**TOPIC: MORPHOLOGY OF FLOWERING PLANTS AND ANATOMY OF FLOWERING PLANTS**

**Unit: B-03**

1. Green stems of unlimited growth, which have taken over the function of photosynthesis is called

1. Phylloclades 2. Tendrils 3. Modified shoot 4. Inflorescence

1. Match the following columns.

|  |  |
| --- | --- |
| **Column I** | **Column II** |
| A. Underground stem | 1. Euphorbia |
| B. Stem tendril | 2. Opuntia |
| C. Stem thorn | 3. Potato |
| D. Flattened stem | 4. Citrus |
| E. Fleshy cylindrical stem | 5. Cucumber |

1. A-1 B-2 C-3 D-5 E-4

2. A-2 B-3 C-4 D-5 E-1

3. A-3 B-4 C-5 D-1 E-2

4. A-3 B-5 C-4 D-2 E-1

1. Leaf base expands into sheath covering the stem partially or wholly. This is the characteristic of

1. Dicot 2. Monocot 3. Pteridophytes 4. Gymnosperm

1. Swollen leaf base is called

1. Lamina 2. Petiole 3. Pulvinus 4. Leaf blade

1. Identify A, B and C in the given diagram

1. A-Leaf base, B-Petiole, C-Lamina

2. A-Leaf base, B-Lamina, C-Petiole

3. A-Lamina, B-Petiole, C-Leaf base

4. A-Lamina, B-Leaf base, C-Petiole

1. Arrangements of veins and the veinlets in the lamina of leaf is termed as

1. Phyllotaxy 2. Inflorescence 3. Venation 4. Petioles

1. Match the following column.

|  |  |
| --- | --- |
| **Column I** | **Column II** |
| A. Pinnately compound leaf | 1. Neem |
|  | 2. Silk cotton. |
| B. Palmately compound leaves | 3.Rose |
|  | 4. Oxalis |

1. A-1, 2; B-3, 4

2. A-1, 3; B- 2, 4

3. A-4, 2; B-1, 3

4. A-3, 4; B-1, 2

1. Inflorescence is the arrangement of

1. Leaves on the floral axis 2. Buds on the floral axis

3. Flowers on the floral axis 4. Petioles on the floral axis

1. Leaf having single or undivided lamina is called

1. Compound leaf 2. Simple leaf 3. Either 1 or 2 4. General leaf

1. Modified shoots where in the shoot apical meristem changes to floral meristem is called

1. Flower 2. Inflorescence 3. Shoot buds 4. Both 1 and 3

1. Ginger is an underground stem. It distinguished from root because

1. It lacks chlorophyll 2. It stores food

3. It has nodes and internodes 4. It has xylem and vessels

1. In a flower when two sepals are completely external and other two are completely internal, while one is partially internal and partially external. This type of aestivation of calyx is called.

1. Imbricate 2. Quincuncial 3. Twisted 4. Valvate

1. Anthesis is

1. Opening of floral bud 2. Development of anthers

3. Maturation of anthers 4. Reception of pollen by stigma

1. The characters of flower which is represented by floral formula but not by floral diagram is

1. Aestivation 2. Placentation 3. Position of gynoecium 4. Adhesion of stamens

1. Perianth is found in a flower in which

1. Calyx and Corolla are not distinguished 2. Stamens are leaf like

3. Corolla leaf-like but calyx is colored 4. None of the above

1. Which one of the following is correctly matched

1. Onion-bulb 2. Ginger-sucker 3. Pistia-Runner 4. Potato-Stolon

1. Phyllodes

1. Green coloured modifications of petioles 2. These perform photosynthesis

3. These are xerophytic modifications to reduce transpiration 4. All of these

1. Which of the following is/are underground stem

1. Turmeric 2. Zaminkhand 3. Both 1 and 2 4. Carrot

1. Grasses are the example of following type of stem

1. Sucker 2. Runners 3.Stolon 4. Rhizomes

1. Opposite decussate phyllotaxy is found in

1. *Calotropis* 2.Mango 3*.Hibiscus* 4. *Nerium*

1. Select the correct statement with respect to thorn

1. These are formed due to the modificatins of apical buds

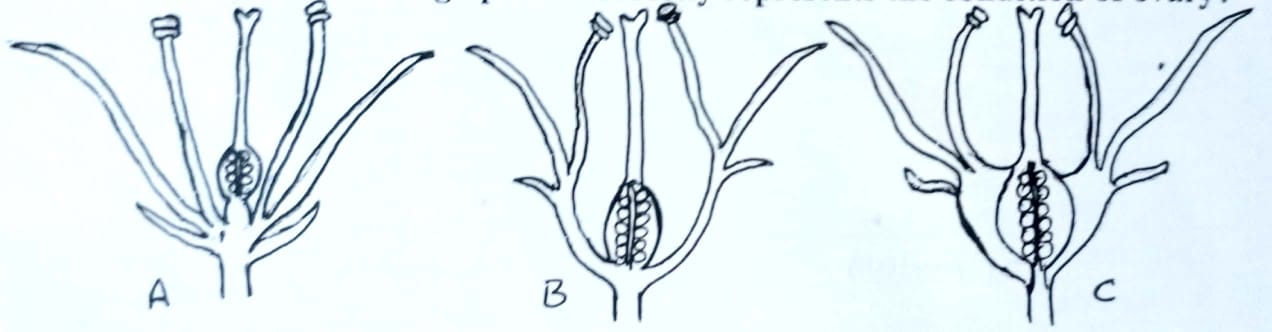
2. These are woody, straight & pointed structures

3. Plants such as cucumber, pumpkins,watermelon show such structures.

4. Both 1 and 2

1. Thalamus of a hypogynous ovary is

1. Convex 2. Concave 3. Deeply cup shaped 4. Flat

1. Which one of the following options correctly represents the condition of ovary?

1. A-Epigyny, B-Hypogyny, C- Perigyny

2. A- Perigyny, B-Epigyny, C- Hypogyny

3. A- Hypogyny, B- Perigyny, C- Epigyny

4. A- Hypogyny, B- Epigyny, C- Perigyny

1. Select the correct statement

1. Runners are creeping steam with long internodes running horizontally on the soils surface produced in plants such as *Centella*, grasses which grow horizontally in all directions.

2. Suckers initially grow upwards & then arch down to develop new daughter plant produced in mint, jasmine etc.

3. In stolons, lateral branches originate from basal portion of the stem which grow horizontally beneath the soil and then come out obliquely upward, as in *Chrysanthemum,* pineapple etc.

4. All of these.

1. Match the following columns.

|  |  |
| --- | --- |
| **Column I** | **Column II** |
| A. Single leaf arises at each node in alternate manner | 1. Whorled phyllotaxy |
| B. Pair of leaf arises at each nodes and arranged opposite to each other | 2. Opposite phyllotaxy |
| C. More than two leaves arises at each node | 3. Alternate phyllotaxy |

1. A-3 B-2 C- 1

2. A- 3 B-1 C- 2

3. A-1 B-2 C- 3

4. A-1 B-3 C-2

1. Find out the pairs, which are correctly matched with respect to aestivation of petals

A. Valvate - *Calotropis*

B. Twisted - Bean

C. Imbricate - *Cassia*

D. Vexillary - China rose

1. B & D 2. A & B 3. A & C 4. C & D.

1. Main axis continues to grow and the flowers are borne laterally in acropetal succession. This is a characteristic of which type of inflorescence?

1. Cymose 2. Racemose 3. Either 1 or 2 4. Both 1 and 2

1. Choose the specific characters of the flowers of *Canna.*

1. Actinomorphic and radial symmetry. 2. Irregular and bilateral symmetry

3. Irregular and zygomorphic 4. Irregular and asymmetric

1. Flower is complete when it has

1. Calyx, corolla, androecium and gynoecium 2. Calyx and corolla

3. Androecium and gynoecium 4. Corolla, androecium and gynoecium.

1. Identify the type of inflorescence in the given diagrams (A and B).

1. A-Racemose; B-Cymose

2. A-Cymose; B-Racemose

3. A-Cymose; B-Cymose

4. A-Racemose; B-Racemose

1. Match the following columns.

|  |  |
| --- | --- |
| Column I | Column II |
| A. Racemose | 1. Radish |
|  | 2. Jasmine |
| B. Cymose | 3. Mustard |
|  | 4. Calotropis |

1. A-1, 2 B- 3, 4

2. A-3, 4 B-1, 2

3. A- 1, 3 B-2, 4

4. A-2, 4 B-1, 3

1. Identify the types of placentation in the given diagrams (A to E).



1. A-Marginal, B-Axile, C-Parietal, D-Free central, E-Basal

2. A-Marginal, B-Basal, C-Parietal, D-Free central, E-Axile

3. A-Parietal, B-Basal, C-Marginal, D-Free central, E-Axile

4. A-Parietal, B-Axile, C-Marginal, D-Free central, E-Basal

1. Which of the following statement is /are incorrect?

a. Calyx and corolla are reproductive organs of a flower.

b. Zygomorphic flower can be divided into two equal radial halves in any radial plane.

c. Flowers without bracts are termed as bracteate.

d. Parthenocarpic fruit is formed after fertilization of the ovary.

e. In legumes, seed is non- endospermic. f. In Gulmohur the aestivation is imbricate.

1. a, b, c, d. 2. a, b, e 3. c, d, f 4. a, d, e.

1. Largest flower is of

1. *Rafflesia* 2. *Nelumbo* 3. *Helianthus* 4. *Wolfia*

1. How many plants in the list given below have marginal placentation?

Mustard, Gram, Tulip, Asparagus. Arhar, Sun hemp, Chilli, Colchicine, Onion, Moong, Pea, Tobacco, Lupin.

1. 4 2. 5 3. 6 4.3.

1. Identify types of aestivation in the given diagrams A to D.

1. A-Valvate, B-Imbricate, C-Twisted, D-Vexillary

2. A-Valvate, B-Twisted, C-Imbricate, D-Vexillary

3. A-Vexillary, B-Twisted, C-Imbricate, D-Valvate

4. A-Vexillary, B-Imbricate, C-Twisted, D-Valvate

1. Fruit is

1. Mature ovary developed before fertilization 2. Ripened ovary developed before fertilisation

3. Ripened ovary developed after fertilization 4. Mature undeveloped ovary

1. Select the correct statement

1. True fruits develop from ovaries after fertilization

2. Parthenocarpic fruits develop from ovaries without fertilization

3. False fruits develop from floral parts other than ovary after fertilization

4. All of these

1. Identify A to D in the give diagram

1. A-Epicarp, B-Mesocarp, C-Seed, D-Endocarp

2. A-Mesocarp, B-Epicarp, C-Seed, D-Endocarp

3. A-Mesocarp, B-Epicarp, C-Endocarp, D-Seed

4. A-Epicarp, B-Mesocarp, C-Endocarp, D-Seed

1. Match the following columns.

|  |  |
| --- | --- |
| **Column I** | **Column II** |
| A. Gamosepalous | 1. Flower of lily |
| B. Polysepalous | 2. Sterile stamen |
| C. Gamopetalous | 3. Free petals |
| D. Polypetalous | 4. Free sepals |
| E. Epiphyllous | 5. Fused petals |
| F. Staminode | 6. Fused sepals |

1. A-6 B- 4 C-5 D-3 E-1 F-2

2. A-1 B-2 C-3 D-4 E-5 F-6

3. A-6 B-5 C-4 D-3 E-2 F-1

4. A-1 B-3 C-2 D-5 E-4 F-6

1. Maize grain is

1. Seed 2. Embryo 3. Ovule 4. Fruit.

1. What type of placentation is seen in sweet pea?

1. Axile 2. Free central 3. Marginal 4. Basal.

1. The term ‘keel’ is used for special type of

1. Sepals 2. Petals 3. Stamens 4. Carpels.

1. In *Dianthus*, placentation is

1. Basal 2. Free central 3. Axile 4. Marginal.

1. Mango juice is extracted from

1. Epicarp 2. Mesocarp 3. Endocarp 4. Pericarp and thalamus

1. In collenchyma intercellular spaces are

1. Usually present 2. Usually absent 3. Always present 4. None of these

1. Axillary bud and terminal bud are derived from the activities of

1. Lateral meristem 2. Intercalary meristem

3. Apical meristem 4.Secondary meristem

1. Which of the following tissue is the only mechanical tissue in monocots?

1. Parenchyma 2. Collenchyma 3. Sclerenchyma 4. Phloem

1. Vessels are different from tracheids because vessels are

1. Multicellular, formed by end to end fusion of vessel members with wide lumen.

2. Multicellular, formed by end to end fusion of vessel members with narrow lumen.

3. Unicellular tube like cells with tapering ends and narrow lumen.

4. Less efficient in water conduction than tracheids.

1. Which of the following is elongated and spindle shaped?

1. Sclerenchyma fibres 2.Sclereids 3. Parenchyma 4. Collenchyma

1. Which of the following is nucleated?

1. Vessel 2.Sieve cell 3.Tracheid 4. Companion cell

1. Which of the following is responsible for maintaining pressure gradient in sieve tubes?

1. Sieve tube element 2.Companian cell 3.Phloem fibre 4.Phloem parenchyma

1. Cuticle is absent in

1. Mesophytes 2. Young roots 3. Mature stem 4. Leaves

1. Conjoint and closed vascular bundles with no phloem parenchyma may be observed in

1. Monocot stem 2. Monocot root 3. Dicot stem 4. Dicot root

1. Meristematic tissue in vascular bundle is

1. Cork cambium 2.Interfascicular cambium 3. Fascicular cambium 4. None of these

1. Monocot root differs from dicot root in having

1. Open vascular bundle 2. Presence of root hair

3. Number of xylem/phloem strands 4. Presence of cortex

1. In root, pericycle gives rise to

1. Lateral roots and cambium 2. Cortex and pith

3. Epidermis and vascular bundles 4. Xylem and phloem

1. Passage cells are thin walled cells found in

1. Phloem elements those help in the transport of substances to other plant parts

2. Testa of seeds to enable emergence of growing embryonic axis during seed germination

3. Central region of style through which the pollen tube grows towards the ovary

4. Endodermis of roots facilitating rapid transport of water form cortex to pericycle.

1. Bulliform cells are also known as ­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_occur in the\_\_\_\_\_\_epidermis of\_\_\_\_\_leaves

1. Guard cells, upper, monocot respectively 2. Motor cells, lower, monocot respectively

3. Motor cells, upper, monocot respectively 4. Motor cells, upper, dicot respectively

1. Which among the following are sister cells?

1. Xylem and phloem 2. Parenchyma and collenchymas

3. Sclereids and fibres 4. Sieve tube and companion cell

1. Select the mismatched pair

1. Root hair-Unicellular 2. Stem hair- Multicellular

3. Trichomes- Cause water loss 4. Guard cells- opening and closing stomata

1. Exarch condition of xylem is found in

1. Root 2. Stem 3. Leaf 4. All of these

1. Match the column I with column II and select the correct option from codes given below

|  |  |  |  |
| --- | --- | --- | --- |
|  | **COLUMN I** |  | **COLUMN II** |
| A | Meristem | i | Photosynthesis,storage |
| B | Parenchyma | ii | Mechanical support |
| C | Collenchyma | iii | Actively dividing cells |
| D | Sclerenchyma | iv | Stomata |
| E | Epidermal tissue | v | Sclereids |

1. A-i, B-iii, C-v, D-ii, E-iv

2. A-iii, B-i, C-ii, D-v, E-iv

3. A-ii, B-iv, C-v, D-i, E-iii

4. A-v, B-iv, C-iii, D-ii, E-i

1. Epidermal tissue system is derived from

1. Protoderm 2. Procambium 3. Periblem 4. Plerome

1. Which of the following statements is true?

1. Vessels are multicellular with narrow lumen

2. Tracheids are multicellular with narrow lumen

3. Vessels are unicellular with wide lumen

4. Tracheids are unicellular with narrow lumen

1. Periderm consists of

1. Phellogen and phellem 2. Phellem and Phelloderm

3. Phellem, phellogen and phelloderm 4. Phellogen and Phelloderm

1. Lenticels are

1. Resinous product secreted in stem 2. Openings present in leaves

3. Buds in axils of leaf 4. Openings on old stem with loose cells

1. Wood present in annual ring is

1. Heart wood and sap wood 2. Spring wood and autumn wood

3. Heart wood and autumn wood 4. Spring wood and sap wood

1. Duramen is

1. Periderm 2. Bark 3. Sap wood 4. Heart wood

1. Complementary cells are

1. Loosely arranged parenchyma cells present in endodermis

2. Loosely arranged parenchyma cells associated with lenticels

3. Compactly arranged collenchymas cells with intercellular spaces

4. Bundles of fibres associated with lenticels

1. In dicot roots cambium is

1. Derived from pericycle and conjunctive tissue

2. Initially it is wavy and later becomes circular due to its activity

3. Produces secondary xylem towards inside and secondary phloem towards outside

4. All of the above are correct

1. Which is the dead mechanical tissue?

1. Parenchyma 2. Collenchyma 3.Sclerenchyma 4. None of these

**In the following questions a statement Assertion (A) is followed by a statement Reason (R) Mark the correct answer as follows:.**

**1. Both assertion and reason are true and reason is the correct explanation of assertion**

**2. Both assertion and reason are true and not reason is the correct explanation of assertion**

**3. Assertion is true and reason is false**  **4. Both assertion and reason are false.**

1. **Assertion:** Pectins are abundant in the middle lamella between plant cells.

**Reason:** Some cells in woody plants have secondary walls and forms inner to the primary wall

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |

1. **Assertion:** Xylem of ancient vascular plants is made up of tracheids only.

**Reason:** Tracheae are the chief water conducting tissue in flowering plants

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |

1. **Assertion**: Secondary tissues are formed by both vascular and cork cambium

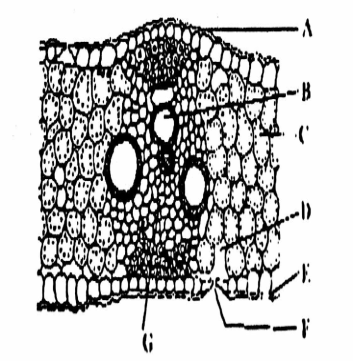
**Reason**: Gymnosperms do not show secondary growth

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |

1. **Assertion**: Endodermis is starch sheath in dicot stem

**Reason**: Endodermis of dicot stem consists of Casparian bands

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |

1. T.S of monocot leaf is given below,certain parts have been indicated by alphabets. Which one is the correct option?

1. A-adaxial epidermis, B-abaxial epidermis, C-xylem,

D-substomatal cavity, E-stoma, F-mesophyll, G-Phloem

2. A- adaxial epidermis, B- xylem, C- mesophyll,

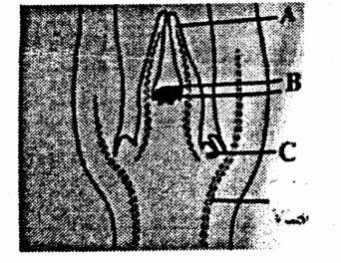
D-substomatal cavity, E- abaxial epidermis, F- stoma, G- phloem

3. A- adaxial epidermis, B- Phloem, C- mesophyll,

D-substomatal cavity, E- abaxial epidermis, F- xylem, G- stoma

4. A- adaxial epidermis, B- xylem, C- stoma, D- substomatal cavity,

E- abaxial epidermis, F- Phloem, G- mesophyll

1. Identify the given figure and select the correct option for A, B and C

1. A-Leaf primordium, B-Shoot apical meristem, C-Axillary bud

2. A-Leaf primordium, B-Shoot apical meristem, C-Apical bud

3. A -Root hair primordium, B-Root apical meristem, C-Axillary bud

4. A - Root hair primordium, B-Root apical meristem, C-Terminal

1. The waxy material deposited in the Casparian strip of the endodermis is

1. Pectin 2. Suberin 3. Cellulose 4. Lignin

1. Anatomically fairly old dicot root is differentiated from dicot stem by

1. Absence of secondary phloem 2. Presence of cortex

3. Position of protoxylem 4. Absence of secondary xylem

1. Dumb-bell shaped stomata are found in

1. *Hibiscus* 2. *Datura* 3. Potato 4. Grasses

1. Identify how many sentences are **correct** about bast fibres?

a. These are also called bast fibres and made up of collenchyma cells.

b. These are generally absent in primary phloem but are found in the secondary phloem

c. Phloem fibres of jute, flax and hemp are used commercially.

d. These are much elongated, branched and have pointed needle like apices.

e. Cell wall of phloem fibre is quite thin.

f. At maturity they lose their protoplasm and become dead.

1. Two 2. Three 3. Four 4. One

1. Identify **wrong** statement

1. The size of the vascular bundles are dependent on size of the veins in dicot leaf.

2. The parallel venation in monocot leaves is reflected in the near similar sizes of vascular

bundles (except in main veins)

3. Organic compounds like tannins, resins, oils, gums, aromatic substances and essential oils are

deposited in heart wood.

4. At some places, the cambium forms a narrow band of parenchyma called primary medullary

rays, which passes through the secondary xylem and secondary phloem in the radial directions.

1. The correct order of tissue layers in the bark of dicotyledonous stem are

1. Phellogen, phellem, phelloderm, primary cortex, primary phloem, secondary phloem.

2. Phellem, phellogen, phelloderm, primary cortex, primary phloem, secondary phloem.

3. Phellem, phellogen, phelloderm, primary cortex, secondary phloem, primary phloem.

4. Phellem, phellogen, phelloderm, primary phloem, primary cortex, secondary phloem.

1. Floating aquatic plants can be represented as\_\_\_\_\_\_\_\_\_\_ leaves

1.Hypostomatic 2.Amphistomatic 3.Astomatic 4.Epistomatic

1. Following table summerises the difference between a monocot and dicot root. Identify wrong differences.

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **Character** | **Monocot root** | **Dicot root** |
| i | Vascular bundle | Polyarch | Diarch to hexarch |
| ii | Cambium | Absent. So secondary growth is absent | Present. So secondary growth is present |
| iii | Pith | Poorly developed | Well developed large pith |
| iv | Activity of pericycle | Gives rise to secondary roots and cork cambium | Gives rise to lateral roots only |

1. i and ii 2. i and iv 3. iii and iv 4. ii and iii

1. Heart wood helps in

1. Mechanical support 2. Circulation of solutes

3. Ascent of sap 4.Transport of food

1. Vascular tissues of angiosperms differ from those of gymnosperms in

1. Presence of vessels in xylem

2. Presence of well developed sieve tubes in phloem

3. Presence of companion cells in phloem 4. All of these

1. Which of the following statements about sclereids is or are correct?

a. Sclereids are spherical, oval or cylindrical cells with highly thick walls.

b. They are dead cells with suberised cell walls

c. Found in the fruit walls of nuts, pulp of fruits like guava, pear, sapota and in the leaves of tea.

1. a and b are correct 2. a and c are correct

3. b and c are correct 4. a, b and c are correct

1. Cork is impervious to water due to

1. Silica in cell wall 2. CaCO3 in cell wall

3. Suberin in cell wall 4. Cuticle in cell wall

**Topic: Morphology of flowering plants and Anatomy of flowering plants**

**Unit: B-03**

**ANSWER KEY**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Q. No.** | **Ans.** | **Q. No.** | **Ans.** | **Q. No.** | **Ans.** | **Q. No.** | **Ans.** | **Q. No.** | **Ans.** |
| 1 | **1** | 2 | **4** | 3 | **2** | 4 | **3** | 5 | **1** |
| 6 | **3** | 7 | **2** | 8 | **3** | 9 | **2** | 10 | **1** |
| 11 | **3** | 12 | **2** | 13 | **1** | 14 | **3** | 15 | **1** |
| 16 | **1** | 17 | **4** | 18 | **3** | 19 | **2** | 20 | **1** |
| 21 | **2** | 22 | **1** | 23 | **3** | 24 | **1** | 25 | **1** |
| 26 | **3** | 27 | **2** | 28 | **4** | 29 | **1** | 30 | **1** |
| 31 | **3** | 32 | **1** | 33 | **1** | 34 | **1** | 35 | **1** |
| 36 | **2** | 37 | **3** | 38 | **4** | 39 | **4** | 40 | **1** |
| 41 | **4** | 42 | **3** | 43 | **2** | 44 | **2** | 45 | **2** |
| 46 | **2** | 47 | **3** | 48 | **3** | 49 | **1** | 50 | **1** |
| 51 | **4** | 52 | **2** | 53 | **2** | 54 | **1** | 55 | **3** |
| 56 | **3** | 57 | **1** | 58 | **4** | 59 | **3** | 60 | **4** |
| 61 | **3** | 62 | **1** | 63 | **2** | 64 | **1** | 65 | **4** |
| 66 | **3** | 67 | **4** | 68 | **2** | 69 | **4** | 70 | **2** |
| 71 | **4** | 72 | **3** | 73 | **2** | 74 | **2** | 75 | **3** |
| 76 | **3** | 77 | **2** | 78 | **1** | 79 | **2** | 80 | **3** |
| 81 | **4** | 82 | **2** | 83 | **4** | 84 | **2** | 85 | **4** |
| 86 | **3** | 87 | **1** | 88 | **4** | 89 | **2** | 90 | **3** |