CET – BIOLOGY – 2010

VERSION CODE: B – 4

EXPERT IS NOT HELD RESPONSIBLE IF ANY CHANGE IN THE ANSWER PROVIDED BY THE CET CELL

1. Which one of the following is a unicellular, nonmotile desmid?

   a) Chromatium b) Cosmarium c) Chlorobium d) Clostridium

Ans: (b)

It is a single celled placoderm desmid

2. Some of the steps involved in the production of Humulin are given below. Choose the correct sequence.

   (i) Synthesis of gene (DNA) for human insulin artificially

   (ii) Culturing recombinant *E.coli* in bioreactors

   (iii) Purificatio of humulin

   (iv) Insertion of human insulin gene into plasmid

   (v) Introduction of recombinant plasmid into *E.coli*

   (vi) Extraction of recombinant gene product from *E.coli*

   a) i, iv, v, ii, vi, iii b) iii, v, ii, i, vi, iv c) ii, i, iv, iii, v, vi d) i, iii, v, vi, ii, iv

Ans: (a)

3. Cockroaches can climb smooth or steep surfaces due to the presence of adhesive pads found on the torses of their legs. They are called …….

   a) Pretarsus b) Arolium c) Plantulae d) Tibia

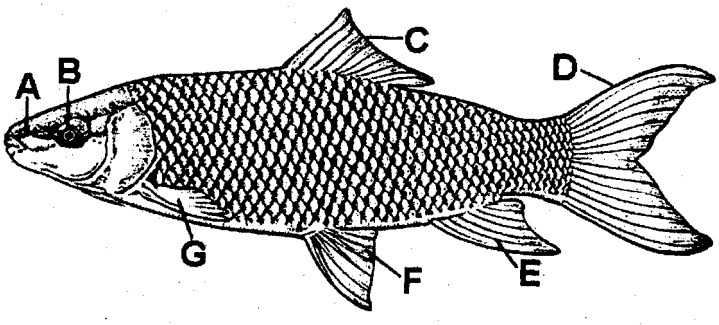
Ans: (b)

4. Gastrula has a pore which is known as ……..

   a) Zoospore b) Oospore c) Blastopore d) Gonophore

Ans: (c)

5. The diagram of *Labeo rohita* is given below. Identify the parts labelled A, B, C, D, E, F, G.



a) A = Nostril, B = eye, C = Dorsal fin, D = Caudal fin, E = Anal fin, F = Pelvic fin, G = Pectoral fin

b) A = Nostril, B = eye, C = Dorsal fin, D = Caudal fin, E = Pectoral fin, F = Anal fin G = Pelvic fin

c) A = Nostril, B = eye, C = Dorsal fin, D = Anal fin, E = Caudal fin, F = Pectoral fin, G = Pelvic fin

d) A = Nostril, B = eye, C = Anal fin, D = Caudal fin, E = Dorsal fin, F = Pectoral fin, G = Pelvic fin

Ans: (a)

6. Identify the pair that exhibit "Cercinate vernation".

a) Nephrolepis and Cycas
b) Riccia and Nephrolepis
c) Psilotum and Riccia
d) Equisetum and SElaginella

Ans: (a)

7. Pyruvate dehydrogenase complex, needed for the conversion of Pyruvic acid to Acetyl CO-A is located in …….

a) Grana of chloroplast
b) Cytoplasm
c) Matrix of mitochondria
d) Intermembranal space of mitochondria

Ans: (c)

Because it takes place in matrix

But answer can be (d)

Reference: Page number 114.

Concept of biology (eleventh edition) by Eldon D. Enger, Fredrick C.Ross, and David B. Bailey. TATA Mc Grew-Hill Publishing company limited , New Delhi .

8. The presence of corollary corona, sagittate anthers and dumb-bell shaped stigma are the characteristic features of ……

a) *Catheranthus roseus*
b) *Ravenala madagascariensis*
c) *Musa paradisiacal*
d) *Hibiscus rosa-sinensis*

Ans: (a)

9. Everytime, when the dosage of a drug has to be increased to achieve the same 'kick' that initially occurred in response to a smaller dose, this condition is known as …….

a) Withdrawal symptoms
b) Addiction
c) Rebound effect
d) Tolerance

Ans: (b)

10. DNA gyrase, the enzyme that participates in the process of DNA replication is a type of

a) DNA Ligase b) DNA Polymerase c) DNA Topoisomerase d) Reverse Transcriptase

Ans: (c)

11. The species, though insignificant in number, determine the existence of many other species in a given ecosystem. Such species is known as

a) Extinct species b) Keystone species c) Endemic species d) Sacred species

Ans: (b)

12. Compare the statement A and B.

Statement A: Sclerenchyma cells do not have plasmodesmata

Statement B: The cell walls of some permanent tissues are heavily lignified. Select the correct description:

a) Both the statements A and B are correct

b) Statement A is wrong and B is correct

c) Statement A is correct and B is wrong

d) Both the statements A and B are wrong

Ans: (a)

13. Which one of the following is *NOT* the reason for very high load of bilirubin in a newborn?

a) Mothers milk contain a high amount of bilirubin

b) Insoluble bilirubin in the intestine is reabsorbed by the blood

c) Excessive red blood corpuscles in the newborn burst, releasing the bilirubin

d) The liver of the newborn is too young to cope up with the heavy load of bilirubin

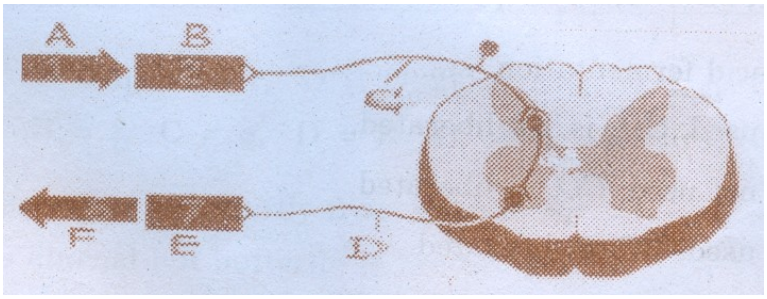
Ans: (a)

14. Which one of the following diseases is caused by *Nosema bombycis* in mulberry silkworm?

a) Grasserie b) Flacherie c) Muscadine d) Pebrine

Ans: (d)

15. The following is the scheme showing the path of reflex arc. Identify the different labellings A, B, C, D, E, F in the reflex arc.



a) A = Stimulus, B = Effector, C = Motor nerve, D = Sensory nerve, E = Receptor, F = Response

b) A = Stimulus, B = Receptor, C = Motor nerve, D = Sensory nerve, E = Effector, F = Response

c) A = Stimulus, B = Effector, C = Sensory nerve, D = Motor nerve, E = Receptor, F = Response

d) A = Stimulus, B = Receptor, C = Sensory nerve, D = Motor nerve, E = Effector, F = Response

Ans: (d)

16. Mendal found that the reciprocal crosses yielded identical results. From that he concluded that …

a) there is no dominance of any trait

b) sex has no influence on the dominance of traits

c) there is independent assortment of traits

d) sex plays a role in deciding the dominance of a trait

Ans: (b)

17. Compare the statements A and B

Statement A: Synthesis of DNA takes place in the S-phase of interphase

Statement B: Every chromosome, during metaphase, has two chromatids.

Choose the correct description:

a) Both the statements A and B are correct and A is the reason for B

b) Both the statements A and B are correct and A is not the reason for B

c) Statement A is wrong and B is correct

d) Statement A is correct and B is wrong

Ans: (a)

18. Match the animals listed in Column I with their of nature of blood listed in Column II. Choose the answer which gives the correct combination of alphabets of the two columns.

	Column – I		**Column – II**
A	Man	**p.**	Plasma and cells are colourless
B	Earthworm	**q.**	Plasma is colourless and nucleated RBC
C	Cockroach	**r.**	Plasma is colourless and enucleated RBC
D	Frog	**s.**	Plasma is red and nucleated, colourless RBC
		t.	Plasma and RBC have haemoglobin

a) A = p, B = s, C = q, D = r

b) A = t, B = r, C = p, D = s

c) A = r, B = s, C = p, D = q

d) A = s, B = t, C = r, D = q

Ans: (c)

19. During Lactic acid fermentation …….

a) O_2 is used, CO_2 is not liberated

b) O_2 is not used, CO_2 is liberated

c) O_2 is used, CO_2 is liberated

d) neither O_2 is used, nor CO_2 is liberated

Ans: (d)

20. Which one of the following is NOT the function of insulin?

a) Initiates the conversion of glycogen to glucose

b) Initiates the formation of hepatic glycogen from excess of glucose

c) Increases the permeability of cell membrane to glucose

d) Increase the oxidation of glucose in the cells

Ans: (a)

21. The sugar present in milk is

a) Glucose b) Lactose c) Fructose d) Sucrose

Ans: (b)

Milk sugar is lactose (Monomers are galactose and glucose)

22. According to Steward's starch hydrolysis theory, which one of the following is the principal reason for the opening of stomata during daytime?

a) Efflux of K^+ ions from guard cells under the influence of ABA hormone.

b) Photosynthetic utilization of CO_2 in guard cells

c) Influx of K^+ ions into guard cells under the influence of ABA hormone

d) Conversion of sugar into starch in guard cells

Ans: (b)

Due to this pH remains 7 in guard cells. At this pH starch (osmotically inactive) is converted into osmotically active sugar compound. This leads to endosmosis and guard cells move apart. Stomata opens.

23. Which one of the following processes results in the formation of a clone of bacteria?

a) Transformation b) Transduction c) Binary fission d) Conjugation

Ans: (c)

Binary fission is asexual mode reproduction. Progeny of the asexual mode of reproduction are genetically identical, transduction, transformation and conjugation are kind of sexual mode of reproduction, where genetic recombination.

24. Match the types of immunity listed in Column I with the examples listed in Column II. Choose the answer that gives the correct combination of alphabets of the two columns:

	Column – I		Column – II
A	Natural active	**p.**	Immunity developed by heredity
B	Artificial passive	**q.**	From mother to foetus thorugh placenta
C	Artificial active	**r.**	Injection of antiserum to travelers
D	Natural passive	**s.**	Fighting infections naturally
		t.	Induced by vaccination

a) A = p, B = q, C = r, D = t b) A = s, B = r, C = t, D = q

c) A = s, B = t, C = q, D = r d) A = t, B = s, C = r, D = p

Ans: (b)

25. How do you differentiate a butterfly from a moth?

a) Moth is diurnal but butterfly is nocturnal

b) Moth has simple eyes but butterfly has compound eyes

c) Moth has feathery antennae but butterfly has club shaped antennae

d) Moth has one pair of wings but butterfly has two pairs of wings

Ans: (c)

26. Compare the statements A and B

Statement A: To counteract the increase in turgour pressure in plant cells, the cell wall produces an equal and opposite pressure, i.e., wall pressure.

Statement B: When plant cells undergo endosmosis, they swell but donot burst.

a) Statement A is wrong and B is correct

b) Both the statements A and B are correct and A is not the reason for B.

c) Both the statements A and B are correct and A is the reason for B

d) Statement A is correct and B is wrong

Ans: (c)

In fully turgid plant cell T.P = W.P

27. When red blood corpuscles containing both A and B antigens are mixed with your blood serum, they agglutinate. Hence your blood group is …… type

a) A b) B c) AB d) O

Ans: (d)

Blood group of person AB. Contain Antigen – A and Antigen – B

They reacts with antibodies A and B. Both A and B are found in blood group 'O'

28. Bovine spongiform encephalopathy is a disease caused by prions in a …..

a) potato b) man c) sheep d) cow

Ans: (d)

Bovine means cow

Bovine spongiform encephalopathy is mad cow disease

29. Compare the statements A and B

Statement A: When the urine moves through the descending limb, it becomes hypertonic and as it passes through the ascending limb of Henle's loop, it becomes hypotonic

Statement B: The descending limb is permeable to sodium ions, while the ascending limb is impermeable to sodium ions

a) Both statements A and B are wrong

b) Both statements A and B are correct

c) Statement A is correct and B is wrong

d) Statement A is wrong and B is correct

Ans: (c)

Descending limb of Henles loop is permeable for water and impermeable for Na^+ and Cl^- ions.

Ascending limb of Henles loop is permeable for Na^+ and Cl^- ions and impermeable for water

30. To meet the demands of the society, *in vitro* production of a large number of plantlets in a short duration is practiced in floriculture and horticulture industry today. This is called ……..

a) Somatic hybridization b) Micropropagation

c) Hybridoma technology d) Soma clonal variation

Ans: (b)

Micropropogation

31. Due to nondisjunction of chromosomes during spermatogenesis, sperms carry both sex chromosomes (22A + XY) and some sperms do not carry any sex chromosome (22A + O). If these sperms fertilize normal eggs (22A + X), what types of genetic disorders appear among the offsprings?

a) Down's syndrome and Turner's syndrome

b) Down's syndrome and Cri-du-chat syndrome

c) Turner's syndrome and Klinefelter's syndrome

d) Down's syndrome and Klinefelter's syndrome

Ans: (c)

Sperm egg

22A + XY + 22A + X

↓

44A + XXY - Kline filters syndrome

sperm + egg

22A + O 22A + X

44A + XO - turner's syndrome

32. When a fresh water protozoan is placed in marine water, ……..

a) the contractile vacuoles disappear.

b) the contractile vacuoles remain unchanged.

c) the contractile vacuoles become bigger in size.

d) the number of contractile vacuoles increase.

Ans: (a)

Osmotic concentration of the marine water and cell fluid almost become same. No net movement of water molecules into the cell.

Contractile vacuoles required for the elimination of excessive incoming water into the cell

33. Which one of the following pairs is an example for lateral meristem?

a) Phellogen and phelloderm b) Phellogen and fascicular cambium

c) Procambium and phelloderm d) Interfascicular cambium and phellem

Ans: (b)

Phellogen or cork cambium are sec lateral meristem formed during extra stellar sec. growth

Fascicular cambium is primary lateral meristem formed during primary growth. It is remaining of procambium.

34. In peritoneal dialysis, ……

a) the blood is not removed from the body and an artificial filter is used.

b) the blood is removed from the body and an artificial filter is employed.

c) the blood is removed from the body and a natural filter is employed.

d) the blood is not removed from the body and a natural filter is used.

Ans: (d)

Peritonium act as semipermeable membrane

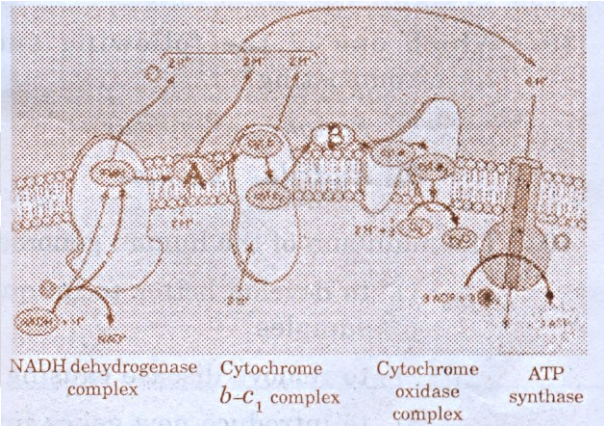
35. The following is a scheme showing the electron transport system. Identify the electron carrier molecules indicated as A and B. Choose the correct option.

a) A = Fe-S protein, B = FMN

b) A = FMN, B = Fe-S protein

c) A = Coenzyme Q, B = Cytochrome C

d) A = Cytochrome C, B = Coenzyme Q



Ans: (c)

36. Which one of the following statement is NOT correct?

During Protein synthesis, ……..

a) UAA codon codes for Lysine.

b) UGG codon codes for Tryptophan.

c) Cysteine is coded by UGU and UGC codons.

d) Tyrosine is coded by UAU and UAC codons.

Ans: (a)

UAA do not codes for amino acid terminator codon

37. In the absence of acrosome, the sperm ……

a) cannot get food

b) cannot swim

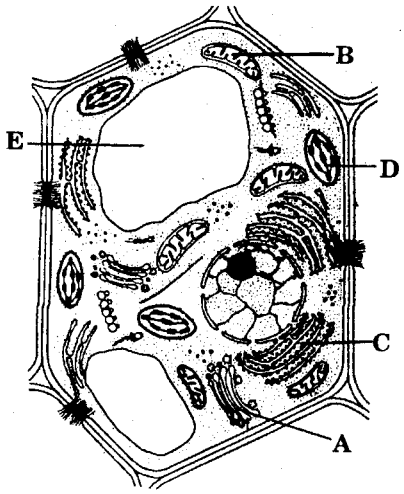
c) cannot penetrate the egg

d) cannot get energy

Ans: (c)

Acrosome contain hydrolytic enzymes like Hyaluronidase, which digest the egg membrane.

38. The diagram of the ultrastructure of a plant cell is given below. Identify the function of the organelles labeled A, B, C, D, E in the diagram.



a) A = Site of photophosphorylation, B = Storage of cell sap; C = Intracellular transport, D = Site of oxidative phosphorylation; E – Principal director of macromolecular traffic

b) A = Storage of cell sap, B = Site of oxidative phosphorylation, C = Principal director of macromolecular traffic, D = Site of photophosphorylation, E = Intracellular transport

c) A = Intracellular transport, B = Site of oxidative phosphorylation C = Principal director of macromolecular traffic, D = Site of photophosphorylation, E = Storage of cell sap.

d) A = Principal director of macromolecular traffic, B = Site of oxidative phosphorylation, C = Intracellular transport D = Site of photophosphorylation, E = Storage of cell sap.

Ans: (d)

A = Principal director of macromolecular traffic (Golgi bodies)

B = Site of oxidative phosphorylation (mitochondria)

C = intracellular transport (ER)

D = site of phosphorylation (chloroplast)

E = storage of cell sap (vacuole)

39. Which one of the following species of earthworm is NOT recommended f vermicomposting?

a) *Perionyx excavatus* b) *Pheretima Posthuma*

c) *Eudrilus eugeniae* d) *Eisenia fetidae*

Ans: (b)

40. The main aim of the human genome project is ……..

a) to develop better techniques for comparing two different human DNA samples.

b) to remove disease causing genes from human DNA.

c) to introduce new genes into humans.

d) to identify the sequence all the genes present in human DNA.

Ans: (d)

41. Succus entericus is secreted by ……..

a) Peyers patches b) Crypts of Lieberkuhn

c) Auerbach's plexus d) Brunner's glands

Ans : (b)

Crypts of Lieberkuhn and Brunner's glands (duodenal glands) are two types of digestive glands found in teh wall of small intestine.

Succus intericus (intestinal juice) is teh combined secretion of both these glands.

42. Cell A and cell B are adjacent plant cells. In cell A, ψ_s = - 20 bars and ψ_p = 8 bars.

In cell B, ψ_s = -12 bars and ψ_p = 2 bars. Then,

a) water moves from cell B to cell A.

b) equal amount of water is simultaneously exchanged between cell A and cell B.

c) water moves from cell A to cell B.

d) there is no movement of water between cell A and cell B.

Ans: (a)

Movement of water between cells, takes place along the water potential gradient water moves from a cell having higher water potential to a cell having lower water potential.

Cell B has higher water potential (-12 bars + 2 bars = -10 bars) where as cell A has lower water potential (-20 bars + 8 bars = -1.2 bars). Hence water moves from cell B to cell A

43. Populations are said to be sympartric when …….

a) two populations are isolated but occasionally come together to interbreed.

b) two populations share the same environment but cannot interbreed.

c) two populations live together and freely interbreed to produce sterile offspring.

d) two populations are physically isolated by natural barriers.

Ans: (b)

Two populations share the same environment but cannot interbreed

44. In which of the following situations, is there a risk factor for children of incurring Erythroblastosis foetalis?

a) Mother is Rh +ve and father is Rh +ve

b) Mother is Rh +ve and father is Rh –ve

c) Mother is Rh -ve and father is Rh –ve

d) Mother is Rh -ve and father is Rh +ve

Ans: (d)

In such a situation, the child can have a disorder called Erythroblastosis foetalis or HDN (Haemolytic disorder of the new born)

45. Compare the statements A and B.

Statement A: RNA produced during transcription is eukaryotic cells cannot be straight away used in photosynthesis.

Statement B: RNA splicing phenomena helps in the removal of exons.

Choose the correct description.

a) Statement A is correct and B is wrong.

b) Statement A is wrong and B is correct.

c) Both the statements A and B are wrong.

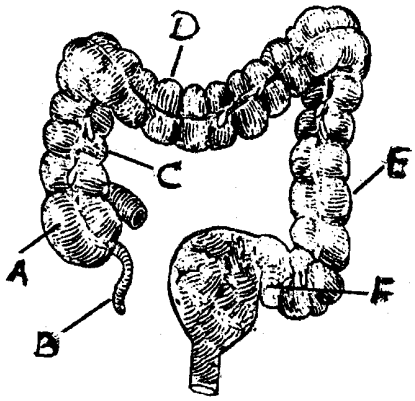
d) Both the statements A and B are correct.

Ans: (a)

Statement A is correct and B is wrong

Statement B should be [66] RNA splicing phenomenon helps in the removal of introns.

46. The diagram of large intestine of man is given below. Identify the parts labeled A, B, C, D, E and F.



a) A = Caecum, B = Vermiform appendix, C = Ascending colon, D = Transverse colon, E = Descending colon, F = Sigmoid.

b) A = Sigmoid, B = Vermiform appendix, C = Descending colon, D = Transverse colon, E = Ascending colon, F = Caecum.

c) A = sigmoid, B = Vermiform appendix, C = Ascending colon, D = Transverse colon, E = Descending colon, F = Caecum.

d) A = Caecum, B = Vermiform appendix, C = Sigmoid, D = Ascending colon, E = Transverse colon, F = Descending colon.

Ans: (a)

47. In genetic fingerprinting, the 'probe' refers to …….

a) a radioactively labeled double stranded RNA molecule.

b) a radioactively labeled double stranded DNA molecule.

c) a radioactively labeled single stranded DNA molecule.

d) a radioactively labeled single stranded RNA molecule.

Ans: (c)

48. Which one of the following is NOT a method of soil conservation?

a) Strip cropping b) Crop rotation c) Mulching d) Overgrazing

Ans: (d)

Overgrazing by animals is one of the causes of soil erosion (human cause)

49. In C_4 pathway, the CO_2 fixation in mesophyll cells is carried out by the enzyme …….

a) Pyruvate dehydrogenase
b) Pyruvate decarboxylase
c) PEP carboxylase
d) Rubisco

Ans: (c)

It catalyses fixation of CO_2 by phosphor Enol Pyruvic acid and formation of Oxaloacetic acid in C_4 Cycle.

50. Which one of the following is a driving force for the process of passive absorption water in roots?

a) Activity of aquaporins
b) Transpiration in leaves
c) The increase in imbibitional pressure in root cells.
d) Root pressure

Ans: (b)

Loss of water by transpiration thorugh leaves results in development highly negative water potential in leaf cells or a suction force called transpiration pull. This helps in passive absorption of water by roots.

51. If the systolic pressure is 120 mm Hg and diastolic pressure is 80 mm Hg, the pulse pressure is …….

a) 120 – 80 = 40 mm Hg
b) 120/80 = 1.5 mm Hg
c) 120 x 80 = 9600 mm Hg
d) 120 + 80 = 200 mm Hg

Ans: (a)

Pulse pressure is difference between systolic pressure and diastolic pressure.

52. Tyloses are found in …….

a) sclereids b) sclerenchyma fibres c) secondary phloem d) secondary xylem

Ans: (d)

Tyloses are balloon shaped outgrowths of xylem parenchyma found inside the lumina of xylem vessels of secondary xylem (Heart wood)

53. Which one of the following synthetic growth regulators is used to promote synchronized flowering in pineapple?

a) Indolebutyric acid
b) 2-chloroethylphosphonic acid
c) Benzyl Aminopurine
d) Phenylmercuric Acetate

Ans: (a)

It is a synthetic Auxin

It can be Ans (b) also. It inhibits the production of IAA and induce the flowering.

54. Sporopollenin, a chemical substance is found in ……

a) Endothecium of anther

b) Tapetum of anther

c) Intine of pollen grain

d) Exine of pollen grain

Ans: (d)

55. Which one of the following statements about the events of noncyclic photophosphorylation is NOT correct?

a) Photolysis of water takes place.

B) O_2 is released.

c) Only one photosystem participates.

D) ATP and NADPH are not produced

Ans: (c) and (d)

Two photosystems participates. ATP and NADPH are produced

56. With reference to enzymes, turnover number means ……

a) the number of substrate molecules that molecule of an enzyme converts into products per minute.

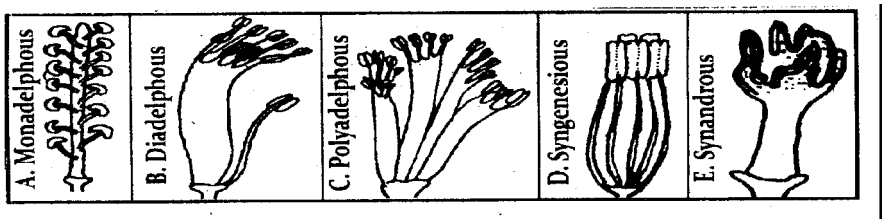
b) the number of substrate molecules that molecule of an enzyme converts into products per day.

c) the number of substrate molecules that molecule of an enzyme converts into products per hour.

d) the number of substrate molecules that molecule of an enzyme converts into products per second.

Ans: (a)

57. The following diagrams A, B, C, D and E show the different types of arrangement of stamens based on the cohesion of their parts in different plats. Assign the stamens to their respective plats. Choose the correct answer.



a) A = *Hibiscus rosa-sinensis*, B = *Bombax ceiba,* C = *Helianthus annus* D = *Cucurbita pepo*, E = *Crotolaria juncea.*

b) A = *Hibiscus rosa-sinensis*, B = *Crotolaria juncea,* C = *Bombax ceiba,* D = *Helianthus annus*, E = *Cucubrita pepo.*

c) A = *Hibiscus rosa-sinensis*, B = *Helianthus annus,* C = *Cucurbita pepo,* D = *Crotolaria juncea*, E = *Helianthus annus*.

d) A = *Hibiscus rosa-sinensis,* B = *Bombax ceiba*, C = *Cucurbita pepo*, D = *Crotolaria juncea*, E = *Helianthus annus.*

Ans: (b)

58. The single horned Rhinoceros is protected at …….

a) Anashi National Park
b) Rajiv Gandhi National Park
c) Kahna Nation Park
d) Kaziranga National Park

Ans: (d)

59. According to Boyle's law, the product of pressure and volume is a constant. Hence,

a) if volume of lungs in increased, the pressure decreases disproportionately.
b) if volume of lungs in increased, the pressure remains the same.
c) if volume of lungs in increased, the pressure decreases proportionately
d) if volume of lungs in increased, the pressure also increases proportionately.

Ans: (c)

60. According to Darwin, evolution is …….

a) a slow, sudden and discontinuous process.
b) a slow and discontinuous process.
c) a sudden but discontinuous process.
d) a slow, gradual and continuous process.

Ans: (d)