Unit-II

Chapter-5. Plant Anatomy Plant Tissues

IMPORTANT POINTS

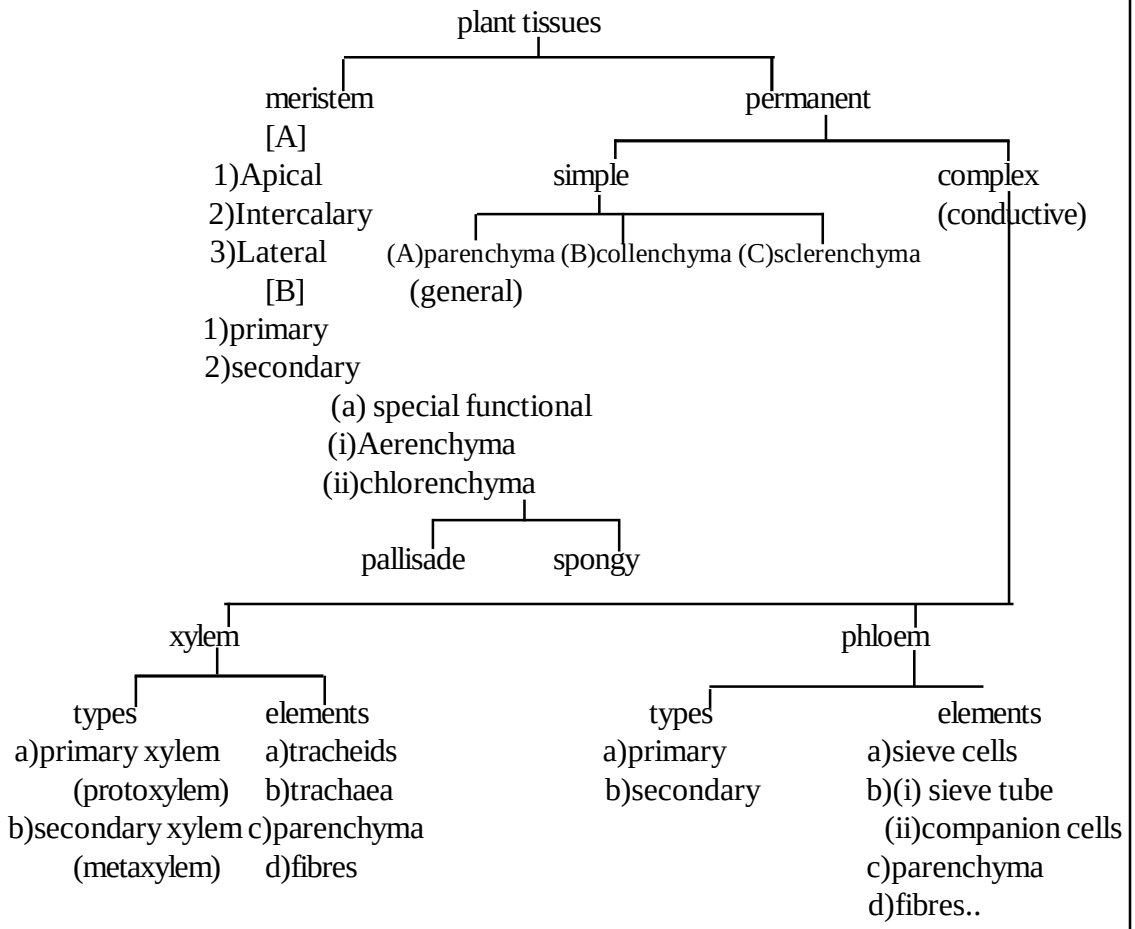
The plant body is made up of cells.cells are organized to form tissues,tissue system and organs in a seqential organization.

Study of the internal strctural organization of plant organs is known as plant anatomy.

Two groups of the angiosperms i.e.Dicot and monocot show different anatomical composition.

Tissue : Tissue is a group of cells having a comman origin, which are grouped together to perform specific functions.

Plant body shows presence of variety of tissues.They are classified as follows.



- plant tissues are of two types (1)meristematic and (2)permanent
- meristematic tissues consists of actively dividing cells.
- Based on their location, they are of 3 types

1) Apical meristem
2) Intercalary meristem

3) Lateral meristem

- Apical meristem and Intercalary meristems,as they appear early in the life of plant and contribute to the formation of primary plant body,they are considered primary meristem.
- Secondary meristematic tissue : the meristems that occurs in the mature regions of shoots and roots of many plants and apper later than primary meristem is called secondary or lateral meristem.
- cells of permanent do not possess the property of cell division and these tissues are structurally and functionally specialized.
- permanent tissues are of two types
  (a)simple and (b)complex (conductive)
- simple permanent tissues consists of similar types of cells.
- They are divided into 3 types.
  (a) parenchyma (b)collenchyma (c)sclerenchyma
- While complex tissues is a group of more than one type of cells ,working together as a unit to perform definite functions.
- they are of two types.
  (a)Xylem and (b)phloem
- Xylem is concerned with transportation of water and minerals.
- Phloem transports nutritive substance.

Anatomy of plant organs :-

- Three types of tissues systems are found in plant organs like root,stem and leaf.

(a) Epidermal tissue system

(b) Ground tissue system

(c) Vascular tissue system

- In most of the dicatyledons,after completion of the primary growth, further increase in girth(diameter)takes place due to formation of secondary tissues.The length wise growth of organs is due to apical meristem.
- the secondary growth involves lateral meristems like vascular cambiun work cambium.

(1) Which of the following is an exmple of laterel meristem.
(A)pith (B)cambium (C)Xylem (D)cortex

(2) The region in apical meristem develops in to..
(A)Endodermis (B)Pericycle
(C)Epidermis (D)Vascular tissue

(3) Hydathodes are component of
(A)Vascular tissue system (B)Ground tissue system
(C)Epidermal tissue system (D)Cortex tissue system

(4) Which of the following is a living structure?
(A)Scleren chyma (B)Parenchyma
(C)Xylemvessel (D)Tracheid

(5) In collenchyma, the thinkening of corners is made of
(A)Pectin (B)Lignin
(C)Subern (D)Resin

(6) Sclereids are also known as
(A)Accessory cells (B)Companian cells
(C)Stone cells (D)Guard cells

(7) Collenchyma constitute the hypodermis in.
(A)Monocot root (B)Dicot Stem
(C)Dicot root (D)Monocot Stem

(8) Cuticle is always present on the surface of
(A)Root (B)Leaf only
(C)Stem only (D)Leaf and stem both

(9) Companion calls are found in
(A)Xylem (B)Stomata
(C)Phloem (D)Endodermis

(10) The element of xylem in which end walls are absent are called
(A)Protoxylem (B)Tracheids
(C)Metaxylem (D)Trachaea

(11) Which type of thickening is found in protoxylem.
(A)Reticulated (B)Spiral
(C)Pitted (D)Sclariform

(12) Sieve tuabe is characterized by
(A)Presence of lignin (B)Absence of Cytoplasm
(C)Presence of Pectin (D)Absence of Nuclens

(13) Which of the following element of xylem is living.
(A)Trachaea (B)Tracheids
(C)Parenchyma (D)fibres

(14) Safranin stains.
(A)Thick walled cells (B)Lignified cells
(C)Suberized cells (D)Living cells

(15) Radial V.B. are found in
(A)Leaf (B)Stem
(C)Flower (D)Root

(16) Which of the following is a food systhesising tissue.
(A)Chlorenchyma (B)Sclerenchyma
(C)Chornchyma (D)Aerenchyma

(17) Cucurbita stem shows
(A)Radial Vascular bundle (B)Collateral Vscular bundle
(C)Conjoint Vascular bundle (D)Bicollateral Vacular bundle

(18) In monocot leaves, the mesophyll Consists of
(A)Aerenchyma (B)Only Spongy chlo renchy ma,
(C)Only Pallisade (D)Pallisade and Spongy Chloren chyna

(19) In stem,the xylem shows.
(A)Tetrach arrangement (B)Endarch development
(C)Polyarch arrangement (D)Exarch development

(20) In monocot stem the vaschlar bundles are
(A)Arranged in a ring (B)Arranged alternatively
(C)Present inside endodermis (D)Scattered in ground tissue

(21) Exarch condition of xylem is found only in
(A)Leaf (B)Root
(C)Flower (D)Stem

(22) Endodomis is always absent in
(A)Monocot root (B)Dicot root
(C)Monocot stem (D)Dicot stem

(23) Which tissue is called a living mechanical tissne
(A)Parenchyma (B)Collenchyma
(C)Arrenchyma (D)Chlorenchyma

(24) Collenchyma Shows deposition of
(A)Pectin (B)Suberin
(C)Resin (D)Lignin

(25)In Which tissue deposition is seen outside the cells ?
(A)Sclerenchyma (B)Xylem
(C)Collenchyma (D)Phloem

(26) Lignin is absent in
(A)Stone cells (B)Sclerenchymatous fibres
(C)Trachaca (D)Sieve cells

(27) Bulliform cells are found in the leaves of
(A)Sunflower (B)Nerium
(C)Maize (D)Lotus

(28) In hydrophytes, stomata are
(A)Not required (B)Seen only on upper epidermis
(C)Absent or rudimentary (D)Seen only on lower epidermis

(29) Casparian Strips are found p on the
(A)Walls of pericycle cells (B)Walls of endodermal cells
(C)Walls of epidermal cells (D)Walls of bundle sheath cells

(30) Which tissue provides elasticity to the young branches of the stem ?
(A)Collenchyma (B)Aerenchyma
(C)Parenchyma (D)sclerenchyma

(31) Which tissue provides mechanical Strength as well as bayouncy support to the plant ?
(A) Sclerenchyma (B) Meristem
(C) Parenchyma (D) Chlorenchyma

(32) Which tissue is always absent in root ?
(A)Sclerenchyma (B)Meristematic
(C)Parenchyma (D)Collenchyma

(33) Which tissue is absent in monocot ?
(A)Meristem (B)Xylem
(C)Collenchyma (D)Phloem

(34) Which simple permanent tissue is formed of dead cells. ?
(A)Collenchyma (B)Sclerenchyma
(C)Aerenchyma (D)Xylem

(35) Stele remain covered by
(A)Pericycle (B)Cortex
(C)Endodermis (D)Conjuctive tissue

(36) Which tissue is responsible for the increase in the length of the plant ?
(A)Lateral meristem (B)Apical meristem
(C)Intercalary meristem (D)Cambium

(37) The dead element of the phloem is
(A)Sieve cells (B)Companion cells
(C)Sieve tube (D)Phloem fibre

(38) Which cells regulate the function of sieve tube ?
(A)Guard cells (B)Passage cells
(C)Companion cells (D)Bulliform cells

(39) Root hair is always
(A)Very long (B)Multi cellular
(C)Cuticularized (D)Unicellular

(40) The central Region of the stem and root is known as
(A)Pericycle (B)Medulla (pith)
(C)Endodermis (D)Cortex

(41) Close type of vasular bundle lacks
(A)Xylem (B)Sclerenchyma
(C)Phloem (D)Cambium

(42) Lysigeneous cavity is found
(A)In the cortex (B)Between xylem and phloem
(C)Beneath Protoxylem (D)Beneath metaxylem

(43) The lateral meristem increases the
(A)Height of the plant (B)Thtickness of trunk
(C)Size of the leaf (D)Branches of root

(44) Conjoint,collateral and open vascular bundles are found in
(A)Monocot Stem (B)Monocot leaf
(C)Dicot Stem (D)Dicot root

(45) In leaf protexylem is directed towards
(A)Lower epidermis (B)Phloem
(C)Stomata (D)Upper epidermis

(46) Lenticels are associated with
(A)Absorption of moisture (B)Photosynthesis
(C)Gaseous Exchange (D)Mineral uptakes

(47)Passage calls are found in
(A)Endodermis (B)Pericycle
(C)Hypodermis (D)Epidermis

(48) Sive plate and Sive pores are located in the
(A)Lateral wall of sieve cells (B)Wall of companion cells
(C)End wall of sieve tube (D)End wall of sieve cells

(49) Pericycle is formed of
(A)Collenchyma (B)Parenchyma
(C)Chlorenchyma (D)Conjuctive tissue

(50) Which cells regulate the opening and closing of stromata
(A)Passage cells (B)Guard cells
(C)Companion cells (D)Epidermal cells

(51) Pericycle is always located inside the
(A)Epidermis (B)Endodermis
(C)Hypodermis (D)Lower Epidermis

(52) In endarch development of xylem the protoxylem is directed towards
(A)Endodermis (B)Centre
(C)Epidermis (D)Phloem

(53) Sclerenchymatous hypodermis is found in
(A)Dicot root (B)Monocot leaf
(C)Dicot stem (D)Monocot stem

(54) Which of the following cells is living but it is without nucleus.
(A)Sieve cells (B)Companion cells
(C)Sieve tube (D)Guard cells

(55) Casperian strip is made up of
(A)Cutin and lignin (B)Lignin and cellulose
(C)Lingnin and suberin (D)Cutin and suberin

(56) Secondary meristem gets activated from-
(A)Primary meristem (B)Mature permanent tissue
(C)Apical meristem (D)Intercalary meristem

(57) In dicot leaves the vascular bundles are-
(A)conjoint,open (B)Radial,closed
(C)conjoint,closed (D)Radial,open

(58) Companion cells are
(A)Living and non-nucleated (B)Dead and non-nucleated
(C)Dead but nucleated (D)Living and nucleated

(59) The last produced secondary xylem remains located near -
(A)Medulla (B)Primary phloem
(C)Cambium ring (D)Primary xylem

(60) Which of the following is absent in the phloem of monocots ?
(A)Companion cells (B)Phloem parecnchyma
(C)Sieve cell (D)Phloem sclerenchyma

(61) In maize stem the vascular bundles are -
(A)Arranged in a ring (B)Scattered-irregularly
(C)Arranged in two ring (D)Scattered but smaller towards periphery

(62) In T.S. the tracheid appears-
(A)Square (B)Round
(C)Polygonal (D)Oval

(63) In T.S. the trachaea appears-
(A)Isodiametric (B)Pentagonal
(C)Circular (D)Hexagonal

(64) In trachaea the end walls are
(A)Continuous (B)Thick
(C)Discontinuous (D)Absent

(65) Compared to the diametre of metaxylem the diametre of protoxylem is -
(A)Larger (B)Smaller
(C)Broader (D)Angular

(66) The ends of tracheids are
(A)Projected (B)Flat
(C)Perforated (D)Wall less

(67) What is the0 normal appereance of stone cells ?
(A)Hexagonal (B)Round
(C)Isodiamatric (D)Oval

(68) Stem has always-

(A)Exarch xylem (B)Scattered V.B.

(C)Arranged V.B. (D)Endarch xylem

(69) Root has always

(A)Endarch xylem (B)Tetrach stele

(C)Exarch xylem (D)Palyarch stele.

(70) Growth rings are produced due to activity of -

(A)Extrastealar cambium (B)Interstealar cambium

(C)Intrastealar cambuim (D)b & C both

(71) Companion cell regulates the activities of -

(A)sieve cell (B)sieve elements

(C)sieve tube (D)sieve plates

(72) Match coloumn I and coloumn II

Organs	vascular bundle
(p)Maize stem	(1)Bicollateral and open
(q)Cucurbita stem	(2)Radidal
(r)Sunflower stem	(3)Conjoint and closed
(s)Maize root	(4)Conjoint and open

(A) (p-1) (q-4) (r-3) (s-2)

(B) (p-2) (q-3) (r-1) (s-4)

(C) (p-3) (q-1) (r-4) (s-2)

(D) (p-3) (q-4) (r-2) (s-1)

(73) Phelloderm is formed of

(A)Phellem + phellogen (B)Periderm + phellogen

(C)Phellem + periderm (D)Periderm-phellogen and phellem

(74) The tissue in roots which acts as check dam against water is-

(A)Hypodermis (B)Passage cells

(C)Endodermis (D)Pericycle.

(75) Companion cell is-

(A)Dead (B)Enucleated

(C)Living and thickened (D)Nucleated

(76) Which one of the following is an internal secretory structure ?

(A)Passage cell (B)Lysigeneous cavity

(C)Resin duct (D)Stone cell

(77) In roots the lateral root originates from-

(A)Cortex (B)Endodermis

(C)Epidermis (D)Pericycle

(78) What is produced from periblem ?

(A) Epidermis (B) Endodermis

(C) Cortex (D) Hypodermis

(79) Match column I with column II

Tissue	Function
(1) PArenchyma	(a) Increase in length of plants
(2) Lateral meristem	(b) Increase in nodal region
(3) Apical meristem	(c) support,protection,storage
(4) Intercalary meristem	(d) Increase in diametre of trunk

(A)(1-d) (2-c) (3-b) (4-a) (B)(1-c) (2-d) (3-a) (4-b)

(C)(1-a) (2-b) (3-d) (4-c) (D)(1-c) (2-a) (3-d) (4-b)

(80)

Tissue	Deposition
(a) Trachaea	(1) callose
(b) parenchyma	(2) pectin
(c) sieve cell	(3) lignin
(d) collenchyma	(4) cellulose

(A)(a-1) (b-2) (c-3) (d-4) (B)(a-3) (b-1) (c-4) (d-2)

(C)(a-3) (b-4) (c-1) (d-2) (D)(a-2) (b-3) (c-1) (d-2)

(81)

Tissue	Function
(p) Chlorenchyma	(i) Strength, Support
(q) sclerenchyma	(ii) Bouyoncy, Support
(r) Aerenchyma	(iii) Growth
(s) Meristem	(iv) Photosynthesis

(A) (p-(iii)) , (q-(i)) , (r-(ii)) , (s-(iv)) (B) (p-(ii)) , (q-(iv)) , (r-(i)) , (s-(iii))

(C) (p-(iv)) , (q-(i)) , (r-(ii)) , (s-(iii)) (D) (p-(i)) , (q-(iii)) , (r-(ii)) , (s-(iv))

(82) Match column I with column II

Specific Structure	Location
(p) Resin duct	(i) Maizestem Vascularbundle
(q) Lysigenious cavity	(ii) Maize leaf-uppear epidermis
(r) Passage cell	(iii) sunflower stem cortex
(s) Motor cells	(iv) Sunflower root endodermis

(A) (p-(i)) , (q-(iv)) , (r-(ii)) , (s-(iii)) (B) (p-(iii)) , (q-(i)) , (r-(iv)) , (s-(ii))

(C) (p-(ii)) , (q-(iii)) , (r-(i)) , (s-(iv)) (D) (p-(iii)) , (q-(ii)) , (r-(iv)) , (s-(i))

(83) Epidermis of plant organs is mostly made up of

(A) Sclernchyma (B) Parenchyma

(C) Meristem (D) Collenchyma

(84) The region of stele begins with-

(A) Cortex (B) Parenchyma

(C) Endodermis (D) Pericycle

(85) Endodermis is a part of
(A) Hypodermis (B) Cortex
(C) Stele (D) Pith

(86) The hygroscopic cells of maize leaf are laterally covered by-
(A) Hair (B) Curved trichomes
(C) Guard cell (D) Compainon cell

(87) In maizestem, the peripherally located vascular bundle are normally :-
(A) Large in size (B) Well organized
(C) Small in size (D) Less organized

(88) Cortex consists of three zones except-
(A) Epidermis (B) Main cortex
(C) Hypodermis (D) Endodermis

(89) When canbium is present, the vascular bundle is called-
(A) Close (B) Radial
(C) Open (D) Conjaint

(90) In callateral vascular bundle , the phloem is present
(A) Inside the xylem (B) Lateral side of xylem
(C) on both sides of xylem (D) Outside the xylem

(91) If one conducting tissue completely surrounds anther one, the vascular bundle is called
(A) Bi-collateral (B) Concentric
(C) Collateral (D) Radial

(92) Which tissue is always present in the ground tissue of root and stem of all plants
(A) Collenchyma (B) Sclerenchyma
(C) Chlorenchyma (D) Parenchyma

(93) Which of the following cells are without cytoplasm and ncleus?
(A) Guard cells (B) Stone cells
(C) Companion cells (D) Sieve cells

(94) Raphides are the crystals of
(A) Calcium oxalate (B) Calcium carbonate
(C) Calcium phosphate (D) Calcium

(95) Bulliform cells are present in
(A) Bundle sheath (B) Mesophyll tissue
(C) Vascular Bandle (D) Epidermis

(96) Kranz anatomy is seen in
(A) Euphorbia hirta (B) Citrus indica
(C) Mangifera indica (D) Zea mays

(97) The chief function of psloem is the conduction of
(A) Food (B) Mineral
(C) Water (D) Air

(98) Casparian strips are the characteristics of

(A) Cortex (B) Endodermis

(C) Pericycle (D) Pith

(99) The crystals of calcium carbonate, which appear like a bunch of grapes in epidermal cells of leaves of some plants , are called -

(A) Sphaeraphides (B) Raphides

(C) Otoliths (D) cytoliths

(100) The vasculan cambium and cork cambium are the examples of

(A) Apical meristem (B) Lateral Meristem

(C) Intercalary meristem (D) Permanent tissue

(101) Seconndary phloem remains functional generally

(A) Less than 1 year (B) More than 1 year

(C) For 1 year (D) As long as plant lives

(102) Transverse section of a plant is stainet with safranin and fast green what is the color of the phloem?

(A) Red (B)Green

(C) Pink (D)Orange

(103) Root cap is formed by

(A) Dermatogen (B) Calyptogen

(C) Vascular cambium (D) Wood cambium

(104) Passage cells are found in (2000)

(A) Dicot stem (B) Monocot root

(C) Arial root (D) Monocot stem

(105) The sugarcane plant has. (2004)

(A) Dumbelled shaped guard cells

(B) Pentamerous flowers

(C) Reticulate venation

(D) Capsular fruits

(106) In plant organ which is covered by periderm and in which the stomata ar absent, Some gaseous exchange takes place through-

(A) Aerenchyma (B) Trichomes

(C) Pneumato phores (D) Lenticels

(107) Companion cells are associated with

(A) Vessels (B) Male gamate

(C) Sieve tube (D) Guard cells

(108) Cork cambium results in the formaation of cork which becomes impermeable to water due to the accumulation of ---

(A) Resin (B) Suberin

(C) Starch (D) Tanin.

(109) Which one of the following statements pertaining to plant structure is correct?

(A) Cork lacks stomata, but lenticels carry out transpiration

(B) Passage cess help in transfer of food from cortex to phloem.

(C) Sieve tube elements possess cyto plasm but no nuclei.

(D) The short apical meristem has a quiescent centre.

(110) In the sieve elements which one of the following is the most likely function of p-proteins?

(A) Deposition of callose on sieve plates

(B) Providing energy for active translocation

(C) Autostylic enerymes

(D) Sealing mechanism on wounding

* A+R type questions mark the coorect choice -as

(A) If both A and R are true and R is the correct explanation of A

(B) If both A and R are true but R is not the corrcet explanation of A

(C) If A is correct but R is false

(D) If both A and R is false

(111) A : In woody stems the amount of heart wood continues to increase year after year

R: The activity of the camibcal ring continues uninterrupted - (1999,2007)

(A) (B) (C) (D)

(112) A: thick cuticle is mostly present in disease resistant plants

R: Disease causing agents can not grow on cuticle and cannot invade the cuticle (1997)

(A) (B) (C) (D)

(113) A: Rhizobial aggregates have been observed at distinct sites on curled root hairs.

R: The infection thread is formed by a process of invagination of the hair cell walls in the region of curling. (1999)

(A) (B) (C) (D)

(114) A:Vascular cambin is considered as lateral meristem.

R: It give rise to lateral shoots (2000)

(A) (B) (C) (D)

(115) A: Monocot stem consists of colateral open vascular bundles.

R: If camblum is present such vascular bundles are called closed type (2001)

(A) (B) (C) (D)

(116) A: The collenchyma is thick walled living tissue.

R: The collenchyma is thickened due to the deposition of pectin.

(A) (B) (C) (D)

Questionbank Biology

ANSWER KEY

1	b	40	b	79	b
2	d	41	c	80	d
3	c	42	d	81	c
4	b	43	c	82	b
5	a	44	a	83	c
6	c	45	c	84	a
7	b	46	b	85	c
8	d	47	b	86	d
9	c	48	b	87	b
10	d	49	b	88	d
11	b	50	d	89	b
12	d	51	c	90	a
13	c	52	c	91	d
14	b	53	b	92	d
15	d	54	c	93	a
16	c	55	d	94	b
17	d	56	c	95	d
18	b	57	b	96	b
19	a	58	d	97	c
20	d	59	c	98	c
21	b	60	c	99	b
22	c	61	d	100	b
23	b	62	b	101	c
24	a	63	a	102	a
25	c	64	c	103	d
26	d	65	d	104	c
27	c	66	c	105	b
28	c	67	d	106	c
29	b	68	c	107	d
30	a	69	c	108	a
31	c	70	c	109	a
32	d	71	d	110	a
33	c	72	c	111	
34	b	73	d	112	
35	c	74	c	113	
36	b	75	b	114	
37	d	76	d		
38	c	77	c		
39	d	78			

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