ANNUAL EXAMINATION (2019-20)

Marking Scheme

Class - XI

Biology.

Section A.

1. (d) Gymnosperm — 1

Or

(c) A gametophyte free living structure formed in pteridophytes — 1

2. (b) Collagen. — 1

3. (c) Nodules present on root — 1

Or

(a) Mn — 1

4. Vernalisation occurs in response to low temperature — 1

5. (a) Glucocorticoids — 1

Section-B

6. Luteinizing hormones. plays.

In males : stimulates the synthesis & secretion of androgens — 1

In females : LH induces ovulation of graafian follicles and maintains corpus luteum formed from the remnants of graafian follicles. — 1 — 2

7. Selective reabsorption : is a process in which substances like glucose, amino acids, vitamins, water is reabsorbed from the blood in PCT. — 1

Tubular secretion : is a process in which ions and other waste products are transported back into filtrate in DCT from the blood. — 1 — 2

8. In Aerobic condition

Glucose is completely broken down to produce 38 ATP through glycolysis, Kreb's cycle & ETS — 1

In anaerobic condition

Glucose is not completely broken down to release 2 ATP. Hence less number of glucose are required for maintenance of cellular metabolism in aerobic condition. — 1

2

9. (a) Metaphase
(b) Anaphase
(c) Zygotene of Prophase I of meiosis
(d) Pachytene of Prophase I of meiosis.

1/2 x 4 = 2

10. Lysosomes

* They are single membrane bound vesicular structures formed by the process of packaging in the golgi apparatus. — 1/2 + 1/2
* Contains hydrolytic enzymes — 1/2
* Capable of destroying the cell itself. — 1/2

2

OR

Mesosomes are special membraneous structures formed by the extensions of plasma membrane — 1

Functions

* Cell wall formation.
* DNA replication & distribution to daughter cell. — 1/2

11. (i) Medusa (ii) Parapodia.
(iii) Radula (iv) Pneumatic bones

1/2 x 4 = 2

12. Cuboidal epithelium – ducts of glands or tubules of nephrons.
Ciliated epithelium – Bronchioles / Fallopian tube
Compound epithelium – Buccal cavity / Pharynx / Pancreatic ducts.
Areolar tissue – Beneath the skin

1/2 x 4 = 2

Section - C

13. Gynoecium . It comprises of one or more carpels 1/2
Carpel consists of
* Stigma - sticky tip of carpel that receive pollen grain. 1/2
* Style - long tube-like structure that connects the ovary to the stigma. 1/2
* Ovary - the basal enlarged part 1/2

Each ovary bears one or more ovules attached to the flattened cushion-like placenta. 1

Or

(i)(a) Cucumber — stem tendrils
(b) Pea — Leaf tendrils. 1/2 x 6 = 3
(c) Pumkins — stem tendrils
(d) Grapevine — stem tendrils

(ii) Rhizophora - Pneumatophores
Sugarcane - Still roots.

14. Cambial ring or Vascular cambium are formed by two types of meristems
* Fasicular / Interfasicular 1
* Intrafasicular (explain) 1
Significance - To calculate age of tree 1.

15. Glycosidic bond : Bond present between two monosaccharide molecules to form a polysaccharide. 1
It is formed by dehydration

Peptide bond : When -COOH group of one amino acid is linked with -NH group of other amino acid. The bond formed is peptide bond 1

Phospho-diester bond : The bond between the phosphate and hydroxyl group of sugar ~~is~~ an either side of nucleotide chain 1.

16.

Anaphase of Mitosis	Anaphase I of Meiosis
(i) Centromeres split and chromatids separate	(i) Homologous chromosome separate ✓
(ii) Chromatids move to opposite poles.	(ii) Sister chromatids remain associated at their centromere ✓
Diagram NCERT Pg 166 Fig 10.2 (c)	NCERT Pg 169 Fig 10.3 1

17. (i) Xylem transport is unidirectional due to one way flow of water in transpiration 2
Phloem transport is bidirectional due to presence of source - sink relation. } 3

(ii) Porins are the proteins that forms channels in the membrane for molecules to pass through ✓

18. (i) GA_3 will increase the length of the rice seedlings ✓

(ii) It will ripe the fruit due to release of ethylene by rotten fruit. ✓

(iii) Cell division will not occur ✓

19. a) The oxygen dissociation curve is a graph that shows the percent saturation of haemoglobin at various partial pressure of oxygen. ✓

b) Right shift indicates decreased oxygen affinity of haemoglobin allowing more oxygen to be available to the tissues

Left shift indicates increased oxygen affinity of haemoglobin allowing less oxygen available to the tissue ✓

c) High pO_2, low pCO_2, lesser H^+ concentration and lower temperature ✓

20. NCERT Pg 307 (consider diagram also) 1 1/2
Sacroplasmic reticulum — store Cattions 1/2
Myosin head — binds with B Actin. & uses ATP to sliding on Actin filament 1/2
F-actin — active site for binding myosin protein. 1/2

or

a) Pivot Joint
b) Saddle joint
c) Hinge joint
d) Ball & socket joint
e) Fibrous joint
f) Cartilagenous joint. 1/2 x 6 = 3

21. (i) Hypothalamus 1
(ii) NCERT Pg 318 Fig 21.2 (Both diagram A & B) 1+1

Section D

22. Doctor suggest ECG to the patient 1/2
P-Wave — depolarisation of atria i.e contraction of both atria.
QRS complex — depolarisation of ventricles which results in initiation of contraction in ventricles. 1
Q-Wave — marks the beginning of ventricular systole. 1/2
T-Wave — end of ventricular systole 1/2
Doctor reached to this conclusion by studing number of QRS complexes. in given time. 1/2

23. (i) Hydroponics ; Julius von Sache. 1/2 + 1/2
(ii) Tomato, cucumber / lettuce 1/2 + 1/2
(iii) Aerating tube — for optimum growth. 1/2
Feeding funnel — for adding nutrient solution time to time 1/2

24. (i) Improper functioning of liver. 1

(ii) Functions of bile :-

a) Emulsification of fats 1

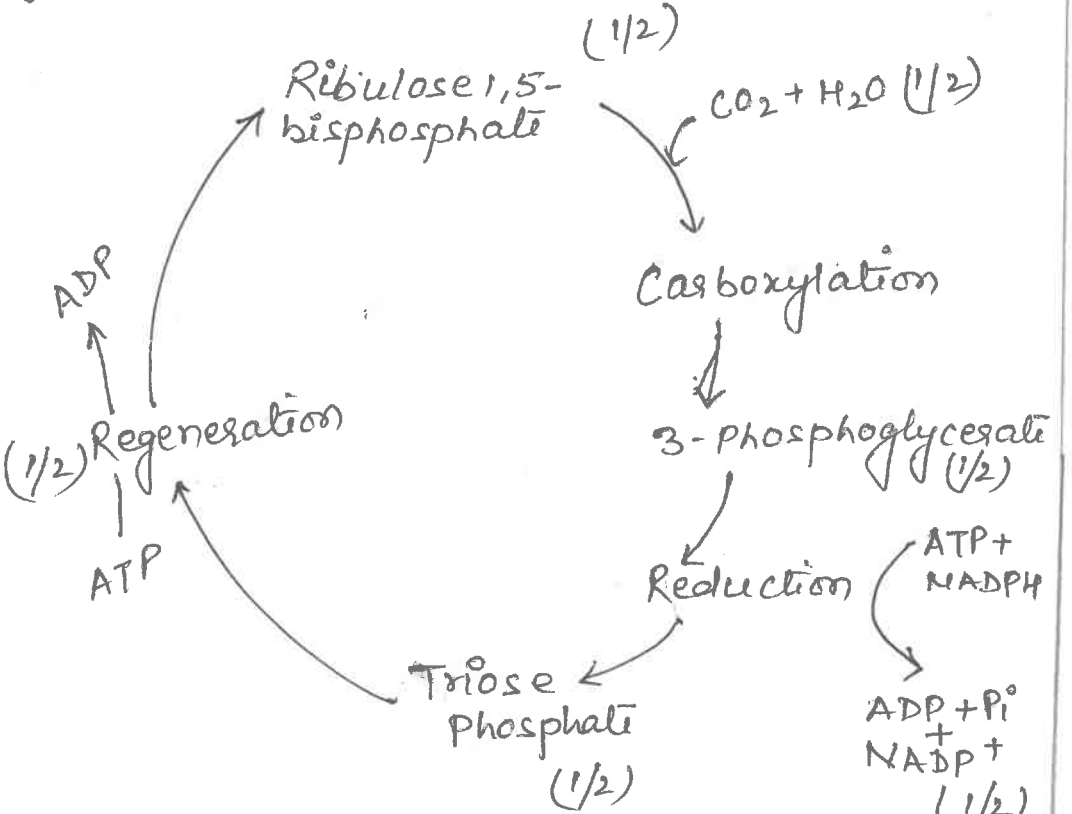
b) Activation of enzyme lipases 1

Section - E

25. Phases of Calvin cycle

(i) Carboxylation (ii) Reduction

(iii) Regeneration 1/2 x 3 = 1 1/2



Marks are allotted in front of steps.

1/2 x 6 = 3

C_4 plants are preferred over C_3 plants due to no photorespiration 1/2

OR

(i) Yes we can see that whether it is C_3 or C_4 plant 1/2

C_4 plants are adapted to dry condition 1/2

(xeric / desert-) therefore leaves are thick. 1/2

parallel venation 1/2

mostly monocot

(ii) • RuBisco present in Bundle sheath cells of C_4 plants 1
where CO_2 is easily present by breakdown of organic acid

• This enzyme brings only carboxylation due to presence of CO_2 1

• In C_3 carries carboxylation but also help oxygenation 1.

26. Renin is released from JGA on activation by fall in blood pressure.
Renin converts angiotensinogen in blood to angiotensin-I & then to angiotensin-II
Angiotensin-II being a powerful vasoconstrictor increases the glomerular blood pressure & thereby GFR. 2½

Angiotensin-II also increases the blood volume by signaling the PCT to reabsorb more NaCl and water and it also activates adrenal cortex to release aldosterone hormone. Aldosterone causes reabsorption of Na+ & water from DCT. This also leads to an increase in blood pressure and GFR. 2½

Or

(i)(a) Micturition – act of discharge of urine from the urinary bladder.
During micturition the urine passes from bladder to the outside via urethra. 1

(b) Uremia – malfunctioning of kidneys can lead to accumulation of urea in blood. which may lead to kidney failure. 1

(c) Glomerulonephritis – inflammation of glomeruli ½

(ii) Haemodialysis – Removal of accumulated wastes like urea from blood. ½
It is done by dialysing unit, blood from the body is pumped into dialysing unit after adding anticoagulant heparin, then blood is passed to coiled cellophane tube surrounded by fluid same as plasma. cellophane membrane act as filter and remove all the waste and purified blood is again passed in the body. 2

27. Cardiac cycle makes one complete cycle of relaxation and contraction occuring in the heart.

The Events are

* Atriole systole - due to contraction, atria contracts, triggered by SAN As bicuspid and tricuspid valves are open the blood is forced into the ventricle.
* Beginning of the ventricular systole
  - Wave of contraction trigger by the AV node causes the contraction of ventricles that leads to the bicuspid & tricupsid valve to close & hence produce the first sound - Lub.
* Complete Ventricular systole
  After the ventricular contract, blood flows into the pulmonary vein & aorta due to opening of semilunar valve.
* Beginning of ventricular diastole
  The ventricles relax while the semilunar valves remain closed which causes the second sound - Dub:
* Complete Ventricular diastole
  A fall in pressure of ventricles causes the opening of the bicuspid and tricuspid valve & hence blood flows from atria to ventricles. 1 X 5 = 5

Or

(i) a - SA Node b - AV Node
c - Bundle of His d - Aorta 1/2 x 4 = 2

(ii) Heart is capable of generating cardiac contraction independently. 1

(iii) a - anti B b - B, O
c - A, B d - O 1/2 x 4 = 2.

x