species.

Q:10 Enlist four plant and four animal diseases caused by fungi.

Plant diseases	Animal diseases
• Rusts • Smuts • Powdery mildews • Potato wilt • Apple scab • Brown rot of peaches, plums, apricots and cherries	• Ringworm • Aspergillosis • Histoplasmosis • Oral and vaginal thrush • Candidosis • Ergotism

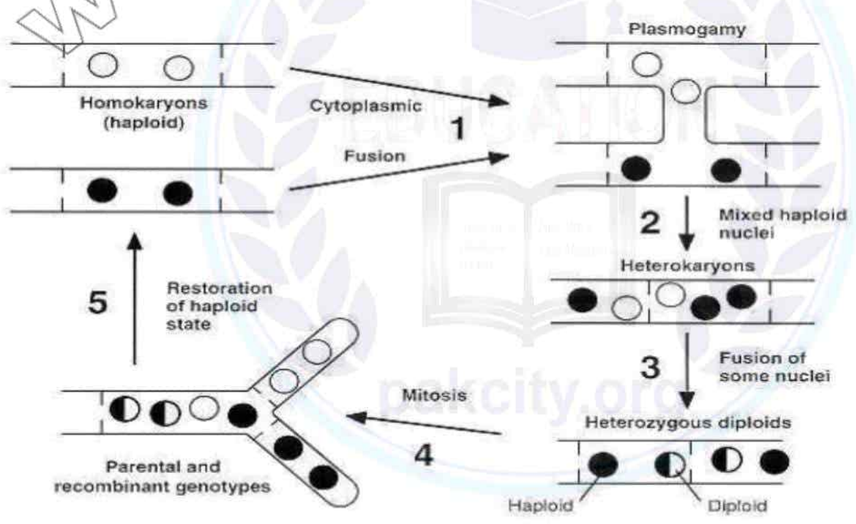
Q:11 Name and write functions of any four antibiotics obtained from fungi.

1	**Penicillin**	It is used against sore throat and other fevers.
2	**Lovastatin**	It is used for lowering blood cholesterol.
3	**Cyclosporine**	It is obtained from a soil fungus is used in organ transplantation for preventing transplant reaction.
4	**Ergotine**	It is used to relieve one kind of headache migraine.
5	**Griseofulvin**	It is used to inhibit fungal growth.

Q:12 What is paraexuality?

Ans: Parasexuality: The exchange of portion of chromosomes of two nuclei lying in the same hypha is called parasexuality.

- Despite absence of sexual reproduction imperfect fungi (deutromycetes) show parasexuality.



Q:13 What are Lichens? Give their importance.

Ans: Lichens: Lichen is a mutualistic association between fungi and certain photoautotrophs like algae or blue, green algae.

- Fungus protects the algae partner from strong light and desiccation and itself gets food through the courtesy of algae.
- They are ecologically very important as bio indicators of air pollution.
- These growing on,, rocks break them, setting stage for other organisms during the course of ecological succession.
- Some fungi are also used for bioremediation (degrading removing environmental poisons/ pollutants by organisms).

Q:14 Define nuclear mitosis in fungi.

Ans: Nuclear Mitosis in Fungi: During nuclear mitosis nuclear envelope does not break instead the mitotic spindle forms within the nucleus and the nuclear membrane constricts between the two clusters of daughter chromosomes. In some fungi nuclear envelope dismantles late.

Q:15 What is histoplasmosis and what is its cause?

Ans: Histoplasmosis: It is a serious infection of lungs.

- It is caused by inhaling spores of a fungus which is common in soil contaminated with bird's feces.
- If infection spreads into blood stream and then to other organs (which is very occasional), it can be serious and even fatal.

Q:16 Name methods of Asexual Reproduction in Fungi.

Ans: Methods of Asexual Reproduction:

1) Spores
2) Conidia
3) Fragmentation
4) Budding

Q:17 Name most commonly exploited yeast and explain the common method of sexual reproduction in yeast.

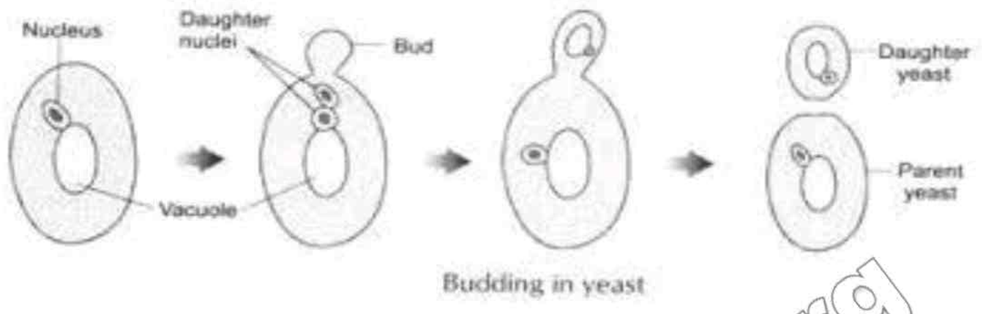
Ans: ***Saccharomyces cerevisiae*** is the most commonly exploited yeast.

- Yeast (*Saccharomyces cerevisiae*) is used in the production of bread and liquor (Fermenting ability).
- Yeast reproduces by budding and conidia formation.

Q: 18 What is budding in Fungi?

Ans. Budding: Budding is an asexual process of reproduction in which an outgrowth or bud is produced which may separate and grow by simple relatively equal cell division.

- Yeast multiply by budding. In yeast a cell becomes swollen at one edge, and a new smaller cell called a bud develops from the parent cell and breaks free to live independently.



Budding in yeast

Q:19 What is Carnivorous fungus? Give example.

Ans: Carnivorous Fungus:

The fungus which obtains its food by digesting and then absorbing the contents of worms to fulfil their nitrogen requirements is called carnivorous fungus.

Examples:

a) ***Pleurotus ostreatus*** **(Oyster Mushroom):**
It paralyses the nematodes (that feed on this fungus) penetrate them, and absorb their nutritional contents, primarily to fulfil its nitrogen requirements. It fulfils its glucose requirements by breaking the wood.
b) Arthrobotrys spp.: some species of *Arthrobotrys spp*. Trap soil nematodes by forming constricting rings. Their hyphae invade and digest the nematodes.
c) Other Predator Fungi: Other predator fungi have other adaptations such as secretion of sticky substances.

Q:20 What are Aflatoxins?

Ans: Aflatoxins: Aflatoxins are potent mycotoxins (poisonous compound by fungi) produced by ***Aspergillus flavus***, a deuteromycete.

- Agriculture products on which aflatoxin-producing fungi commonly grow include peanuts, grains, cereals, sweet potatoes, corn, rice and animal feed.
- Other foods that may contain traces of aflatoxins include animal products such as milk, eggs, and meat (from animals that consumed feed contaminated by aflatoxin).
- Aflatoxins deposited in foods and ingested by humans are thought to be carcinogenic, especially in the liver.
- Any human or animal forage product that has become moldy should be suspected of aflatoxin contamination and discarded.

Q:21 What are saprotrophs?

Ans: Saprotrophs: Organisms that obtain energy by the decomposition of dead organic material are called Saprotrophs.

- These are heterotrophic organisms that secrete digestive enzymes into their surroundings, break down dead organic material externally and then absorb back the organic molecules produced by this external digestion into their body. They use decomposition products as a source of energy.

Q:22 Give the causes and symptoms of Ergotism.

Ans: Causes of Ergotism:

Ergotism is caused by a powerful mycotoxin produced by *Clavicepes purpurae*, an ascomycete. The fungus infects the flower of rye pants and other cereals. The fungus replaces the seed with its own sclorita or resting bodies known as ergots which contain alkaloids. When livestock eat this grain or when human eat bread made from ergot contaminated rye flour,, they may be poisoned by extremely toxic substances in the ergot.

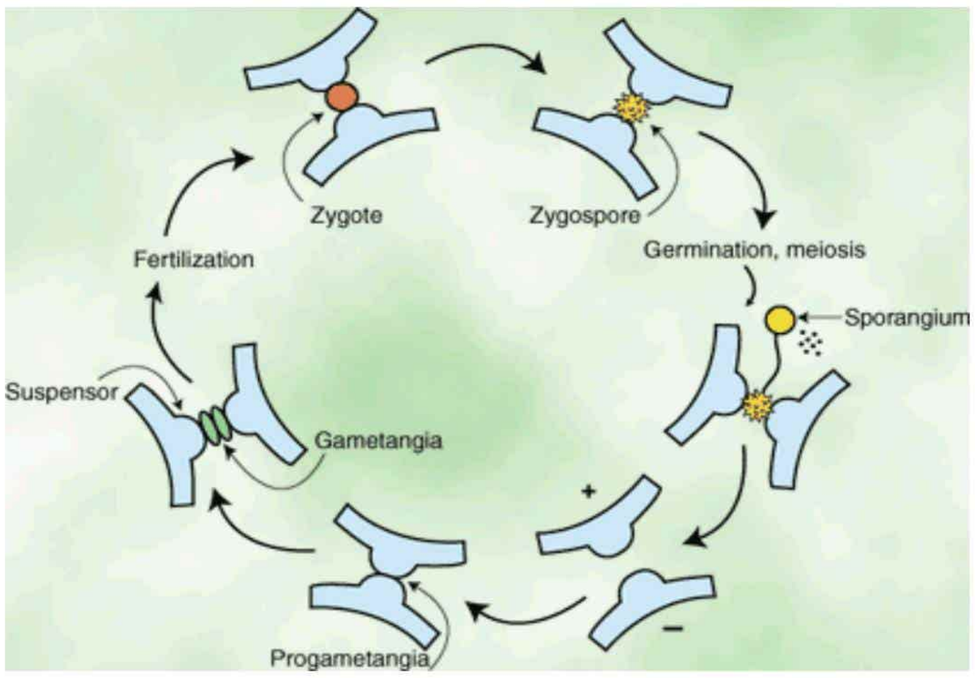
Symptoms of Ergotism:

Symptoms include nervous spasm, convulsion, psychotic delusion and even gangrene.

Q:23 How sexual reproduction occurs in zygomycota?

Ans: Sexual reproduction in Zygomycota:

- Zygote is formed directly by the fusion of hyphae.
- Zygote forms temporary, dormant, thick walled structure called zygospore.
- Meiosis takes place when zygosopre germinates and haploid spores are produced.
- Spores on germination produce new mycelium.



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Q:24 write economic importance of Fungi.

Ans: Fungi cause economic gains or losses.

Economic gains:

- Some fungi are used in food industry such as Yeasts, Penicillium aspergillus etc.
- Some fungi are source antibiotics and other drugs.
- Some fungi are used in genetic and molecular biological research.

Economic loses:

- Fungi are responsible for many serious plant diseases, including powdery mildews, ergot of rye, red rot of sugar cane etc.
- Fungi also cause certain animal diseases such as Ringworm, athlete's foot, histoplasmosis, aspergillosis etc.
- They also do incalculable damage to food, wood, fiber and leather by decomposing them.