

3. Through which membrane the trans-membrane transport takes place?

- (A) Epidermis (B) Hypodermis
(C) Cortex (D) Endodermis

4. Which chemical enters into the chloroplast from Peroxisome during photo-respiration?

- (A) Glycolate (B) Glycerate
(C) Glycine (D) Serine

5. Choose right alternative to complete the equation, so as to make RQ=4.



- (A) $4\text{CO}_2 + 2\text{H}_2\text{O}$ (B) $8\text{CO}_2 + 4\text{H}_2\text{O}$
(C) $32\text{CO}_2 + 8\text{H}_2\text{O}$ (D) $32\text{CO}_2 + 16\text{H}_2\text{O}$

6. If annual growth rate (I) = 45 and birth rate (b) = 65, then find out death rate (d) of a given population.

- (A) 20 (B) $\frac{13}{9}$
(C) $\frac{9}{13}$ (D) 110

7. How energy is generated in Lakshadweep islands in South India?

- (A) Difference between regions of high tide and low tide.
(B) Difference between pressure of marine water.
(C) Difference between Geothermal energy.
(D) Difference between temperature of surface and deep water of ocean.

8. $\frac{\text{Use of energy in food}}{\text{Energy obtained through food}} \times 100;$

this formula measures which Ecological efficiency ?

- (A) Photosynthetic (B) Trophic level
(C) Assimilation (D) Net production

- 9. Which of the following option is responsible for the growth of bones?**
(A) Vitamin D, Vitamin A (B) Calcium, Phosphorus
(C) Option (A) and (B) both (D) None
- 10. Which enzyme takes part in digestion process in stomach?**
(A) Pepsin (B) Amylase
(C) Trypsin (D) Peptidase
- 11. Which adaptation is of Avicenia?**
(A) Development of aerial breathing roots.
(B) Development of root system upto water level.
(C) Poorly developed root system.
(D) Root possesses root pockets in place of root caps.
- 12. Which hormone inhibits the secretion of GH?**
(A) Melatonin (B) Somatostatin
(C) HGH (D) GHRH
- 13. Which effect can be seen, if nicotine mixes with blood, due to smoking?**
(A) Development of Asbestosis.
(B) Formation of plaques in blood vessels.
(C) Reduction in O₂ carrying capacity of Haemoglobin.
(D) Blood clots circulate with blood.
- 14. Which of the following is not suitable for the development of Osteoporosis?**
(A) Deposition of Uric acid.
(B) Prolonged Cortisone treatment.
(C) Pregnancy.
(D) Imbalance between activities of Osteoblasts and Osteoclasts.

15. Which fruit shows Polyembryony?
(A) Banana (B) Pineapple
(C) Mango (D) Grapes
16. Which of the following shows induced curvature movements?
(A) Volvox (B) Tulip
(C) Chlamydomonas (D) Moss and Bryophytes.

SECTION-B

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17. Though plant has vast surface open to air, cuticular transpiration is negligible. Why?
18. Classify the given minerals into macro-nutrients and micro-nutrients.
C, Co, B, Ni, Fe, V, Ca, N, S, P
19. What is Biological Magnification?
20. Which two reactants react to produce K.Hb.O₂? Write site for this reaction in Human body.
21. What is Ecesis?
22. Why 36 ATP is produced in place of 38 ATP, in Eukaryotic organism, during combustion of one Glucose molecule?
23. Name the inter-relationship, which can be seen in Sucker fish and Cuscuta.
24. Classify the following on the basis of Auxetic growth or Multiplicative growth.:
Cleavage, Lens, Nerve cells, Roundworms.
25. Write the location of Germinal Epithelium in male and female human beings.

26. What is 'Viviparous Germination'?
27. Write site of secretion and function of PIF.
28. Why the sixth abdominal ganglion is comparatively larger in Cockroach?
29. Why much more energy is required to excrete the Uric acid?
30. Which two aspects are considered in determining Rich and Threatened Reservoirs of Life?
31. Which two aspects determine whether the biotic potential of living organism is high or low?
32. How protection can be gained against Bio-war? (any two points)

SECTION - C

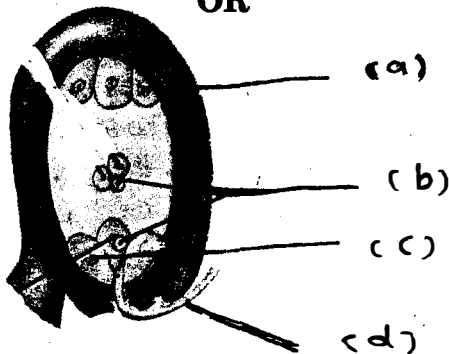
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33. Differentiate between Osmosis and Imbibition on the basis of given aspects.

(i) Definition	(ii) Biological importance
(iii) Related forces	(iv) Release of heat.
34. Describe PPP according to points given below :
 - (i) Full name
 - (ii) Why it is called PPP?
 - (iii) Complete the following equations -
 - (a) Glucose - 6 - phosphate →
 - (b) 6 - phosphogluconic acid →
35. Explain :
 - (i) Intra-cellular digestion
 - (ii) Assimilation
 - (iii) Calorie-value
 - (iv) Physiological value

36. Write the constituents of Bile juice and explain its importance during whole digestion as well as absorption process.
37. Explain - Spiracles.
38. Draw a labelled diagram of Human Pectoral Girdle and explain its structure and function.
39. Draw a labelled diagram of Human Brain. Differentiate between sympathetic and para-sympathetic system according to points given below :
- (i) Neuro-transmitter
- (ii) Length of pre-ganglionic and post-ganglionic fibres.
40. Give full name and function of the following :
- (i) ACTH (ii) MSH
- (iii) RH (iv) TSH

OR



Label *a*, *b*, *c* and *d* shown in the figure.

Give two characteristics of flower and pollen grain of Wind pollinated plant.

41. Write number, location, characteristic and function of erectile tissue in male and female human beings.
42. Differentiate between Callus culture and Suspension culture with four points each.

OR

Describe four kinds of Consumers briefly.

43. Explain Grassland management.
44. Explain Wear and Tear theory.

SECTION-D

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- 45.** Explain main three zones of Biosphere Reserves. (Diagram not required)

OR

Write three points for Sonography as a treatment and three points for facilities in Endoscope.

- 46.** Write any six changes induced during Succession.

OR

Give benefits of controlled fire and two dangers of uncontrolled fire. Classify the given examples into less than 400 nm and more than 700 nm wave-length.

- (i) Ultra-violet rays (ii) Radio waves
(iii) Infra red rays (iv) Cosmic rays

- 47.** Explain structure and function of internal ear of Human according to points given below :

- (i) Semi-circular canals (ii) Vestibule (iii) Cochlea

- 48.** Explain structure and function of Vertebral column in Human. (Figure is not necessary and the types and number of vertebrae are not required)

OR

Explain briefly Rhythmicity and Regulation of Heart beats.

- 49.** Write any six effects of Auxin.
- 50.** Explain embryo development after pro-embryo formation in Capsella. (Figure is not required)
- 51.** Draw a chart showing fixation of Nitrogen and explain the role of leg haemoglobin in it. Also write three components required to complete this process.
- 52.** Draw a chart showing role of Rubisco in photo-respiration and explain the chemical changes taking place in Kranz-anatomy. Why productivity of C₄ - Path is higher?

SECTION - E

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53. Draw chart of PS-I and PS-II. Differentiate between Cyclic and acyclic photophosphorylation according to the points given below :

- (i) their electron conductors
- (ii) Photolysis
- (iii) End Product
- (iv) Activated by which wave-length?

OR

Explain Negative feed-back regulation. Explain mode of action of Peptide hormones. (Diagram is not required)

54. Draw a chart of Glycolysis and differentiate between its two sub-phase, according to given points :

- (i) Name of Sub-phase
- (ii) End product
- (iii) Formation and utilization of ATP
- (iv) Formation of NADH_2 and H_2O

55. Give name of any two non-biodegradable waste and explain how to control the Industrial Pollution.

OR

Write the range of Regeneration in any four animals and describe type of Regeneration.

56. Explain structure of Immunoglobulin and Antibody mediated Immunity. (Diagram is not required)

OR

Explain Human Embryo development after Morula stage.

(Structure developing from germinal layer is not required)

57. Draw a labelled diagram of internal structure of human kidney and describe Uriniferous tubules according to given points :

- (i) Number
- (ii) Length
- (iii) Location of Uriniferous tubules in kidney.
- (iv) Name the processes taking place in its different parts.