

华中农业大学二00九年硕士研究生入学考试

试题纸

课程名称：⁶³教育学（含中国教育史） 第1页 共2页

注意：所有答案必须写在答题本上，不得写在试题纸上，否则无效

一、专业术语解释（3.5分×12=42分）

1. 教育的质的规定性；
2. 义务教育；
3. 教育目的的价值取向；
4. 我国教育目的的基本点；
5. 1922年的“新学制”；
6. 教学方法；
7. 班级授课制；
8. 德育的功能；
9. 有教无类；
10. 孟子的“性善论”；
11. 《学记》；
12. 韩愈的“性三品”说

二、判断题（判断对错并改正）（3分×6=18分）

1. 夸美纽斯的《普通教育学》标志着教育学开始成为一门独立的学科。
2. 教育目的受一定的生产关系和以这种生产关系为基础的政治观点、政治设施的影响。
3. 1904年清政府颁布了癸卯学制，这个学制是以美国的学制为蓝本。
4. 赞可夫提出了教学过程最优化理论。
5. 问题—发现教学法，是指在教师引导下，学生通过对问题的独立研究来发现、获取知识的教学方法。
6. “中体西用”的思想主要是张之洞在《西学》中阐述完善的。

三、简答题（8分×5=40分）

1. 教育在人的发展中的作用。
2. 形式教育论和实质教育论对课程论的影响。
3. 简述德育的过程。
4. 朱熹论读书法。
5. 蔡元培“五育”并举的教育方针。

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课程名称：⁶¹³教育学（含中国教育史） 第2页 共2页

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四、论述题（共50分）

1. 结合实际，谈谈教育与政治、经济制度的关系和教育的独立性之间的辩证关系。（12分）
2. 有人说目前我国高等教育出现质量“滑坡”问题主要是由于近几年的高等教育扩招导致的，你是否同意该观点，结合实际谈谈你的观点。（18分）
3. 评述陶行知“生活教育”理论的基本内容及其现实意义。（20分）

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课程名称: 614 微生物学

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一. 填空题 (共 15 分, 每题 1 分)

1. Enrichment culture is a method for isolating microorganisms from nature using specific _____ and incubation conditions
2. Eukaryote is a cell possessing a membrane-enclosed _____ and usually other organelles
3. Chemotaxis means the movement of an organism _____ a chemical gradient
4. A gel-like region between the outer surface of the cytoplasmic membrane and the inner surface of the lipopolysaccharide layer of gram-negative bacteria is called _____
5. A culture medium composed of digests of chemically undefined substances such as yeast and meat extracts is called _____ medium
6. Anaerobic catabolism in which an organic compound serves as both an electron donor and an electron acceptor and in which ATP is produced by substrate-level phosphorylation is a process called _____
7. Actinomycetes are _____ bacteria. The best-known genus of actinomycetes is _____.
8. phototrophic bacteria comprise a large and morphologically heterogeneous group of _____
9. All fungi are _____, requiring organic compounds for energy and carbon. Fungi are _____ or facultatively _____
10. Bacteria can be divided into two groups, _____ and _____
11. _____ are microorganisms that obtain their energy to synthesize organic compounds from light.
12. A medium where the ingredients are known is called a _____ medium
13. Bacteria that are not able to grow without oxygen are called _____
14. The portion of the mycelium concerned with obtaining nutrients is called the _____ mycelium; the portion concerned with reproduction is the _____ or _____ mycelium.
15. Pili function to join bacterial cells prior to the transfer of DNA from one cell to another. For this reason, they are sometimes also called _____ pili.

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二. 选择题 (共 40 分, 每题 1 分)

- The process of DNA replication is best described by which of the following:
 - DNA replication begins on both strands and proceeds in opposite directions as the strands unwind
 - DNA replication begins on both strands and proceeds in the same direction as the strands unwind
 - DNA replication begins on one strand and proceeds until completion before replication of the other strand
 - DNA replication occurs by copying only one daughter strand from the DNA molecule
- Autotrophs can be differentiated from heterotrophs since autotrophs use which of the following as a carbon source?
 - CH₄
 - CO₂
 - CH₃OH
 - CO
- Pili are tubular shafts in bacteria that serve as a means of
 - gram-positive, genetic exchange
 - gram-positive, attachment
 - gram-negative, genetic exchange
 - gram-negative, protection
- Which of the following is present in both gram-positive and gram-negative cell walls?
 - an outer membrane
 - peptidoglycan
 - teichoic acid
 - lipopolysaccharides
- Which of the following bacteria are capable of fixing inorganic nitrogen?
 - Rhizopus
 - Pseudomonas
 - Acinetobacter
 - Rhizobium
- Yeasts are ___ fungi, and molds are ___ fungi.
 - macroscopic, microscopic
 - unicellular, filamentous
 - motile, nonmotile
 - water, terrestrial
- A bacterial arrangement in packets of eight cells is described as a ___
 - micrococcus
 - tetrad
 - diplococcus
 - sarcina
- Both flagella and cilia are found primarily in
 - algae
 - fungi
 - protozoa
 - both b and c
- In general, if two haploid cells fuse, ___ will result.

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- a. a germ cell
b. a diploid zygote
- c. mitosis
d. Meiosis
10. The cell wall is found in which eucaryotes?
a. fungi
b. algae
c. protozoa
d. a and b
11. UV light induces mutations by:
a. causing breaks in the DNA chain allowing for the substitution of additional bases
b. causes links between thymidine molecules on the same DNA chain
c. causes links between thymidine molecules on different DNA chains
d. causes an increase in melanin in the skin
12. In general, fungi derive nutrients through
a. photosynthesis
b. engulfing bacteria
c. digesting organic substrates
d. parasitism
13. A hypha divided into compartments by cross walls is called
a. nonseptate
b. imperfect
c. septate
d. perfect
14. A conidium is a/an ___ spore, and a zygosporangium is a/an ___ spore.
a. sexual, asexual
b. free, endo
c. ascomycete, basidiomycete
d. asexual, sexual
15. Extrachromosomal elements that can be exchanged between bacteria are called:
a. transposons
b. plasmids
c. alleles
d. probes
16. Viruses are known to infect
a. plants
b. bacteria
c. fungi
d. all organisms
17. Fermentation and respiratory metabolism differ in the amount of ATP that is produced and in the nature of the terminal electron acceptor. Fermentation uses which of the following as an electron acceptor?
a. O₂
b. nitrate molecules
c. organic molecules
d. sulfate molecules
18. The envelope of an animal virus is derived from the ___ of its host cell.
a. cell wall
c. glycocalyx

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- b. cell membrane
d. receptors
19. The nucleic acid of a virus is
a. DNA only
b. RNA only
c. both DNA and RNA
d. either DNA or RNA
20. A prophage is an early stage in the development of a/an
a. bacterial virus
c. lytic virus
b. poxvirus
d. enveloped virus
21. Viruses cannot be cultivated in
a. tissue culture
c. live mammals
b. bird embryos
d. blood agar
22. An organic nutrient essential to an organism's metabolism that cannot be synthesized itself is termed a/an
a. trace element
c. growth factor
b. micronutrient
d. essential nutrient
23. The source of the necessary elements of life is
a. an inorganic environmental reservoir
b. the sun
c. rocks
d. the air
24. Bacterial genes are considered:
a. homozygous
b. heterozygous
c. diploid
d. haploid
25. An obligate halophile requires high
a. pH
c. salt
b. temperature
d. pressure
26. Chemoautotrophs can survive on alone.
a. minerals
c. minerals and CO₂
b. CO₂
d. methane
27. Which of the following statements is true for all organisms?
a. they require organic nutrients
b. they require inorganic nutrients
c. they require growth factors
d. they require oxygen gas
28. A pathogen would most accurately be described as a
a. parasite
c. saprobe
b. commensal
d. symbiont

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29. A cell exposed to a hypertonic environment will ___ by osmosis.
- a. gain water
b. lose water
c. neither gain nor lose water
d. burst
30. Active transport of a substance across a membrane requires
- a. a gradient
b. the expenditure of ATP
c. water
d. Diffusion
31. ___ is another term for biosynthesis.
- a. catabolism
b. anabolism
c. metabolism
d. catalyst
32. Catabolism is a form of metabolism in which ___ molecules are converted into ___ molecules.
- a. large, small
b. small, large
c. amino acid, protein
d. food, storage
33. An enzyme ___ the activation energy required for a chemical reaction.
- a. increases
b. converts
c. lowers
d. catalyzes
34. To digest cellulose in its environment, a fungus produces a/an
- a. endoenzyme
b. exoenzyme
c. catalase
d. polymerase
35. What is the smallest unit of heredity?
- a. chromosome
b. gene
c. codon
d. nucleotide
36. A nucleotide contains which of the following?
- a. 5 C sugar
b. nitrogen base
c. phosphate
d. b and c only
e. all of these
37. DNA replication is semiconservative because the ___ strand will become half of the ___ molecule.
- a. RNA, DNA
b. template, finished
c. sense, mRNA
d. codon, anticodon
38. Messenger RNA is formed by ___ of a gene on the DNA template strand.
- a. transcription
b. replication
c. translation
d. transformation

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39. For mutations to have an effect on populations of microbes, they must be

- a. inheritable
- b. permanent
- c. beneficial
- d. a and b
- e. all of the above

40. Which of the following characteristics is not true of a plasmid?

- a. It is a circular piece of DNA.
- b. It is required for normal cell function.
- c. It is found in bacteria.
- d. It can be transferred from cell to cell.

三. 连线题 (共 17 分)

Matching 1 (5 分)

- | | |
|---|--------------------|
| 1. Primary stain for gram stain | a. Negative stain |
| 2. Stains <i>Bacillus</i> cell | b. Carbohl fuchsin |
| 3. Used to fix stain | c. Crystal violet |
| 4. Decolorizer | d. Malachite green |
| 5. Spore stain | e. Safranin |
| 6. Acid-fast stain | f. Positive stain |
| 7. Gram- bacteria take up this counterstain | g. Alcohol |
| 8. Stains background | h. Mordant |

Matching 2 (letters may be used more than once) (10 分)

- | | |
|-------------------------|------------------------|
| 1. prokaryotes | a. hook and basal body |
| 2. eukaryotes | b. end of cell |
| 3. hydrophobic | c. microtubles |
| 4. hydrophilic | d. pill |
| 5. permease | e. eukaryotes |
| 6. eubacteria | f. surrounding cell |
| 7. archeobacteria | g. 9 + 2 arrangement |
| 8. cellulose | h. prokaryotes |
| 9. chitin | i. fatty acid |
| 10. circular chromosome | j. algae |
| 11. linear chromosome | k. transport protein |
| 12. 70 S ribosomes | l. lack organelles |
| 13. 80 S ribosomes | m. posses nucleus |

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- | | |
|---------------------------|------------------|
| 14. polar flagella | n. water loving |
| 15. peritrichous flagella | o. fungi |
| 16. bacterial flagella | p. L-amino acids |
| 17. eukaryotic flagella | q. D-amino acids |
| 18. fimbria | |
| 19. cilia | |
| 20. cytoskeleton | |

Matching 3 (2分)

Genetic exchange in bacteria occurs by three mechanisms. Match the following:

- | | |
|-------------------|--------------------------------|
| 1. transduction | a. exchange of free DNA |
| 2. transformation | b. exchange of DNA by a vector |
| 3. conjugation | c. exchange of DNA by mating |

四. 判断与改错题 (如有错误需改正, 共 13 分, 每题 1 分)

1. Aerobe is a microorganism that grows best, or exclusively, in the absence of oxygen. ()
2. Lipopolysaccharides is present in both gram-positive and gram-negative cell walls. ()
3. An organism that can synthesize all its required organic components from CO₂ using energy from the sun is a Chemoautotrophs. ()
4. Photoautotrophs can survive on CO₂ and water alone. ()
5. A bacterial arrangement in packets of eight cells is described as a micrococcus. ()
6. The process of nitrification by bacteria described by Winogradsky converts nitrate ions to ammonia. ()
7. The generation time for bacteria is determined by measuring the time it takes to double the number of bacteria from exponential phase to the end of stationary phase. ()
8. Alkaline soils are more favorable for the development of Streptomyces than are acid soils. Fungi can be differentiated from most bacteria by culturing at neutral conditions. ()
9. Archaeobacteria include four distinct groups: the methanogenic

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bacteria, extreme thermophilic bacteria, extreme halophilic bacteria and extreme low temperature. ()

10. The BOD is a measure of water quality that measures the level of oxygen consumption in the water. ()

11 Two important precursors in the biosynthesis of cell walls are N-acetylglucosamine and N-acetylmuramic acid.()

12 The major locomotor structures in bacteria are flagella. ()

13 Active transport of a substance across a membrane requires a gradient ()

五. 各词解释 (共 15 分, 每题 3 分)

1. one-step growth curve
2. ammonification
3. temperate phage
4. Chemoautotroph
5. enriched medium

六. 问答题 (共 50 分, 每题 10 分) (提示: 许多问题在回答时, 陈述+图示, 效果会更好)

1. 陈述 (1) G⁺ 和 G⁻ 细菌细胞壁的结构和功能, (2) Gram Staining 的原理和基本操作步骤, (3) 细菌芽孢抗性机制及芽孢形成过程。
2. 陈述 (1) 病毒粒子的基本结构和化学组成, (2) 噬菌体的生活周期和 (3) 亚病毒的类型和特点。
3. 陈述 (1) 微生物培养基的类型和培养基配制原则, (2) 细菌生长曲线及其各阶段的特点 (3) 环境中营养物质进入微生物细胞的主要方式。
4. 陈述 (1) 原核微生物的基因重组的主要方式, (2) 基因工程菌构建原理及基本操作步骤。
5. 根据你掌握的微生物学知识, 请展望微生物在 (1) 污染环境修复中的作用, (2) 新的生物质能源的开发和 (3) 绿色 (环保) 农业的建立中的应用潜力。