

M.M. : 70

**CLASS-XI  
BIOLOGY**

**Marking Scheme/Hints to Solution**

**Note :** (Any other relevant answer not given herein but given by the candidate be also suitably rewarded)

S. No.	Value Points/Key Points	Marks Allotted to each value point/key point	Total Marks
<b>Section-A</b>			
1.	(a) The same class, but different species	1	1
2.	(b) heterotrophs	1	1
3.	(c) Golgi apparatus	1	1
4.	(a) Nucleoside	1	1
5.	(b) $2\text{ATP} + 2\text{NADH} + 2\text{H}^+$	1	1
6.	(d) 104   40   40   45   95   40   40	1	1
7.	(a) The 'R' band gets reduced, whereas the 'S' band retains the length	1	1
8.	(b) (i) Incorrect (ii) Correct (iii) Incorrect (iv) Correct	1	1
9.	(d) Nearly 99% of the glomerular filtrate is reabsorbed by the renal tubule.	1	1
10.	(a) Body receives fully oxygenated blood while gills receive partially oxygenated blood	1	1
11.	(b) Neurotransmitters	1	1

12.	(b) Antidiuretic hormone	1	1
13.	(b) Both A and R are true and R is not the correct explanation of A.	1	1
14.	(c) A is true but R is false.	1	1
15.	(d) A is False but R is true.	1	1
16.	(a) Both A and R are true and R is the correct explanation of A.	1	1
17.	(a) Cyclostomata	$\frac{1}{2}$	2
	(b) Gnathostomata	$\frac{1}{2}$	
	(c) Pisces	$\frac{1}{2}$	
	(d) Tetrapoda	$\frac{1}{2}$	
18.	(a) Common bile duct	1	2
	(b) Helps in emulsification of fat	1	
19.	The sequence of amino acids i.e., the positional information in a protein- which is the first amino acid, which is second, and so on- is called the primary structure	1	2
	The long protein chain is also folded upon itself like a hollow woolen ball, giving rise to the tertiary structure	1	
	<b>OR</b>		
	(a) Morphine and Codeine	$\frac{1}{2} + \frac{1}{2}$	
	(b) Rubber, Gums, Cellulose (any two)	$\frac{1}{2} + \frac{1}{2}$	
20.	X - F <sub>0</sub> is an integral membrane protein complex that forms the channel through which protons cross the inner membrane.	$\frac{1}{2} + \frac{1}{2}$	2
	Y-F <sub>1</sub> /catalytic site for the production of ATP	$\frac{1}{2} + \frac{1}{2}$	

21.	(a) It is autoexcitable/auto regulated by specialised muscles (Nodal Tissue)	1	
	(b) Signal from SAN goes to purkinje fiber with a gap of time interval.	1	2
22.	• The ovules are borne on megasporophylls which may be clustered to form the female cones.	1	
	• The megaspore mother cell divides meiotically to form four megaspores.	1	3
	• One of the megaspores enclosed within the megasporangium develops into a multicellular female gametophyte that bears two or more archegonia or female sex organs.	1	
23.	Fig 9.4 NCERT, Page - 115 Labels - X axis- progress of reaction Y axis - potential energy Substrate Product Activation energy with enzyme Activation energy without enzyme (any four)		3
		$\frac{1}{2} \times 4$	
24.	(a) Cnidoblast	$\frac{1}{2}$	3
	Cnidaria / Coelenterata	$\frac{1}{2}$	
	(b) Polyp	$\frac{1}{2}$	
	Medusa	$\frac{1}{2}$	
	(c) Metagenesis	1	

25.	(a) Stomata, Trichomes, Cuticle	$\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$	3												
	(b) Parenchyma, sclerenchyma, collenchyma	$\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$													
26.	Figure 8.10 NCERT; page: 99- Any four labels as in figure	1 $\frac{1}{2} \times 4$	3												
27.	<table border="1"> <thead> <tr> <th></th> <th>Non cyclic</th> <th>Cyclic</th> </tr> </thead> <tbody> <tr> <td>Photosystem</td> <td>PS I &amp; PSII</td> <td>PSI only</td> </tr> <tr> <td>Energy molecule</td> <td>ATP &amp; NADP</td> <td>ATP only</td> </tr> <tr> <td>Light</td> <td>680 nm, 700 nm</td> <td>Beyond 680 nm</td> </tr> </tbody> </table>		Non cyclic	Cyclic	Photosystem	PS I & PSII	PSI only	Energy molecule	ATP & NADP	ATP only	Light	680 nm, 700 nm	Beyond 680 nm	$\frac{1}{2} \times 6$	3
	Non cyclic	Cyclic													
Photosystem	PS I & PSII	PSI only													
Energy molecule	ATP & NADP	ATP only													
Light	680 nm, 700 nm	Beyond 680 nm													
28.	<ul style="list-style-type: none"> <li>Each myosin (thick) filament is a polymerised protein of meromyosin.</li> <li>Each meromyosin has two important parts, a globular head/called the heavy meromyosin (HMM)</li> <li>With a short arm and a tail/the light meromyosin (LMM).</li> <li>The globular head is an active ATPase enzyme and has binding sites for ATP and active sites for actin.</li> </ul> <p style="text-align: center;"><b>OR</b></p> <ul style="list-style-type: none"> <li>True ribs - 1-7th pair</li> <li>False ribs - 8- 10th pair</li> <li>Floating ribs - 11 and 12th pair</li> </ul>	$\frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2}$	3												
29.	(a) A will develop sporophyte as it will have egg in its archegonia (no marks for writing 'A' only)	1													
	(b) It will produce asexual spores	1	4												
	(c) Its thallus is prostrate/mosses are erect	1+1													


OR

30. (c) Gemma cups - haploid/sporophyte - diploid 1+1  
(a) Cell 'B' as C value reduced to half 1  
(no marks for writing 'B' only)  
(b) 48 chromatids 1  
(a) Figure 10.1 page 121 (two daughter cells must be represented) 2

OR

(c)

	Number of chromosomes at each pole	Number of chromatids at each pole
Anaphase I	7	14
Anaphase II	7	7

31. (a) (i) Five gamopetalous-  $C_{(5)}$   
(ii) Actinomorphic -  $\oplus$   
(iii) Bicarpellary syncarpous -  $G_{(2)}$   
(iv) Unisexual staminate -   
(v) Perianth - P  
(b) (i) Bisexual  
(ii) Epipetalous  
(iii) Superior ovary  
(iv) Bractetate  
(v) Four Sepals in two whorls

OR

4

$\frac{1}{2} \times 4$

$\frac{1}{2} \times 10$

5

- Figure 5.3
- Root cap - It protects the tender apex of the foot as it makes its way through the soil.
- Region of meristematic activity - The cells of this region divide repeatedly.
- Region of elongation - The cells in this region undergo rapid elongation and enlargement
- Region of maturation - cells mature

1\*5

32. (a) Induce rooting in a twig - Auxin  
 (b) Quickly ripen a fruit - Ethylene  
 (c) Delay leaf senescence - Cytokinin  
 (d) Induce growth in axillary buds - Cytokinin  
 (e) a rosette plant- GA

1\*5

5

'Bolt' OR

- Water - Turgidity of cells helps in extension growth.
- Water also provides the medium for enzymatic activities needed for growth.
- Oxygen helps in releasing metabolic energy essential for growth activities.
- Nutrients (macro and micro essential elements) are required by plants for the synthesis of protoplasm and act as a source of energy.
- Environmental signals such as light and gravity also affect certain phases/stages of growth.

1\*5

33.

- Inside the kidney, there are two zones, an outer cortex and an inner medulla.
- The medulla is divided into a few conical masses (medullary pyramids) projecting into the calyces (sing.: calyx).
- The cortex extends in between the medullary pyramids as renal columns called Columns of Bertini
- Towards the centre of the inner concave surface of the kidney is a notch called hilum through which ureter, blood vessels and nerves enter.
- Inner to the hilum is a broad funnel shaped space called the renal pelvis with projections called calyces.

1\*5

5

**OR**

The JGA plays a complex regulatory role.

- A fall in glomerular blood flow/glomerular blood pressure/GFR can activate the JG cells to release renin
- Which converts angiotensinogen in blood to angiotensin I and further to angiotensin II.
- Angiotensin II, being a powerful vasoconstrictor, increases the glomerular blood pressure and thereby GFR.
- Angiotensin II also activates the adrenal cortex to release Aldosterone.
- Aldosterone causes reabsorption of Na<sup>+</sup> and water from the distal parts of the tubule.

1\*5

This also leads to an increase in blood pressure and GFR. This complex mechanism is generally known as the Renin-Angiotensin mechanism.