單選題 （每題二分，答錯不倒扣）

1. Microorganisms are suitable laboratory subjects of study because of they are:
   (A) microscopic
   (B) fast growing
   (C) highly adaptable
   (D) comparatively simple
   (E) all of these

2. In which field of microbiology is *epidemiology* indispensible?
   (A) industrial microbiology
   (B) food microbiology
   (C) public health microbiology
   (D) dairy microbiology
   (E) agricultural microbiology

3. Iodine is a significant reagent in:
   (A) Gram stain
   (B) disinfectants
   (C) radioactive isotopes
   (D) an antiseptic
   (E) More than one of the above

4. This inoculating tool spills the inoculum into the media being inoculated.
   (A) loop
   (B) needle
   (C) swab
   (D) beaker
   (E) pipette

5. Nutrient broth drawn through unglazed porcelain filters with minimum pore diameter of 200 nm, will bar all of these except:
   (A) *Poxvirus*
   (B) *Rickettsia*
   (C) *Herpes simplex*
   (D) *Streptococcus*
   (E) yeast cells

6. ____ is a microbial endoenzyme, the rest of the enzymes listed are exoenzymes.
   (A) DNA polymerase
   (B) amylase
   (C) penicillinase
   (D) cellulase

(背面仍有題目,請繼續作答)

(E) lipase

7. The biophysicists __ and __ deserve recognition for their work on crystallography that led to the discovery of the spatial three-dimensional structure of DNA.
(A) O. Avery, C. McLeod
(B) R. Franklin, M. Wilkins
(C) E. Chargaff, A. Leeuwenhoek
(D) J. Watson, F. Crick
(E) L. Pasteur, R. Koch

8. DNA replication fidelity is assured by:
(A) ribose-deoxyribose combinations
(B) complementary nucleotides
(C) minor-major grooves
(D) A-U, C-G pairing
(E) all of these

9. Vaccination with cowpox vaccinia resulted in more consistent immunity and reduced risk when compared with variolation with wild smallpox variola. The chief basis for this difference is rests upon the:
(A) route of administration
(B) dose of inoculum
(C) health of patient
(D) mutant benign antigenicity
(E) all of these

10. An aseptically biopsied specimen is still subject to deterioration by:
(A) surgical instruments
(B) normal flora
(C) prolonged storage
(D) environmental microbes
(E) transport medium

11. Morphological switching in response to temperature changes has profound medical impact and is known as __ dimorphism.
(A) sexual
(B) mycotic
(C) infectious
(D) mycelial
(E) thermal

12. The agent of amebiasis is Entamoeba histolytica exhibit these features. Which item is most revealing of their eucaryotic parasitic adaptation?

(A) cysts tough though thin-walled, with four nuclei
(B) has a large nucleus with a nucleolus called a karyosome
(C) vacuoles with erythrocytes, bacteria, other engulfed material in trophozoites
(D) many "missing" organelles
(E) cyst contains chromotoidals of densly packed ribosomes

13. Viruses are known for various traits. Which trait appears to participate in the evolution of organisms?
(A) the smallest and simplest parasites
(B) comprised essentially of protein coated DNA or RNA
(C) able to control its own entry
(D) transporters of genetic information
(E) capable of redirecting host genetic and molecular activity

14. The RNA viruses are not classified according to:
(A) envelope, capsid geometry
(B) gram reaction
(C) RNA strandedness
(D) genomic segmentation
(E) strand sense

15. Regarding the trophic/energy pyramid, might the contribution of anaerobic, lithotrophic extremophiles challenge this feature?
(A) portrays energy constraints of distribution and quantity in a biological system
(B) depicts one-way flow of energy and diminishing availability
(C) emphasizes loss of energy from one trophic level to the next
(D) recognizes the reduction in numbers of organisms towards the apex
(E) implies virtual dependency on solar energy and photosynthesis

複選題 （每題二分，全對才計分，答錯不倒扣）

1. Traditionally, which group of organisms is usually included in microbiology?
(A) bacteria
(B) viruses
(C) plantae
(D) fungi
(E) protozoa

2. A most powerful methodology now feasible for deciphering a chromosome is:
(A) the Svedberg constant
(B) gene sequencing
(C) selective/differential media
(D) electron microscopy

(背面仍有題目,請繼續作答)

(E) chromosome walking

3. The richest sources of antibiotics include:
   (A) *Chlorophyta*
   (B) *Bacillus*
   (C) *Cephalosporium*
   (D) *Streptomyces*
   (E) *Penicillium*

4. Microflora are permitted to settle in the:
   (A) gastrointestinal lumen
   (B) lower genitalia tracts
   (C) upper respiratory tract
   (D) central nervous system
   (E) auditory or urinary canals

5. Protection from invasion by barrier is not a truly immune mechanism because it __ potential intruders.
   (A) recognize
   (B) destroy
   (C) seek
   (D) discriminate
   (E) arrest

6. With the aid of monoclonal antibodies, immunoassay testing techniques have raised threshold levels of:
   (A) affinity
   (B) collectivity
   (C) selectivity
   (D) sensitivity
   (E) None of the above

7. Which of the following description of ascomycetous genus *Cordyceps* are true?
   (A) endomopathogenic fungus
   (B) insect control
   (C) antitumor and antioxidant in *C. sinensis*
   (D) immunomodulator in *C. cicadae*
   (E) food and herbal medicine

8. Which of the following description of piscine nodaviruses are true?
   (A) a member of the *Betanodavirdae* family
   (B) enveloped
   (C) icosahedral capsids

(D) the genome is composed of bipartite, single-stranded RNA molecules
(E) the genome is composed of negative sense RNA molecules

9. Which of the following is not true of the *Ehrlichia* species:
(A) and those of Rickettsia are not strict parasites
(B) include E. chaffeensis, the agent of monocytic ehrlichiosis
(C) invade granulocytes and monocytes
(D) are transmitted by Ixodes scapularis ticks
(E) cannot coinfect with Borrelia of Lyme disease

10. Diphtherotoxin, the essence of diphtheria pathology, is not:
(A) an endotoxin
(B) a transduction product
(C) a single polypeptide molecule
(D) produced only by nontoxigenic strains
(E) acquired by bacteriophage

簡答題 （每題五分）

1. What are the different structures of cell walls between Gram-positive and Gram-negative?
2. What is a mycosis?
3. What is the haploid?
4. What is the prion?
5. Please explain what is the polymerase chain reaction?
6. Please explain what is the plaque?
7. Please explain what is the spheroplast?
8. Please draw and explain what is the enzyme-linked immunosorbent assay?
9. Please draw the structure of chloramphenicol.
10. Please explain what are the different between *in vivo* and *in vitro*?