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NAME:…….. **STREAM**……

SENIOR FOUR

553/1

BIOLOGY

PAPER 1

EXAM 12

TIME: 1 ½ HOURS

Instructions:
Answer all questions.

1. Which one of the following is the least important reason why plants need to ensure efficient seed dispersal in nature?
   A: increasing chances of finding a better habitat for multiplication
   B; ensuring better colonization of different places
   C: Escape being eaten by animals in its original habitat
   D: Reducing competition for food, resulting from overcrowding.

2. Which of the following parts of the flower is non essential?
   A: corrolla B: stigma C: embryo sac D: Anther

3. Internal respiration may be defined as
   A: breathing in and releasing of oxygen in the tissues
   B: the oxidation of food substances to release energy
   C: the building up (synthesis) of complex substances
   D: getting rid of carbondioxide that would accumulate in the tissues

4. Respiratory energy is believed to be used in absorption of mineral salts by plant roots. Which of the following observations best supports that hypothesis
   A: carbohydrate is stored in the root
   B: chloride uptake is reduced in lower oxygen concentrations
   C: The root hairs provide a large surface area for gas exchange
   D: living roots give off carbon dioxide.

5. People living in high altitudes have more red blood cells than those in low altitudes. Which of the following best accounts for this phenomenon?
   A: the cold temperature stimulates the production of red blood cells to keep the body warm
   B: Inhabitants of high mountains breathe more quickly
   C: The low air pressure requires more red corpuscles to supply the body cells with oxygen
   D: the low air pressure in high mountains speeds the blood circulation so that more red corpuscles are needed.

6. Which of the following activities can take place together in the skin?
   A: vasodilatation, increase in sweating, contraction of erector pili muscles
   B: vasodilatation, increase in sweating, shivering
   C: increase in sweating, vasodilatation, relaxation of erector pili muscles
   D: vasoconstriction, increase in sweating, shivering

7. The main value of sweating in man is that during the process
   A: Excess water is removed from the body
   B: latent heat of vaporization of water helps to cool
   C: Excess mineral salts are removed from the body
   D: the body gets rid of excess nitrogenous wastes

8. Which of the following best explains why plant shoots bend towards unidirectional light?
   A: a higher auxin concentration on the dark side promotes faster elongation than on the illuminated side
   B: there is greater concentration of auxin on the illuminated side than dark side
   C: there is equal auxin concentration on both sides
   D: A higher auxin concentration on the illuminated side promotes faster elongation than the dark side

9. Which of the following is the correct sequence for successful completion of a reflex action?
   A: stimulus – receptor – impulse – motor neurone – central nevous system – sensory nerve – effector
   B: impulse – receptor – stimulus – motor neurone – central nervous system – sensory neurone – effector
   C: impulse – receptor – stumulus – sensory neurone – central nervous system – motor neurone – effector
   D: stimulus – receptor – impulse – sensory neurone – central nerous system – motor neurone – effector

10. Which of the following changes occurs when you walk out of bright sunshine into a poorly lit room?
    A: the pupils become larger B: the lens becomes thicker
    C: the cilliary muscle relaxes D: the eyes become blind

11. Which part of the ear is responsible for the detection of the positions of the body when the body is rotating?
    A: Perilymph B: semi circular canals C: Cochlea D: Ossicles

12. Which of the following conditions would cause the adrenal glands of a man to produce a hormone?

A: hearing a song B: seeing a burglar
C: smelling a flower D: Eating a carrot

13. Which of the following is the least important function of humus in the soil?
A: improving Aeration B: prevention of soil erosion
C: water retention D: increasing soil fertility

14. A doctor examined the blood smear of a patient who was suffering from malaria. Which of the following did the doctor expect to observe in the blood smear?
A: more white blood cells than red blood cells
B: some broken down remains of white blood cells
C: An equal number of white blood cells and red blood cells
D: Malaria parasites

15. In a flowering plant the seed and fruit develops from
A: ovules and ovary B: radicles and plumules
C: ovary and ovules D: cotyledon and embryo

16. In which part of the kidney nephron does reabsorption of sodium ions occur?
A: proximal convoluted tubule B: descending loop of Henle
C: Ascending loop of Henle D: Distal convoluted tubule

17. Which one of the following has no effect on the rate of diffusion?
A: Density of diffusion medium B: length of diffusion pathway
C: concentration gradient D: size of diffusing molecules

18. The forces which mostly help water to move up a tall plant are?
A: osmosis and diffusion B: capillarity and transpiration
C: osmosis only D: capillarity and osmosis

19. The root which grows from the stem in underground plants is called
A: lateral root B: prop root
C: Aerial root D: Adventitious roots

20. Which one of the following is a characteristic of meristematic cells?
A: have large vacuoles B: have soft cell walls
C: have rigid cell walls D: are specialized

21. Which of the following may not be used during construction of a dichotomous key in insects?
A: mouth parts B: structure of legs
C: feeding habits D: type of eyes

22. Which one of the following organisms contains no hemoglobin in its blood?
A: Fish B: Housefly C: Snake D: crocodile

23. The following are adaptation of plants to live in water except:
A: small air spaces in stem and leaf
B: poorly developed xylem
C: poor root system

D: thin layer of cuticle

24. The rate of glomerular filtration is highest in
A: man B: Amphibians
C: fresh water fishes D: marine fishes

25. Which of the following features are most useful to amphibians in living an aquatic habitat?
A:: moist skin, membrane round eggs and gills
B: membrane round eggs, gills and webbed feet
C: long hind limbs, short forelimbs and gills
D: webbed feet, moist skin and gills.

26. Which one of the following does not occur when the floor of the buccal cavity is raised during breathing in a fish?
A: mouth closes B: opercula valve closes
C: opercula volume increases D: mouth opens

27. Which one of the following belongs to a different phylum?
A: Octopus B: scorpion C: millipede D: crab

28. Which one of the following concentrations of proteins in mammals is correctly indicated? High in
A: the glomerular filtrate and urine
B: the blood plasma, absent in glomerular and filtrate urine
C: both blood plasma and glomerular filtrate but in urine
D: blood plasma, glomerular filtrate and urine

29. The hormone secretin stimulates the release of
A: bile from gall bladder to duodenum B: insulin from the pancreas
C: intestinal juice D: gastric juice

30. The lymphatic system is important in
A: promoting blood clotting
B: distribution of heat
C: transporting hormones around the body
D: draining excess tissue fluid into the blood circulating system.

SECTION B:

31. The concentration of carbon dioxide in the air of a tropical rainforest was measured over a 24 hour period and the results are obtained below

Time of day	12:00 midnight	4:00 a.m.	8:00 a.m.	12:00 noon	4:00 p.m.	8:00 p.m	12:00 midnight
% carbon dioxide	0.050	0.080	0.060	0.040	0030	0.038	0.050

(a) Plot a Graph of percentage carbon dioxide concentration against time

(b) From the graph, determine the carbon dioxide concentrations at 6.00 a.m. and 6.00 p.m.

(c) Explain why the concentration of carbon dioxide was high at 4.00 a.m.

(d) Explain why the concentration of carbon dioxide was decreasing between 8.00 a.m. and 4 p.m.

SECTION C:

32. Describe the mechanism of hearing in man.