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UACE BIOLOGY PAPER 1 2008

Do all numbers

SECTION A

1. In the body, proteins may combine with acids or bases depending on the

- A. temperature of the medium.
- B. hydrogen ion concentration in the medium.
- C. number of solvent molecules present in the medium.
- D. number of amino acid molecules in the protein.

2. Epithelial type lining the mammalian alveoli is

- A. columnar. ~~Champions~~
- B. cuboid.
- C stratified.
- D- squamous.

3. Which one of the following is correct about first division of meiosis but not that of mitosis?

- A. Nucleolus disappears.

B. Spindle is formed.

C. Centrioles move to opposite pole of the nucleus.

D. Homologous chromosomes associate to form bivalents.

4. Worker bees and the queen bee are polymorphic forms which differ in their fertility as a

Result of

A. feeding on different diets.

B. worker's eggs not being fertilized.

C. workers being produced parthenogenetically.

D. the queen having diploid cells while the workers have haploid cells.

5. Which of the following ions move from the plasma into the red blood cells to maintain electro-neutrality during the uptake of carbon dioxide by the blood in the tissues?

A. Cl^-

B. CO_3^{2-}

C. K^+

D. HCO_3^-

6. Which one of the following is not a correct statement about nastic response?

A. The response may be a growth movement.

B. The direction of movement of a plant is always related to the direction of the stimulus.

C. It is a response from a non-directional stimuli.

D. The response movements are localized.

7. Long -day plants may be stimulated to flower if

- A. the period of darkness is interrupted with flashes of light.
- B. provided with more than 10 hours of light.
- C. provided with 12 hours of complete darkness.
- D. the light period is interrupted with short dark period.

8. Wearing a coarse shirt causes unpleasant sensation at first but later the discomfort disappears because

- A. with continued stimulus, generator potential falls below threshold value.
- B. the post-synaptic surfaces fail to release the transmitter substance.
- C. nervous system stops carrying sensory impulses.
- D. continued stimulation leads to fusion of generator potentials.

9. Which one of the following is the correct shape, in the region of the body of an earth worm where its circular muscles are contracted?

- A. Short and thick.
- B. Long and thin.
- C. Short and thin
- D. Long and thick.

10. Chiroleples, the desert frog flourishes in the desert because it

- A. has a water proof skin.
- B. is nocturnal.
- C. has few and small glomeruli.
- D. reabsorbs metabolic water,

11. Which one of the following is the ultimate hydrogen acceptor during anaerobic respiration in

animals?

A. Lactic acid.

B. NAD

D. Acetylaldehyde.

C. Pyruvic acid.

12. Which one of the following is unlikely to be found in the body cells of obligate anaerobes?

A. Glycolytic enzymes.

B. ATP

C. Mitochondria.

D. Sugars.

13. Which one of the following is illustrate Figure 1?

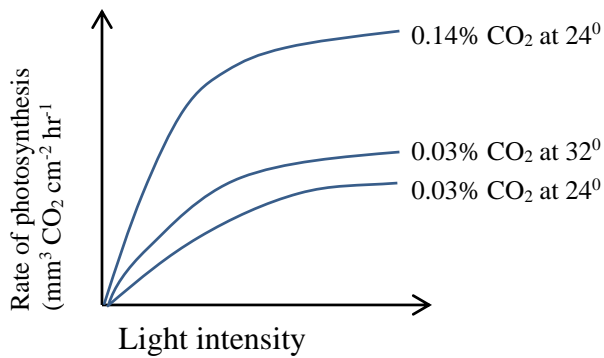


Fig. 1

A. With increase in light intensity, the rate of photosynthesis increases until temperature becomes a limiting factor.

B. Rate of photosynthesis increases with an increase in the carbon dioxide concentration.

C. With increase in light intensity, the rate of photosynthesis increases indefinitely.

D. Rate of photosynthesis increases with an increase in light intensity until carbon dioxide concentration becomes a limiting factor.

14. Which one of the following is not a fibrous protein?

- A. Keratin
- B. Globulin
- C. Elastin.
- D. Collagen

15. Which one of these activities would result into a low respiratory quotient?

- A. Respiration in muscles during heavy exercise.
- B. Formation of calcareous shells.
- C. Fattening livestock.
- D. Preparation for hibernation in a mammal.

16. A probable function of the endoplasmic reticulum is to

- A. control the entry and exit of materials in cells.
- B. facilitate intracellular transport of materials.
- C. act as a template in protein synthesis.
- D. enable substances diffuse against concentration gradient.

17. The rapid stomatal closure during wilting is due to

- A. increase in Abscisic acid.
- B. rapid conversion of sugar to starch.

- C. rapid accumulation of carbon dioxide in the guard cells.
- D. reduction in the level of mineral ions in the guard cells.

18. Cartilaginous fish retain urea in the blood in order to

- A. avoid dehydration.
- B. reduce entry of salts into the tissue.
- C. avoid loss of excess water by excreting it.
- D. maintain an internal ionic concentration in balance with the external medium.

19. Which one of the following organisms does not belong to the same phylum as the rest?

- A. Tape worm.
- B. Liver fluke.
- C. Planaria
- D. Leech.

20. A cockroach has a respiratory system while an earthworm does not because

- A. earthworms do not need much oxygen.
- B. the surface volume ratio in a cockroach is small.
- C. earthworms can be parasitic.
- D. the respiratory system provides shape in a cockroach.

21. Which one of the following structures is not homologous with the rest?

- A. Bat wing.
- B. Human fore arm.

C. Insect wing.

D. Bird wing.

22. Which one of the following has the greatest biomass in an ecosystem?

A. Tertiary consumers.

B. Primary producers.

C. Secondary consumers.

D. Primary consumers.

23. Which one of the following is an effect of the luteinising hormone?

A. Development of the Graafian follicles.

B. Ovulation.

C. Stimulation of sperm production.

D. Repair of the uterine wall.

24. Which one of the following is a correct statement about a neurone membrane during resting potential?

A. The inside of the neurone membrane is negatively charged.

B. The Na^+ , K^+ and Cl^- ions are evenly distributed on either side of the membrane.

C. The concentration of Na^+ ions is greater inside the membrane.

D. The concentration of K^+ ions is greater outside the membrane. ,

25. Which one of the following statements is not correct about a test cross?

- A. It is carried out on an organism with a dominant phenotype.
- B. The offspring of the cross may all have dominant phenotype.
- C. The organism of the unknown genotype is crossed with a homozygous dominant individual.
- D. The offspring of the cross may have a ratio of 1 dominant phenotype: 1 recessive phenotype.

26. Which of the following conditions result from gene mutation?

- A. Klinefelter's syndrome.
- B. Turner's syndrome.
- C. Sickle cell anaemia.
- D. Down's syndrome.

27. If the triplet of mRNA is AAG what is the complementary triplet of the bases on the tRNA molecule?

- A. TTC
- B. UUC
- C. CCT
- D. CCU

28. Which one of the following factors does not increase the chances of fertilization in mammals?

- A. Seasonal breeding cycles.
- B. Female receptiveness to the male only during ovulation.
- C. Internal fertilization.

D. Development of secondary sex characteristics,

29. Which one of the following is not a problem that endoparasites face in their transmission?

A. Leaving the host.

B. Entering the host.

C. Living away from the host.

D. Identifying the host.

30. Which one of the following statements is/are correct about the exponential phase in the population growth?

A. Death rate and birth rate are equal.

B. Numbers of individuals and rate of growth increase.

C. The numbers outstrip the supply of factors for support.

D. Slow growth of the population.

31. An organism living in a oxygen deficient environment has

A. haemoglobin that easily picks up oxygen.

B. its oxygen dissociation curve to the right.

C. haemoglobin that readily releases its oxygen.

D. haemoglobin that less readily picks up oxygen

32. Which one of the following is not a purpose for courtship behaviour among animals?

A. Ensuring that both partners are sexually mature.

B. Establishing a pair-bond.

C. Ensuring that both partners are ready for mating.

D. Establishing territories.

33. Which one of the following statements is not correct about seed dormancy?

A. It allows further development of the seed.

B. It is induced by internal factors.

C. It increased the chances of survival of the seed.

D. It is ended by external factors.

34. Figure 2 shows that

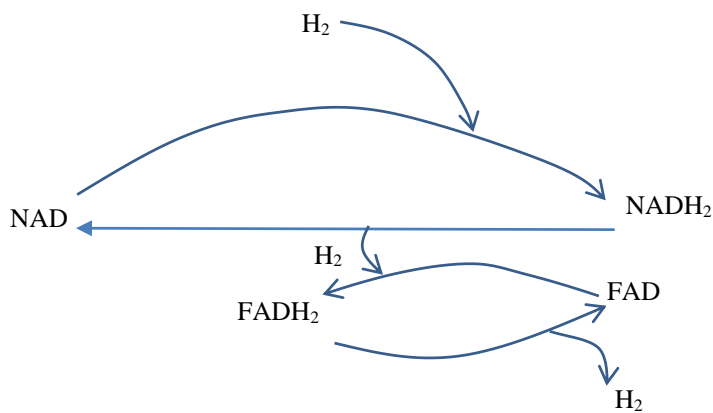


Fig.2

A. NAD is oxidized to NADH₂.

B. NADH₂ reduces FAD to FADH₂.

C. FADH₂ is reduced to FAD.

D. $\text{NADH}_2 + \text{H}_2 \rightarrow \text{NAD}$

35. The number of organisms in each trophic level reduce as one moves up a food chain because

A. energy is lost in moving from one trophic level to another.

B. energy is lost from the top trophic levels.

C. organisms in higher trophic levels are less productive.

D. high level of predation at the top trophic levels.

36. Anaerobes thrive better than aerobic organisms experiencing thermal pollution because

A. high temperatures kill aerobic organisms.

B. anaerobes possess enzymes that work best at high temperatures.

C. high temperatures reduce solubility of oxygen.

D. high temperatures encourage multiplication of aerobes predators.

37. Which one of the following is correct about parallel flow of water across the gills?

A. water has higher oxygen concentration at each point of contact.

B. low blood oxygen concentration is attained.

C. Diffusion occurs over the whole region of the gill filament.

D. High blood oxygen concentration is achieved.

38. Which one of the following adaptations of xerophytes does not reduce transpiration?

A. Hairy leaves.

B. Leaves with thick waxy cuticle.

C. Small sized leaves.

D. Succulent stems.

39. The influx of water in fresh water bony fish is offset by possession of

A. numerous, large glomeruli and reabsorption of salts from the renal fluid.

B. numerous, small glomeruli and uptake of salts from the body.

C. few large glomeruli and uptake of salts.

D. many small glomeruli and uptake of salts.

40. The main difference between endotherms and ectotherms is that ectotherms

A. gain their body heat from internal sources.

B. gain less heat than endotherms

C. gain the body heat from external sources.

D. are lower animals while endotherms are higher animals.

Section B

41. figure 3 show the variation of rate photosynthesis with temperature in C₃ and C₄ plants, at different light intensities.

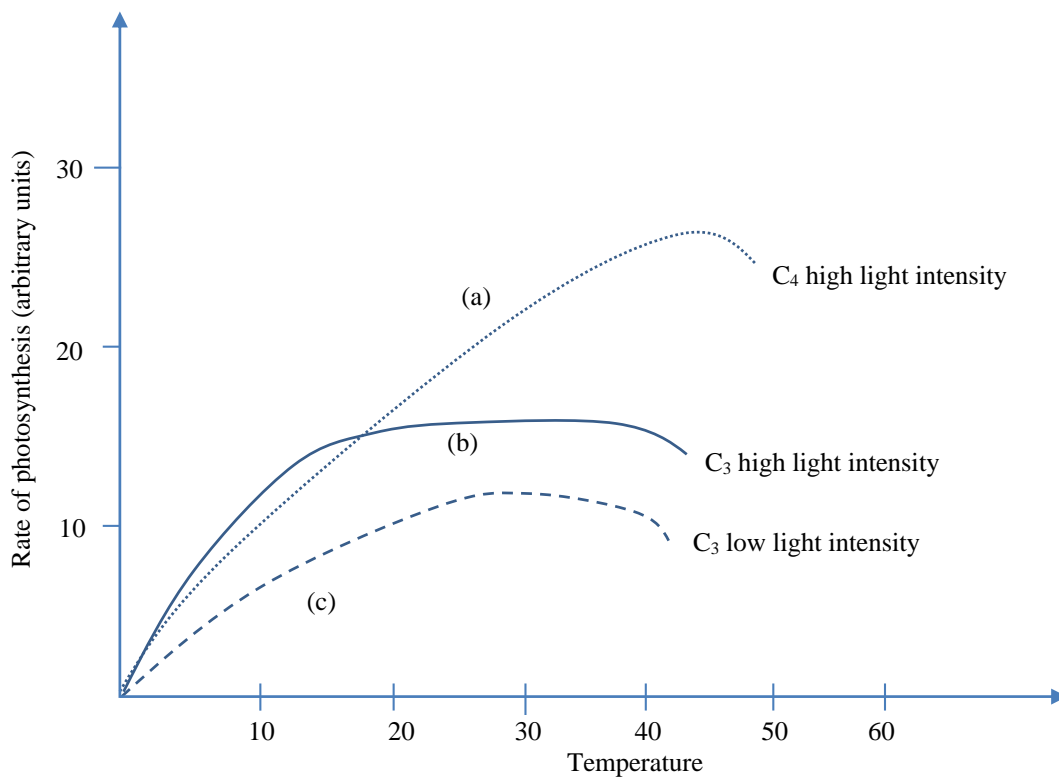


Fig.3

(a) Using the figure, state how differently temperature affects the rate of photosynthesis in C₃ plants from C₄ plants at high intensity.

- (b) Explain the differences in the effect of temperature on the rate of photosynthesis in C_3 and C_4 plants at high light intensities stated in (a).
- (c) Explain the pattern of curve (c) in the figure.

42. (a) What is meant by apical dominance?

(b) State the causes of each of the following

(i) Apical dominance

(ii) Seed dormancy

(c) what is the ecological importance of

(i) Apical dominance

(ii) Seed dormancy

43. (a) Explain the absence of a yolk sac in the development of a human foetus while it is an important structure in the development of birds.

(b) state the reproductive adaptation of birds to terrestrial life.

(c) Give three form of parental care provided by mammals.

44. (a) What is instinctive behavior?

(b) State two factors that influence instinctive behavior.

(c) Territorial behavior is common among animal species. Give

(i) Four advantage of this behavior

(ii) Three disadvantages of this behaviour.

45. (a) Illustrate with a cell of one pair of homologous chromosomes, draw diagrams in the space below to show.

(i) mitotic metaphase

(ii) meiotic metaphase 1

(iii) Meiotic metaphase II

46. Figure 4 shows the immune response of a person's blood after vaccination are given on day one and 60 days later.

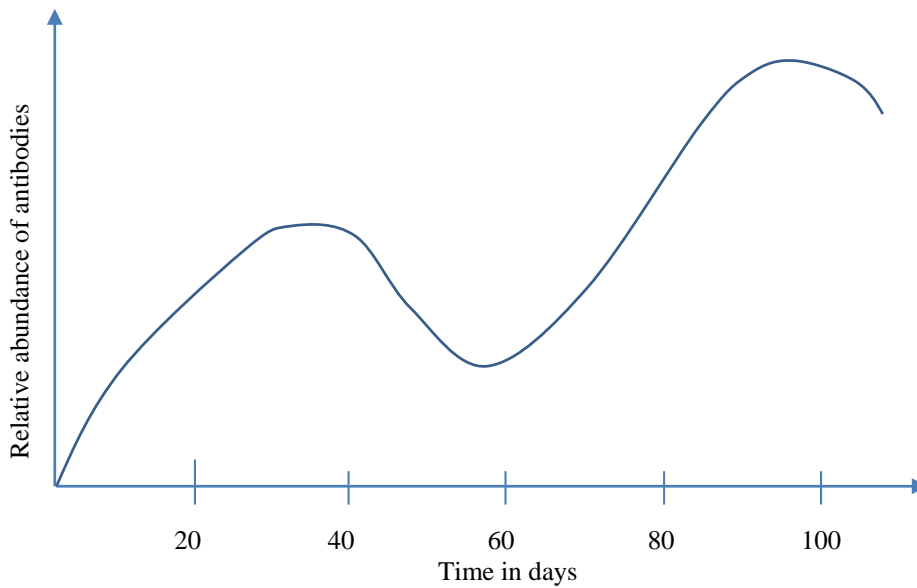


Fig. 4

- What is the effect of giving immunization to the individual?
- From the graph, state the type of immunity acquired by the individual, giving a reason.
- Explain the shape of the graph
- Describe three ways in which antibodies combat antigens.