2007-2008 ENTRANCE EXAM SAMPLE QUESTIONS

Life Sciences

1. An atom is neutral if the number of its electrons is equal to its
   a. number of protons
   b. number of nucleons
   c. atomic weight
   d. none of the above

2. The lens and cornea have no capillaries and are nourished by
   a. tears b. aqueous humor c. vitreous humor d. intracellular fluid

3. The visual receptors that detect colors are the
   a. rhodopsins b. optic discs c. cones d. rods

4. The barrier between a cell and its environment is the
   a. nucleus
   b. cytoplasm
   c. nuclear envelope
   d. plasma membrane

5. Which tissue forms coverings, linings, and glands?
   a. adipose b. connective c. epithelial d. muscular

6. Which of the following are the first tissues that form in the human embryo?
   a. epiderm, hypoderm, endoderm
   b. ectoderm, mesoderm, endoderm
   c. epiderm, mesoderm, endoderm
   d. hypoderm, mesoderm, endoderm

7. Which of the following is NOT an accessory organ of digestion?
   a. the appendix
   b. the gall bladder
   c. the liver
   d. the pancreas

8. The pharynx
   a. extends from the internal nares to the esophagus.
   b. is composed of smooth muscle.
   c. is lined with a serous membrane.
   d. serves the respiratory, but not the digestive, system.

9. Which of the following is NOT a function of the stomach?
   a. serves as the primary absorption site for most nutrients
   b. receives the bolus from esophagus
   c. delivers chyme to the duodenum
   d. performs both mechanical and chemical digestive processes

10. The sites of exchange between the blood and the tissues are the
    a. arteries
    b. capillaries
    c. arterioles
    d. venules

11. A Papanicolaou smear
    a. is recommended for all men as part of an annual exam.
    b. is a treatment for some forms of cancer.
    c. cannot detect changes that may be associated with cancer.
    d. examines non-keratinized stratified squamous epithelium.

12. Smooth muscle tissue is found in all of the following locations EXCEPT:
    a. the airways to the lungs
    b. between the ribs
    c. the urinary bladder wall
    d. uterine wall

13. The function of keratin is to:
    a. make skin hard and brittle.
    b. protect skin from ultraviolet light.
    c. make skin tough and waterproof.
    d. provided added pigment.

14. The rest mass of an electron is
    a. 981 MeV b. 1.02 MeV c. 0.51 MeV d. 1 amu e. 0.51 keV

15. A neutron is heavier than an electron. The ratio of their masses is approximately
    a. 10:1 b. 1000:1 c. 1400:1 d. 1800:1

16. The mass number (A) of an atom is equal to the sum of the
    a. neutrons b. protons c. nucleons d. atomic masses minus the total binding energy

17. The number of neutrons in a Cobalt-60 atom (Z=27) is
    a. 27 b. 60 c. 33 d. 7

18. The removal for microscopic examination of a small bit of living tissue from a patient is called
    a. biopsy c. dissection
    b. surgery d. therapy

19. What is the function of bile?
    a. carbohydrate digestion c. fat digestion
    b. protein digestion d. hormone digestion

20. Platelet deficiency would predispose a living creature to problems with
    a. fatigue c. infection
    b. bleeding d. forgetfulness

21. In females, the urinary bladder is located
    a. superior to the uterus c. posterior to the ovaries
    b. inferior to the uterus d. anterior to the ovaries

22. The innermost covering membrane of the spinal cord is the
    a. pia mater c. dura mater
    a. arachnoid mater d. terminal filum

23. The acetabulum is located on the
    a. humerus c. femur
    b. hip bone d. scapula

24. Which of the following statements about the salivary glands is not true?
    a. They play a role in preventing tooth decay,
    b. The largest salivary gland is the submandibular gland,
    c. Salivary glands assist in the digestion of starches,
    d. The smallest salivary gland is the sublingual glands.

25. The lens of the eye
    a. is composed of a vitamin A derivative called retinal
    b. holds the retina against the choroid
    c. becomes more elastic with age
    d. focuses light onto the retina

Mathematics

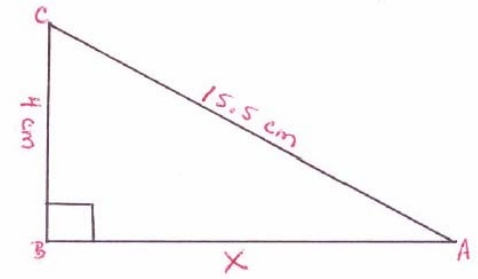
26. 20 + 8 x 10 + 10 ÷ 2 =
    a. 145 c. 285
    b. 65 d. 105

27. When eight times a number is increased by 12, the result is 140. What is the number?
    a. 13.6 c. 44
    b. 16 d. 35

28. What percent of 15 is 8?
    a. 53% c. 7%
    b. 120% d. 23%

29. 28 + 5 (2 x 6) – (9 + 3) =
    a. 390 c. 76
    b. 34 d. 82

30. In the following triangle, what is the length of the side marked “x” to the nearest cm?



    a. 11 cm b. 14 cm c. 15 cm d. 16 cm

31. $\frac{1}{8}+\frac{1}{4}+1\frac{1}{2}=$

    a. $1\frac{3}{8}$ b. $1\frac{7}{8}$ c. $\frac{3}{14}$ d. 1.75

32. Solve for x: $\frac{2x+5}{5}-\frac{x}{5}=0$
    a. x = -5 b. x= -1 c. x = 5 d. x = 1

33. A crew of electrician can wire 6 houses in 144 hours. How many hours will it take them to wire 9 houses?
    a. 144 hrs b. 216 hrs c. 375 hrs d. None of the above

34. Solve $4^{-\frac{1}{2}}$
    a. 0.25 b. ½ c. 0.75 d. 1

35. Write as a percentage: $\frac{23}{125}=$
    a. 5.4 % b. 1.8 % c. 0.184% d. 18.4%

36. $9^{\frac{3}{2}}=$
    a. 3 b. 364 c. 27 d. 9

37. Solve : $\frac{2^8\cdot 2^4}{\left(2^5\right)^2}=$
    a. $\sqrt{4}$ b. 2 c. 8 d. 4

38. Write the given expression using a radical sign : $y^{\frac{2}{3}}=$
    a. $\sqrt[3]{y^2}$ b. $\sqrt[2]{y^3}$ c. $\left(\sqrt{y}\right)^2$ d. $\sqrt{y}$

39. Solve for *x*: $9^{x+1}=27^x$
    a. x = 3 b. x = 2 c. x = 4 d. x = 3.2

40. If $\log A = 0.4262$, find $\log \sqrt{A}$.

a. $\frac{1}{2}\log A$ b. $\frac{1}{2}\log A^2$ c. 0.2131 d. 0.8524

41. Solve for x: $2^{3x} = 6$

a. $\frac{1}{3}^{3x}$ b. $\left(\frac{1}{3}\right)^{3x}$ c. 0.3010 d. 0.86

42. Use exponents to write the radical expression: $2\left(\sqrt[5]{b}\right) =$

a. $2b^{\frac{1}{5}}$ b. $2b^5$ c. $2^5 b^{\frac{1}{5}}$ d. $2^{\frac{1}{5}} b$

43. Which of the following statements about logarithmic functions is true?
    a. natural logarithms have a base of 10
    b. common logarithms have a base of 10
    c. all logarithmic functions have a base of 10
    d. none of the above

44. Calculate Log [(20)(8)].
    a. Log (28) c. Log (20)- Log (8)
    b. Log (160) d. 2.204

45. Evaluate $a^0 + a^{\frac{1}{3}} + a^{-2}$ when $a = 8$.

a. $3\frac{1}{16}$ b. $3\frac{1}{64}$ c. $10\frac{1}{16}$ d. $2\frac{1}{64}$

Complete the following conversions:

46. 230 cm = _____ meters
    a. 23 m b. 2.3 m c. 0.23 m d. 230 m

47. 3.45 km = _____ cm
    a. 34,500 cm b. 3,450 cm c. 345 cm d. 345,000 cm

48. 0.179 Kg= _____ g
    a. 179 g b. 1.79 g c. 17.9 g d. 1,790 g

49. 87° Fahrenheit = _____℃
    a. 16.3 b. 66.1 c. 30.6 d. 43.2

50. 40 ℃ = _____ ° Fahrenheit
    a. 129.6 b. 104 c. 72 d. 98.6