**Exercise-1** 

> Marked Questions are for Revision Questions.

#### **ONLY ONE OPTION CORRECT TYPE**

#### **SECTION - A # Growth and Development** 1. Maximum growth in roots occurs (1) At apex (2) In presence of light (3) Behind the apex (4) In presence of soil 2. Auxanometer is meant for determining (2) Photosynthetic activity (1) Respiratory activity (3) Growth activity (4) The amount of auxins 3. What is the role of light in plants (1) It is necessary for photosynthesis (2) It controls growth and movement (3) It controls the distribution of hormones (4) All the above 4. Evergreen trees remain green throughout the year on account of (1) Absence of leaf fall (2) Leaves falling in small numbers at intervals (3) Supply of the moisture throughout the year (4) Cold climate 5. Plant growth in length is by (1) Apical meristem (2) Lateral meristem (4) Periblem (3) Dermatogen 6.2 Growth is (1) Unidirectional backward (2) Reversible (3) Unidirectional forward (4) None of the above 7. The rate of growth of any organism follows (1) Hyperbola curve (2) J-shaped curve (3) Sigmoid curve (4) Parabola curve 8. The growth in plants is (1) Limited (2) Unlimited (3) Unlocalised (4) None of these 9.2 The correct sequence of cellular growth stages is (1) Division $\rightarrow$ differentiation $\rightarrow$ elongation (2) Division $\rightarrow$ elongation $\rightarrow$ differentiation (3) Differentiation $\rightarrow$ division $\rightarrow$ elongation (4) Elongation $\rightarrow$ differentiation $\rightarrow$ division 10. Energy for the early growth of a developing bean embryo comes from (2) Water in the soil (1) Sunlight (4) Leaves in the seed (3) Food in the soil 11. Arithmetic growth can be mathematically expressed as (3) $\frac{dN}{dt} = rN$ (4) $\frac{dN}{dt} = rN\left[\frac{K-N}{K}\right]$ (1) $L_{t} = L_{0} + rt$ (2) $W_1 = W_0 e^{rt}$

#### SECTION - B # Introduction, Discovering of PGR, Auxin, Gibberellins and Cytokinins 1. The natural plant hormones were first isolated from (1) Corn germ oil and human urine (2) Cotton fruits, spinach leaves and rice plants (3) Avena coleoptile, spinach leaves and the fungus Gibberella (4) Human urine and rice seedlings 2. In which of the following respect the plant hormones differ from enzymes (1) Required in less quantity (2) They are expended in the process (3) They release some energy (4) None of the above 3. Plant hormones are usually (1) Proteins (2) Lipids (3) Carbohydrates (4) Aromatic compounds 4. Leaf fall occurs as abscission layer is formed when the content of (1) Auxin increases (2) Auxin decreases (3) Abscisic acid decreases (4) Gibberellic acid decreases 5. Apical dominance in higher plants is due to (1) Balance between auxin and cytokinin (2) Enzyme activity and metabolism (3) Carbohydrates (4) Photoperiodism 6.2 Indole -3-acetic acid called as auxin was first isolated from (1) Human urine (2) Corn germ oil (3) Fusarium (4) Rhizopus 7. Parthenocarpy is induced by (1) ABA (2) Auxins (3) Zeatin (4) Cytokinin 8. Highest concentration of auxins exist in (1) At the base of various plant organs (2) Growing tip of plants (4) In xylem and phloem cells only (3) In leaves 9. Which of the following prevents falling of fruits (1) GA<sub>3</sub> (2) NAA (3) Ethylene (4) Zeatin 10. The movement of auxin is largely (1) Basipetal (2) Acropetal (3) Centripetal (4) Centrifugal 11. Bioassay for auxin is (1) Avena curvature test (2) Green leaf test (3) Dwarf maize test (4) Cell division test

12. IAA Stands for

(1) Indole–3–acetic anhydride
(2) Indole–3–acetic acid
(3) Indole–3–acetic acetate
(4) Indole–3–acetoacetic acid

13. Auxin – b was first isolated by

(1) Kogl and Erxlaben
(2) Kogl, Erxlaben, Haagen and Smith
(3) Miller and Skoog
(4) Yabuta and Sumiki

14.ര	The presence of auxins in a solution could be tested by					
	(1) Avena sativa stem t	tip test	(2) Carbon tetrachloride test			
	(3) lodine test		(4) Defoliation test			
15.	During germination, ste	em grows upward and ro	ot goes downward becau	ISE		
	(1) It depends upon light		(2) Of auxin			
	(3) It does not depend	on light	(4) Of epinasty and hyp	oonasty		
16	Specific property attribu	uted to dibberelling is				
10.	(1) Shortening of genet	tically tall plants	(2) Elongation of genet	ically dwarf plant		
	(1) Ononcerning of generation	n na	(2) Elongation of generation			
		9		leaves		
17.	Gibberellins differ from	auxins since they produ-	се			
	(1) Cell division	(2) Stem elongation	(3) Root initiation	(4) Shortening of internodes		
18.	Bakane disease in pad	dy is caused by				
	(1) Abscisic acid		(2) Gibberellic acid			
	(3) Phenyl acetic acid		(4) Naphthalene acetic	acid		
19. ര	The chemical nature of	dibberellins is that they	are			
	(1) Acidic	(2) Alkaline	(3) Proteinaceous	(4) Amines		
00.	The beautient in the d	in match allows of familian		······		
20.2	i ne normone involved	in metabolism of food ma	aterial in cereal grain dui	ing germination is		
	(1) Auxin	(2) CK	(3) GA	(4) None of these		
21.	Cytokinin is a hormone whose main function is					
	(1) Induction of cell divi	ision and delay in seneso	cence			
	(2) To take part in cell of	division				
	(3) Refers to cell move	ments				
	(4) To cause dormancy	/				
22.	Leaf fall can be prevented by					
	(1) Florigen	(2) Auxin	(3) Cytokinins	(4) Abscisic acid		
22	Cutokining are formed	in				
23.	(1) Poote		(2) Eruito	(1) Stome		
	(1) ROOIS	(Z) Leaves	(3) Fiults			
24.	Name 'Zeatin' was give	en by				
	(1) Skoog	(2) Miller	(3) Letham	(4) Melver		
25.	All the cytokinins are					
	(1) Acidic	(2) Aminopurines	(3) Phenol	(4) Glucosides		
		· · · · · · · ·				
26.	Which of the following	induces flowering in shor	t day plant			
	(1) Gibbereilins	(2) Cytokinin	(3) Auxins	(4) Ethylene		
27.১	Dormancy of seed is bi	roken by				
	(1) Auxin	(2) Gibberellins	(3) Ethylene	(4) Cytokinin		
28.	IAA firstly isolated from	I				
	(1) corn germ oil	(2) Wheat endosperm	(3) human urine	(4) None of the above		

29.	Who discovered cytokir	nins?	(3) 1 & 2	(1) None the above	
			(0) 1 4 2		
30.১	Apical dominance is ca (1) Auxin	used by (2) Gibberellin	(3) Kinetin	(4) ABA	
31.	The hormone which ha	s negative effect on api (2) Auxin	cal dominance is (3) Gibberellin	(4) Ethylene	
32.2	The growth hormones r (1) Auxins	esponsible for bolting ar (2) Kinetin	e (3) Coumarins	(4) Gibberellins	
33.	Weedcide 2, 4 - D is (1) Pesticide (3) Auxin		<ul><li>(2) Growth inhibitor hormone</li><li>(4) Insecticide</li></ul>		
34.	Gibberellin is obtained (1) Phytophthora infesta (3) Gibberella fujikuroi	from ans	(2) Fusarium indicum (4) Alternaria solani		
35.	What will be effect on exposed to unidrectiona (1) Curvature towards I (3) No curvature occurs	curvature if gelatin is pla al light? ight occurs	<ul><li>aced between coleotile tips and the coleoptile and then</li><li>(2) Curvature away from light occurs</li><li>(4) None of the above</li></ul>		
36.	Went found that curvature of coleoptile is (1) Directly proportional to concentration of auxin (2) Inversely proportional to concentration of auxin (3) Not affected by concentration of auxin (4) None of the above				
37.	How the polar transport (1) From tip towards ba (3) From centre towards	t of auxins occurs se s lateral side	<ul><li>(2) From base towards tip</li><li>(4) From lateral side towards centre</li></ul>		
38.	Which of these causes (1) NAA	root initiation from cut er (2) IBA	nd of stem (3) Both of above	(4) None of these	
39.	Dormancy in potato car (1) IBA	be induced by (2) NAA	(3) Malic hydrazide	(4) All the above	
40.	Parthenocarpy can be i (1) IAA	nduced by (2) NAA	(3) IBA	(4) All the above	
41.	What is used to control (1) naphthalene acetic (3) naphthyl acetamide	lodging in wheat etc. acid	(2) IAA (4) all the above		
42.	More flowering and frui (1) NAA	ting in pineapple occurs (2) 2-4D	due to (3) Both of above	(4) None of above	

43.ര	It is essential for synthesis of auxin					
	(1) Mn	(2) Zn	(3) Ca	(4) Mg		
44.2	Which is the most impo (1) GA <sub>1</sub>	ortant gibberellin (2) GA <sub>2</sub>	(3) GA <sub>3</sub>	(4) GA <sub>4</sub>		
45.	Gibberellin is formed fr (1) Acetyl Co~A	om (2) Methionine	(3) isoprene	(4) None of the above		
46.	What is the sudden gro (1) Bolting (3) Internode elongatio	wth in very reduced sten	n in biennials called (2) Cell elongation (4) None of the above			
47.	Parthenocarpy can be (1) ABA	induced in apple and pea (2) Gibberellins	ar by (3) Both of above	(4) None of these		
48.	Which enzyme is synth (1) α-Amylase	eized in aleurone layers (2) Protease	of germinating seeds du (3) Lipase	e to the effect of gibberellins (4) None of the above		
49.	Generally which sex de (1) Maleness	evelops due to the effect ( (2) Femaleness	of gibberellins (3) Bisexuality	(4) None of these		
50.2	In which plants, gibbere (1) In LDP	ellins induce flowering (2) In SDP	(3) In DNP	(4) All the above		
51.	What is the chemical name of Kinetin (1) 6-(4 hydroxy 3-methyl trans 2-butene aminopurine) (2) 6-furfuryl aminopurine (3) Dimethyl allyl adenine (4) None of the above					
52.	Which is the most effec (1) Kinetin	ctive cytokinin (2) Kinin	(3) Zeatin	(4) All the above		
53.	By which experiment cytokinin is bioassayed (1) Induction of growth in soybean cotyledon culture (2) Induction of growth in tobacco cortex culture (3) Both of the above (4) None of the above					
54.	Delay of senscence is ( (1) Auxin	due to the effect of (2) Cytokinin	(3) Both of above	(4) None of the above		
55.æ	Cytokinins cause increase in resistance against (1) Effect of high temperature (3) Diseases		t (2) Effect of low temperature (4) All the above			
56.2	What is the reason of p (1) More distribution of (3) Uneven distribution	hototropism auxin of auxin	<ul><li>(2) Less distribution of</li><li>(4) Rapid synthesis of a</li></ul>	auxin auxin		

- **57.** What is the effect of high auxin concentration on root growth
  - (1) Growth is inhibited
  - (2) Growth is induced
  - (3) Growth remains unaffected
  - (4) Growth sometimes increases sometimes decreases
- 58. Which of the following growth regulator is used for increase in length of grapes Stalks
  (1) Auxin
  (2) Gibberellin
  (3) Cytokinins
  (4) Ethylene

#### **SECTION - C # Ethylene**

#### 1. Climacteric is

- (1) A phenomenon related to fruit ripening
- (2) The condition of a plant when all of its fruits are almost ripe
- (3) The condition of a plant when most of its leaves have turned yellow
- (4) None of the above

#### 2. Ethylene gas

- (1) Is a saturated hydrocarbon
- (2) Slows down the ripening of apples
- (3) Retards ripening of tomatoes
- (4) Speeds up maturation of fruits and early ripening of some fruits

#### 3. Ethylene is a

	(1) Gaseous hormone	(2) Gaseous enzyme	(3) Liquid–gas mixture	(4) Solid hormone		
4.	A higher proportion of e (1) Ripened banana	thylene is found in - (2) Green banana	(3) Green apple	(4) Fresh potato tuber		
5.	The most efficient precu (1) Adenine	ursor of ethylene is (2) Thiocarbamate	(3) Zeatin	(4) Methionine		
6.	Which combination of gases is suitable for fruit ripening?					

- (1)  $80\% C_2H_4$  and  $20\% CO_2$ (2)  $80\% CO_2$  and  $20\% CH_2$ (3)  $80\% CH_4$  and  $20\% CO_2$ (4)  $80\% CO_2$  and  $20\% O_2$
- 7. When an unripe banana is sealed in a polythene bag, it remains green for many days. But if an apple is also sealed in the same bag, the banana ripens and turns yellow within a fewdays. The reason is that apple
  - (1) Removes O<sub>2</sub> released by the banana and thus promotes ripening
  - (2) Produces CO<sub>2</sub> which promotes ripening
  - (3) Removes CO<sub>2</sub> which inhibits ripening
  - (4) Releases ethylene which promotes ripening

#### SECTION - D # ABA

1. The following is a naturally occurring growth inhibitors

2.24	This hormone affects o (1) GA	pening and closing of sto (2) Kinetin	omata (3) ABA	(4) IBA	
3.	Hormone used in early (1) Auxin	ripening of fruits is (2) ABA	(3) Ethylene gas	(4) Cytokinin	
4.	Which one of the follow (1) Gibberellin	ing plant hormone is kno (2) Kinetin	own as a stress hormone (3) Auxin	? (4) Abscisic acid	
5.24	Which one of the follow (1) Ethylene	ing is growth inhibitor (2) ABA	(3) GA	(4) IAA	
6.	Which one of the follow (1) ABA	ing hormone is produced (2) Cytokinin	d during leaf fall? (3) Florigen	(4) All of these	
7.2a	What happens during the (1) Auxin synthesis incr (3) Ethylene amount incr	ne formation of abscissio eases creases	n layer (2) Auxin synthesis dec (4) Both 2 & 3	reases	
8.	Ethylene can be used a (1) Ethene	artificially in the forms of (2) Ethephone	(3) Both of above	(4) None of the above	
9.2	Which is not the charac (1) Fruit ripening (3) Growth in length of a	eter of ethylene stem	(2) Isodiametric growth (4) None of the above		
10.	Which effect is due to abscisic acid (1) Induction of dormancy in buds or seeds (3) Senescence		<ul><li>(2) Inhibition of growth</li><li>(4) All the above</li></ul>		
11.24	In which plants inhibitor (1) In LDP	ry effect on flowering occ (2) In SDP	urs due to abscisic acid (3) In DNP	(4) None of the above	
12.	Which effect is stronger (1) Hydrotropism	r in roots (2) Geotropism	(3) Both of above	(4) None of the above	
	SECTIO	N - E # Photoperic	odism and Verna	lisation	
1.	Which of the following f (1) Acidity of soil (3) Amount of green pig	actors influence the proc gment	ess of flowering (2) Water in the soil (4) Photoperiod		
2.	The red absorbing for irradiated at	m of phytochrome gets	converted to the far re	ed absorbing form after getting	
	(1) 660 nm	(2) 730 nm	(3) 530 nm	(4) 660 nm to 730 nm	
3.2	Effect of length of day ( (1) Phototropism	light duration) on flowerir (2) Photoperiodism	ng is called (3) Photo respiration	(4) None of these	
4.	Florigen is synthesized	in			
5.	(1) Stem Phytochrome becomes	(2) Leaves active in	(3) Root	(4) Fruits	

	(1) Green light	(2) Blue light	(3) Red light	(4) None of these		
6.	Stimulus for flowering	accepted by				
	(1) Young leaves	(2) Mature leaves	(3) Stem tissues	(4) None of the above		
S	ECTION - F # See	d dormancy, se	ed germination ar	nd plant movement		
1.24	To remove seed dorn	nancy by mechanical rer	moving of seed coat is call	led		
	(1) Stratification	(2) Scarification	(3) Vernalization	(4) Photoperiodism		
2.	The movement of org	ans in response to light	is called			
	(1) Hydrotropism	(2) Thigmotropism	(3) Phototropism	(4) Geotropism		
3.	Which of the following	g is absolutely necessar	y for germination			
	(1) Light	(2) Water	(3) Low temperature	(4) mineral salts		
4.	During seed germinat	tion				
	(1) heat is liberated		(2) Starch is synthesiz	red		
	(3) Fat is synthesized		(4) Light is absorbed			
5.১	Legume seeds exhibi	t dormancy because of				
	(1) Undeveloped emb	oryos	(2) Hard seed coat	(2) Hard seed coat		
	(3) Absence of cytoki	nins	(4) Absence of gibberellic acid			
6.2	What causes delay in	germination of seeds				
	(1) Mechanical resista	ance of testa	(2) Impermeability of s	seed coat		
	(3) Unavailability of w	ater and $O_2$	(4) All the above			
7.	Why the newly harves	sted potato tubers do no	ot germinate even when pla	aced in favourable conditions		
	(1) Due to dormancy		(2) Due to lack of wate	(2) Due to lack of water absorption		
	(3) Due to difficulty of	light penetration	(4) Due to lack of phot	tosynthetic apparatus		
		MISCELLANE	OUS QUESTIONS			
1.	High concentration of	Auxin is present in				
	(1) Root apex	(2) Stem apex	(3) Node	(4) Petiole		
2.	Hormone responsible	for plant and seed dorn	nancy during drought is			
	(1) IBA	(2) NAA	(3) ABA	(4) Zeatin.		
3.2	Plant hormone causir	ng abscission of leaves	, senescence, bud dorma	ncy and inhibition of cell division		
	is			(A)		
	(1) IAA	(2) Ethylene	(3) Cytokinins	(4) ABA		
4.	Growth substance that	at stimulates nodule form	nation in leguminous plant	s is		
	(1) NAA	(2) IAA	(3) IBA	(4) ABA.		
5.	Photoperiodic stimulu	is is picked up by				
	(1) Phytohormones	(2) Stomata	(3) Phytochrome	(4) Enzymes.		
6.	Photoperiodism influe	ences				

	<ol> <li>(1) Seed germination</li> <li>(3) Internode elongation</li> </ol>	n	(2) Vegetative growth (4) All the above	
7.	A long day plant flowers (1) Red light (3) Light equal to critica	s only when it is exposed Il day length	l to (2) Light more than criti (4) Light less than critic	cal day length al day length.
8.24	Bending of shoot towar (1) Phototaxis (2) Increase in auxin ar (3) More cells divided of (4) More cells divided of	ds light is due to nd elongation of cells in s on lighted side due to aux on lighted side due to gibl	haded area in perellins.	
9.	Growth of lateral branch (1) Removal of axillary (2) Auxin application ov (3) Auxin application ov (4) Removal of apical b	hes is promoted by buds ver decapitated apex ver apical bud vud.		
10.24	Common inhibitor of ge (1) GA (3) Pantothenic acid	ermination is	(2) ABA (4) Tartaric acid.	
11.24	Apical dominance is du (1) High concentration (2) High concentration (3) High concentration (4) Absence of auxin an	e to of gibberellin in apical bu of auxin in terminal bud of auxin in lateral bud nd gibberellin in apical bu	d ıd.	
12.	Stress related hormone (1) Accelerates fruit ripo (3) Aids in fruit develop	ening ment	(2) Stimulates cell divis (4) Helps in stomatal cl	ions osure.
13.	Parthenocarpic fruit car (1) IAA	nnot be produced by app (2) 2, 4-D	lication of (3) ABA	(4) IBA
14.	Essential requirement of (1) $O_2$ and light (3) $H_2O$ and high temper	of seed germination is erature	(2) $H_2O$ and $O_2$ (4) Scarification and ve	rnalisation.
15.	IAA helps in formation (1) stem	of (2) Root	(3) Fruit	(4) lateral buds.
16.	Which one of the follow (1) Wheat	ring is a short day plant? (2) Barley	(3) Larkspur	(4) Dahlia.

#### 17. Match the columns

		Column I		Column II				
	(a)	Auxin	(i)	Colouring test in Le	emon			
	(b)	Gibberellin	(ii)	Cell division test in	plant			
	(C)	Cytokinin	(iii)	Avena curvature te	st			
	(d)	Ethylene	(iv)	Dwarf corn test				
	(1) a -	-iii b—iv c—	ii d-	- i	(2)	a–ib–ivc–ii	1 — iii	
	(3) a -	- iv. b – iii. c –	- i. d –	·ii	(4)	a - ii. b - i. c - iv. 0	d — iii	
		, , , , , ,			( )			
18.	Which	i hormone is r	not tra	Inslocated?	$\langle 0 \rangle$		(1) Or tabiain	
	(1) Au	xin	(	(2) Gibberellins	(3)	АВА	(4) Cytokinin	
19.	α-amy	lase synthesi	is is p	romoted by				
	(1) IA	4	(	(2) GA	(3)	Cytokinin	(4) NAA	
20.	Which	is not a func	tion of	f cytokinin				
	(1) Delay in senescence			(2)	(2) Breaking seed dormancy			
	(3) Promoting bud dormancy			(4)	Promoting stomata	al opening		
21 🥿	Comr	on hiosynthe	tic inh	hibitor of GA is				
	(1) CC	C	(	(2) Jasmonic acid	(3)	Citric acid	(4) Lactic acid	
	•	· ·						
22.	Seeds	s of some plar	nts do	not germinate even	under	favourable conditio	ns due to	
	(1) DC	innancy	(		(3)	vivipary	(4) Non-viability	
23.	Plants	requiring exp	osure	e to light for less than	the ci	itical photoperiod f	or flowering are	
	(1) LD	P	(	(2) DNP	(3)	IDP	(4) SDP	
24.	Which	of the followi	ng is	more essential for the	e brea	king of seed dorma	incy	
	(1) Lig	jht	(	(2) Heat	(3)	Cold	(4) Moisture.	
25. 🔊	Match	list I and list	ll an	d select the correct o	ption			
	List I				Lis	it II		
	(a) Au	xin			(i)	Herring sperm DNA	N .	
	(b) Cy	tokinin			(ii)	Inhibitor of growth		
	(c) Gil	oberellin			(iii)	(iii) Apical dominance		
	(d) Etł	nylene			(iv)	Epinasty		
	(e) Ab	scisic acid			(v)	Induces amylase s	ynthesis	
	(1) a–	iii, b–i, c–v, d-	-iv, e-	-ii	(2)	a-i, b-v, c-iii, d-iv	, e–ii	
	(3) a–	ii, b–i, c–v, d–	-iii, e–	iv	(4)	a–iii, b–i, c–v, d–ii,	e–iv	
26.	The m	aximum arow	/th rat	e occurs in				
_0.	(1) Sta	ationary phase	e (	2) lag phase	(3)	Exponential phase	(4) Senescent phase.	
07	( ) = ··				(-)		(),,	
27.		of the followi	ng pi	gment is responsible	tor flov	vering and germina	(4) Photohormono	
	(1) PN	ylonormone	(	<li>Z) Phylochrome</li>	(3)	FILOLOCHIOME	(4) Photonormone	

	<b>Exercise</b> -	-2			
1.	Which of the following	plant hormones is pri	marily responsible for see	d dormancy	(2 <sup>nd</sup> ABO)
	(1) Auxin	(2) Cytokinin	(3) Abscisic acid	(4) Gibberellic a	icid
2.	Auxins cannot be cons	idered as catalysts a	s they are		(1 <sup>st</sup> NSEB)
	(1) Inactivated by light		(2) used in growth pr	ocess	
	(3) non-proteinaceous	in nature	(4) Active only in larg	e concentration	
3.2	The correct process of	phytochrome conver	sion is		(4th NSEB)
	Red light	Far red light	Red light	Far red light	
	(1) Pr <u>Pfr</u>	(2) Pr <u>Pfr</u>	(3) $\Pr \xrightarrow{V_{1}}_{\forall f} \Pr$	(4) Pr 🔨 Pfr	
	Far red light	Red light	<i>M</i> Far red light	Red light	
4.	If a dark period of a sh	ort day plant is interru	upted by a flash of light, it	will	(3 <sup>rd</sup> NSEB)
	(1) Flower immediately	,	(2) Produce many flo	owers	
	(3) Produce abnormal	flowers	(4) Not produce flow	ers	

- 5.Application of auxin in a concentration far more than cytokinin then callus undergo:(NSEB 2009-10)(1) callogenesis(2) histogenesis(3) rhizogenesis(4) morphogenesis
- **6.** Three hormones X, Y, Z show the following properties:

Hormone	Seedling Growth	Apical Dominance	Leaf Abscission	Site of Production
Х	Promotes cell division and expansion	-	-	Embryo, young leaves, root and shoot apices
Y	Promotes cell expansion	Inhibits lateral buds	Inhibits Abscission	Embryo, young leaves, root apical meristem
Z	Promotes cell expansion	Promotes lateral buds	Inhibits Abscission	Roots

(1) X-Gibberellin, Y-Cytokinin, Z-Auxin

(2) X- Gibberellin, Y-Auxin, Z-Cytokinin

(3) X-Auxin, Y-Cytokinin, Z-Gibberellin

(4) X- Auxin, Y-Gibberellin, Z-Cytokinin

7. A long day plant with critical day length of 14 hrs will flower under which of the following treatments?

(1) 7 hrs light-2 hrs darkness-3 hrs light-5 hrs darkness-7 hrs light

(2) 5 hrs light-9 hrs darkness-8 hrs light-2 hrs darkness

(3) 11 hrs darkness-13 hrs light

(4) 6 hrs iight-6 hrs darkness-7.5 hrs light-4.5 hrs darkness

(NSEB 2010-11)

(NSEB 2009-10)

8. Q and R are the flowering plants belonging to the same species. Plant Q is defoliated and both Q and R are then exposed to appropriate photo inductive cycles. A branch of R is then grafted on Q, which of the following response can be obtained? (NSEB 2009-10) (1) Only R will flower (2) Only Q will flower (3) Both 'Q and R will flower (4) There will be no flowering in both. 9.2 Fruits are often shipped in containers with higher CO<sub>2</sub> content to prevent (NSEB 2010-2011)

- 10. Cell division typically occurs only in the meristematic regions of plants. In which region would cell (4<sup>th</sup> CBO) division not occur
  - (1) Shoot apex
  - (3) Root apex
- 11. Seedlings grown in dark are :
  - (1) similar to those grow in light

(1) infestation of fruits by fungi

(3) fermentation of sugar in fruits

- (3) shorter than those grow in light
  - **Exercise-3**

## PART - I : NEET / AIPMT QUESTION (PREVIOUS YEARS )

1.24	Which one prevents premature fall of fruits					
	(1) NAA	(2) Ethylene	(3) GA <sub>3</sub>	(4) Zeatin		
2.	Differentiation of shoot (1) high auxin : Cytokin (3) high gibberellin : aux	is controlled by in ratio xin ratio	(2) high cytokinin : Auxi (4) high gibberellin : cyt	(AIPMT-2003)		
3.	Coconut milk factor is (1) Auxin	(2) Gibberellin	(3) Abscisic acid	(4) Cytokinin	(AIPMT-2003)	
4.æ	Plant deficient of eleme	nt growth horm	one (AIPMT-2003)			
	(1) auxin	(2) cytokinin	(3) ethylene	(4) abscisic ad	cid	
5.	Cell elongation in intern (1) Indole acetic acid	nodal regions of the green (2) Cytokinins	n plants takes place due (3) Gibberellins	to (4) Ethylene	(AIPMT-2004)	
6.	One set of plants exposed to 12 hr day and 12 hr night flowered. The other set with similar exposure to day-night period but with dark period interrupted by flash of light did not come to flower. The plant is (AIPMT-2004)					
	(1) Long day	(2) Day neutral	(3) Darkness neutral	(4) Short day.		

(2) Wood

(4) Cambium between wood and bark

(KVPY 2009)

- (2) taller than those grow in light
- (4) they don't grow at all

- (2) over ripening of fruits
- (4) insect and pests from spoiling fruits

7.	How does pruning help		(AIPMT-2006)		
	(1) It releases wound h				
	(2) Apical shoot grows	faster after pruning			
	(3) It frees axillary buds				
	(4) It induces differentia	ation of new shoot from r	root stock.		
8.	Treatment of seeds at	ing their dorma	incy is		
					(AIPMT-2006)
	(1) Vernalisation	(2) Chelation	(3) Stratification	(4) Scarificati	on
9.	Importance of day leng	th in flowering of plants	was first shown in		(AIPMT-2008)
	(1) Cotton	(2) Tobacco	(3) Lemna	(4) Petunia	
10.๖	Pr state of phytochrom	e absorbs light wave len	gth of		(AIPMT-2007)
	(1) 660 nm	(2) 640 nm	(3) 620 nm	(4) 720 nm	
11.	Which one is not correc	ctly matched			(AIPMT-2007)
	(1) Cytokinin – cell divis	sion	(2) IAA – cell elongatio	n	,
	(3) Abscisic acid – stor	natal closure	(4) Gibberellic acid – L	eaf fall.	
12.	Opening of floral buds	is			(AIPMT-2007)
	(1) Autonomic moveme	ent of variation	(2) Paratonic movemer	nt of growth	<b>(</b>
	(3) Autonomic moveme	ent of growth	(4) Autonomic moveme	on.	
13.	One of the synthyetic a	iuxin is -			(AIPMT-2009)
	(1) IBA	(2) NAA	(3) IAA	(4) GA	(,
14.	Phototropic curvature is	s the result of uneven di	stribution of		(AIPMT-2010)
	(1) Phytochrome	(2) Cytokinins	(3) Auxin	(4) Gibberelli	n
15 ∽	Photoporiodism was fir	at charactoricod in			(AIDMT-2010)
13.0	(1) Potato	(2) Tomato	(3) Cotton	(4) Tohacco	(AIFWI1-2010)
				(4) 1000000	
16.	Coiling of garden pea t	(AIPMT-2010)			
	(1) Thigmonasty	(2) Thigmotropism	(3) Thermotaxis	(4) Thigmota	KIS
17.	One of the commonly u		(AIPMT-2010)		
	(1) ABA	(2) Zeatin	(3) IAA	(4) Ethylene	
18.১	Through their effect on	rol in the plants?			
			(AIPMT-2012)		
	(1) Apical dominance		(2) Flowering		
	(S) Closure of stornata		(4) FIUL EIONGATION		
19.	Which one of the follow	(AIPMT-2012)			
	(1) Zeatin	(2) Ethylene	(3) ABA	(4) IAA	
20.	During seed germination	(NEET-2013)			
	(1) Cytokinin	(2) ABA	(3) Gibberellin	(4) Ethylene	

21.১	Dr F. Went noted that if coleoptile tips were removed and placed on agar for one hour, the agar would produce a bending when placed on one side of freshly - cut coleoptile stumps. Of what significance is this sum ariment?								
	<ul> <li>this experiment?</li> <li>(1) It made possible the isolation and exact identification of auxin.</li> <li>(2) It is the basis for quantitative determination of small amounts of</li> <li>(3) It supports the hypothesis that IAA is auxin.</li> <li>(4) It demonstrated polar movements of auxins</li> </ul>						th- promoting s	(AIPMT-2014)	
22.	Which one of th (1) Abscissic ac	ne follow cid	ing growth regu (2) Ethylene	Ilators is I	known as stress hormone? (3) GA <sub>3</sub> (4) Indole ac			(AIPMT-2014) tic acid	
23.	What causes a it grows? (1) Green plants (2) Light stimula (3) Auxin accum (4) Green plants	lant exposed to ght because the nt cells on the li on the shaded s ght to perform	o the light ey are ph ghted side side, stim photosynt	on only one si ototropic. e to grow faster ulating greater thesis.	de, to ber r. cell elong	nd toward the s	source of light as (AIPMT-2015)		
24.	Auxin can be bi (1) Hydroponics (3) Lettuce hype	ioassaye s ocotyl el	ed by: ongation		(Re-AIPMT-2 (2) Potometer (4) Avena coleoptile curvature				
25.	Typical growth curve in plants is (1) Linear (2) Stair-steps shaped			shaped	(3) Parabolic		(4) Sigmoid	(AIPMT-2015)	
26.	The <i>Avena</i> curvature is used for bioassay of: (1) Ethylene (2) ABA		say of:	(3) GA <sub>3</sub>		(4) IAA	(NEET-II-2016) \A		
27.	You are given a tissue with its potential for difficult pairs of hormones would you add to the mediur (1) Gibberellin and abscisic acid (3) Auxin and cytokinin				erentiation in a to secure sho (2) IAA and gi (4) Auxin and	n artificial ots as wel bberellin abscisic a	culture. Which I as roots? acid	n of the following (NEET-II-2016)	
28.	Phytochromes i (1) chromoprote	is a ein	(2) flavoprotei	n	(3) glycoprote	in	(4) lipoprotein	(NEET-II-2016)	
29	Fruit and leaf drop at early stages can be preve (1) Cytokinins (2) Ethylene			be prevei	nted by the app (3) Auxins	lication of	: (4) Gibberellic	(NEET-2017) acid	
30.	It takes very lor applied to artific	ng time fo cially ind	or pineapple pla uce flowering ir	ants to pro	oduce flowers. le plants throug	Which coughout the g	mbination of ho year to increas (NEET-1-2019	ormones can be e yield? <b>9)</b>	
	<ul><li>(1) Cytokinin and Abscisic acid</li><li>(3) Gibberellin and Cytokinin</li></ul>				<ul><li>(2) Auxin and Ethylene</li><li>(4) Gibberellin and Abscisic acid</li></ul>				
31.	What is the site	of perce	eption of photop	period neo	cessary for indu	uction of fl	owering in plar (NEET-1-201	nts? 9)	
	ot apex								

32. Removal of shoot tips is a very useful technique to boost the production of tea- (NEET-2-2019)

leaves. This is because

- (1) Gibberellins prevent bolting and are inactivated.
- (2) Auxins prevent leaf drop at early stages.
- (3) Effect of auxins is removed and growth of lateral buds is enhanced.
- (4) Gibberellins delay senescence of leaves.
- 33. In order to increase the yield of sugarcane crop, which of the following plant growth regulators should be sprayed ? (NEET-2-2019)

(1) Ethylene (2) Auxins (3) Gibberellins (4) Cytokinins

### PART - II : AIIMS QUESTION (PREVIOUS YEARS )

1.24	What is true about phytochrome									
	(1) P <sub>r</sub> absorbs red light	t and becomes P <sub>fr</sub>	(2) $P_r$ absorbs yellow light and becomes $P_{fr}$							
	(3) P <sub>fr</sub> absorbs yellow I	light and becomes P <sub>r</sub>	(4) P <sub>fr</sub> absorbs red	light and becomes P	r					
2.	Bud dormancy is induc	ced by			(AIIMS-2002)					
	(1) IAA	(2) GA	(3) ABA	(4) Ethylene						
3.	Pruning of plants prom	notes branching due to se	ensation of axillary bu	uds by	(AIIMS-2004)					
	(1) IAA	(2) Ethylene	(3) Gibberellin	(4) Cytokinin						
4.	Avena curvature test is	s a bioassay for examinin	g the activity of		(AIIMS-2006)					
	(1) auxins	(2) gibberellins	(3) cytokinins	(4) ethylene						
5.	The growth curve of ba (1) sigmoid (3) ascending straight	acterial population in lab i line	<ul> <li>is plotted against time. What will be the shape of graph?</li> <li>(2) hyperbolic (AIIMS-2008)</li> <li>(4) descending straight line</li> </ul>							
6.#>	(b) assertaing straight									
	A B	Critical Photo- period C			(AIIMS-2010)					
	A	В		С						
	(1) no correlation be	etween light   long light-	- exposure period short light-exposure period							

(1)	no correlation between light period and flowering	long light- exposure period	short light-exposure period							
(2)	long light-exposure period	no correlation between light period and flowering	short light-exposure period							
(3)	short light-exposure period	long light exposure period	no correlation between light period and flowering							
(4)	no correlation between light period and flowering	short light-exposure period	long light-exposure period							
Gibb	Gibberellins can promote seed germination because of their influence on (AIIMS-2012)									

7.

(1) Rate of cell division

(3) Synthesis of abscisic acid (4) Absorption of water through hard seed coat.

(2) Production of hydrolyzing enzymes

- 8. Study the following statements.
  - I. "X " hormone promotes root growth and root hair formation thus helping the plants to increase their absorption surface.
  - II. "Y" hormone induces flowering in mango and also promotes rapid internode/ petiole elongation in deep plants and hence helping leaves or upper parts of shoot above water.
  - III. "Z" hormone inhibits the seed germination, increase the tolerance of plant to various stresses, play import ant role in seed development, maturation and dormancy.

Identify the correct names of hormones marked as 'X', 'Y', 'Z'.

- (1) Y = ABA; X = Auxin; Z = GA(2) Z = GA; X = Auxin;  $Y = C_2H_4$ (3) Y= Auxin ;  $X = C_2 H_4$  ; Z= GA (4)  $Y = C_2 H_4$ ;  $X = C_2 H_4$ ; Z = ABA
- 9. Vernalisation is related to plants growing in -
  - (1) tropical areas (2) sub tropical areas
  - (3) temperate areas (4) hot areas/ arctic region
- 10. One hormone hastens maturity period in juvenile conifers, a second hormone controls xylem differentiation, while the third hormone increases the tolerance of plants to various stresses. They are respectively (AIIMS-2016)
  - (1) Gibberellin, Auxin, Ethylene (2) Auxin, Gibberellin, Cytokinin (3) Gibberellin, Auxin, ABA (4) Auxin, Gibberellin, ABA
- 11. Which of the following plant growth hormone increases the yield of sugar by increasing the length of stem in sugarcane? (AIIMS-2017)
- (1) Cytokinin (2) Ethylene (3) Gibberellic acid (4) Auxin 12. Cytokinin involves (AIIMS-I-2018) (1) Kinetin, zeatin, BAP (2) GA<sub>3</sub>, IBA, Kinetin (3) Zeatin, GA<sub>3</sub>, BAP (4) IAA, Zeatin, kinetin 13. Auxin was first isolated from (AIIMS-I-2018) (1) Human urine (2) Callus (3) Coconut milk (4) None 14. Which of the following statement is wrong about Abscisic acid: (AIIMS-I-2018) (1) It helps in general plant metabolism (2) It is antagonistic to GA3 (3) It helps in seed maturation & dormancy (4) Morphogenesis
- 15. Which of the following is wrong about ethylene.

(AIIMS-2013)

(AIIMS-2014)

	(1) Inhibit growth of root		(2) Ripening of fruits					
	(3) Elongation of stem in paddy		(4) Promote senescence of leaves & flowers					
16	Which group of hormones is natural			(AIIMS-III-2018)				
	(1) IAA, IBA, NAA	(2) IAA, GA <sub>3</sub> , ABA	(3) 2,4-D, Kinetin, ABA (4) GA <sub>3</sub> , Zeatin, NAA					
17	Match the Column-I an	nd Column-II		(AIIMS-III-2018)				
	Column-I	Column-II						
	(i) Auxin	(A) Adenine derivatives	;					
	(ii) Gibberellin (B) Carotenoid derivative		/es					
	(iii) Cytokinin (C) Terpenes							
	(iv) ABA	(D) Indole compounds						
	(1) i–B, ii–A, iii–D, iv–C		(2) i–D, ii–B, iii–A, iv–C					
	(3) i–B, ii–A, iii–C, iv–D		(4) i–D, ii–C, iii–A, iv–B					
18	Which of the following s	statement is wrong abou	t auxin	(AIIMS-III-2018)				
	(1) 2,4–D prevents the	growth of dicot weeds	(2) 2,4–D prevents the growth of monocot weeds					
	(3) It promotes parthene	ocarpy	(4) IAA is natural auxin					
19	Match the Column-L& (	Column-II		(AIIMS-IV-2018)				
	(i) Auxin	(A) Ripening of fruit		(/				
	(ii) ABA	(B) Bolting						
	(iii) Gibberellin	(C) Sensitivity against a	adverse conditions					
	(iv) Ethephon	(D) parthenocarpy in to	mato					
	(1) i–C. ii–D. iii–B. iv–A		(2) i–D. ii–C. iii–A. iv–B					
	(3) i–D, ii–C, iii–B, iv–A		(4) i–A, ii–C, iii–B, iv–D					
20.	Which of the following a	are synthetic phytohormo	one	(AIIMS-IV-2018)				
	(1) IBA, IAA, BAP		(2) 2.4-D. NAA. BAP					
	(3) Zeatin, IBA, IAA		(4) NAA, IAA, 2,4-D					
21	The value of 2,4-D is 2	25 ppm. How many amo	ount of 2, 4-D should require for mak	ing its 5 litres, 15				
	litres and 25 litres solut	ions respectively	(AIIMS-IV-201					
	(1) 25 mg, 50 mg, 75 m	ig	(2) 50 mg, 1/5 mg, 525 mg					
	(3) 250 mg, 750 mg, 12	250 mg	(4) 125 mg, 375 mg, 625 mg					

# Answers

E

EXERCISE - 1													
SECTION - A													
1.	(3)	2.	(3)	3.	(4)	4.	(2)	5.	(1)	6.	(3)	7.	(3)
8.	(2)	9.	(2)	10.	(4)	11.	(1)		. ,				. ,
SECT	ION - B												
1.	(1)	2.	(2)	3.	(4)	4.	(2)	5.	(1)	6.	(1)	7.	(2)
8.	(2)	9.	(2)	10.	(1)	11.	(1)	12.	(2)	13.	(2)	14.	(1)
15.	(2)	16.	(2)	17.	(2)	18.	(2)	19.	(1)	20.	(3)	21.	(1)
22.	(2)	23.	(1)	24.	(3)	25.	(2)	26.	(2)	27.	(2)	28.	(3)
29.	(1)	30.	(1)	31.	(1)	32.	(4)	33.	(3)	34.	(3)	35.	(1)
36.	(1)	37.	(1)	38.	(3)	39.	(4)	40.	(4)	41.	(3)	42.	(3)
43.	(2)	44.	(3)	45.	(1)	46.	(1)	47.	(2)	48.	(1)	49.	(1)
50.	(1)	51.	(2)	52.	(3)	53.	(3)	54.	(2)	55.	(4)	56.	(3)
57.	(1)	58.	(2)										
SECT	ION - C												
1.	(1)	2.	(4)	3.	(1)	4.	(1)	5.	(4)	6.	(1)	7.	(4)
SECT	ION - D												
1.	(2)	2.	(3)	3.	(3)	4.	(4)	5.	(2)	6.	(1)	7.	(4)
8.	(2)	9.	(3)	10.	(4)	11.	(1)	12.	(1)				
SECT	ION - E												
1.	(4)	2.	(1)	3.	(2)	4.	(2)	5.	(3)	6.	(2)		
SECT	ION - F												
1.	(2)	2.	(3)	3.	(2)	4.	(1)	5.	(2)	6.	(4)	7.	(1)
				Μ	ISCEL	LANE	DUS Q	UESTI	ONS				
1.	(2)	2.	(3)	3.	(4)	4.	(2)	5.	(3)	6.	(4)	7.	(2)
8.	(2)	9.	(4)	10.	(2)	11.	(2)	12.	(4)	13.	(3)	14.	(2)
15.	(2)	16.	(4)	17.	(1)	18.	(3)	19.	(2)	20.	(3)	21.	(1)
22.	(1)	23.	(4)	24.	(4)	25.	(1)	26.	(3)	27.	(2)		
_						EXER	CISE -	- 2					
1.	(3)	2.	(2)	3.	(1)	4.	(4)	5.	(3)	6.	(2)	7.	(1)
8.	(3)	9.	(2)	10.	(2)	11.	(2)						
						EXER	CISE -	3					
						PA	ART- I						
1.	(1)	2.	(2)	3.	(4)	4.	(1)	5.	(3)	6.	(4)	7.	(3)
8.	(3)	9.	(2)	10.	(1)	11.	(4)	12.	(3)	13.	(2)	14.	(3)
15.	(4)	16.	(2)	17.	(2)	18.	(2)	19.	(3)	20.	(3)	21.	(2)
22.	(1)	23.	(3)	24.	(4)	25.	(4)	26.	(4)	27.	(3)	28.	(1)
29.	(3)	30.	(2)	31.	(1)	32.	(3)	33.	(3)				
						PA	RT- II						
1.	(1)	2.	(3)	3.	(4)	4.	(1)	5.	(2)	6.	(3)	7.	(2)
8.	(4)	9.	(3)	10.	(3)	11.	(3)	12.	(1)	13.	(1)	14.	(1)
15.	(1)	16.	(2)	17.	(4)	18.	(2)	19.	(3)	20.	(2)	21.	(4)