

Answer Key - Grades 10

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Ø=Ý Answer Key Grade Levels: 10 Total Questions: 25 Answer 1 Correct
Diagram (c) shows the five petals of the pea flower separated to illustrate their different shapes and arrangement. This specific arrangement, with a large posterior 'standard', two lateral 'wings', and two anterior fused 'keel' petals, is called a papilionaceous corolla. Answer 2 Correct Answer: B
Explanation: The term 'papilionaceous' is derived from 'papilio', the Latin word for butterfly. It describes a corolla with five petals arranged in a butterfly-like shape: a large upper petal (standard), two side petals (wings), and two fused lower petals (keel). Answer 3 Correct Answer: C
Explanation: 'Diadelphous' means 'in two brothers' or two bundles. In the pea flower, the ten stamens are arranged in two groups: nine are fused together to form a sheath around the pistil, and the tenth stamen is free. Answer 4 Correct Answer: B Explanation: In a floral formula, the symbol '%' represents a zygomorphic flower, which can be divided into two equal halves in only one plane.
The symbol "'•'" is used for an actinomorphic (radially symmetrical) flower.
C Explanation: The notation A(9)+1 specifically represents the diadelphous condition of the androecium (A). The parenthesis around the '9' indicates that nine stamens are fused (connate), while the '+1' indicates that one stamen remains free. Answer 6 Correct Answer: A Explanation: 'Monocarpellary' means the gynoecium (the female reproductive part) is composed of only one carpel. This single carpel develops into the legume fruit (pod). Answer 7 Correct Answer: B
Explanation: Arhar (pigeon pea or tur dal), like gram, sem, and moong mentioned in the text, is a pulse and belongs to the family Fabaceae. Wheat and rice are cereals (family Poaceae), and potato belongs to the Solanaceae family. Answer 8 Correct Answer: A Explanation: The plant *Indigofera tinctoria*, a member of the Fabaceae family, was a major source of the natural blue dye known as indigo before synthetic dyes were developed. Answer 9 Correct Answer: C Explanation: A legume is a dry, dehiscent fruit that develops from a single carpel (monocarpellary) of a superior ovary. It typically splits open along two seams to release its seeds. Answer 10 Correct Answer: C
Explanation: Vexillary aestivation is a characteristic feature of the Fabaceae family. It is a type of imbricate aestivation where the large posterior petal (standard) overlaps the two smaller lateral petals (wings), which in turn overlap the two fused anterior petals (keel). Answer 11 Correct Answer: C Explanation: In non-endospermic (or exalbuminous) seeds, the endosperm—the nutritive tissue formed after fertilization—is completely consumed by the embryo during its development. The food is then stored in the cotyledons, which become thick and fleshy, as seen in peas and beans. Answer 12 Correct Answer: A Explanation: *Mullathi* is the Hindi name for licorice. It is famous for its sweet-tasting roots, which contain glycyrrhizin. These roots are widely used in traditional Ayurvedic medicine for treating coughs and sore throats. Answer 13 Correct Answer: C Explanation: The student's handwritten note correctly points out that Solanaceae flowers are typically 'pentamerous', meaning their floral parts (sepals, petals, stamens) occur in multiples of five. Answer 14 Correct Answer: C Explanation: In a floral formula, a line drawn below the letter 'G' (Gynoecium) indicates that the ovary is superior. This means the calyx, corolla, and androecium are attached below the ovary (a hypogynous condition). Answer 15 Correct Answer: B Explanation: The text states that plants in the family Solanaceae are 'mostly herbs, shrubs and rarely small trees'. Therefore, a large forest canopy tree would be the least expected type of plant in this family. Answer 16 Correct Answer: C Explanation: In a racemose inflorescence, the main axis continues to grow indefinitely. The flowers are borne laterally in an acropetal succession, meaning the oldest flowers are at the base and the youngest ones are at the apex. Answer 17 Correct Answer: B
Explanation: A key difference between monocots (like rice, wheat) and dicots (like pea) is the arrangement of floral parts. Monocots are typically trimerous (parts in 3s), while dicots are often tetramerous (parts in 4s) or pentamerous (parts in 5s). The pea flower is pentamerous (5 sepals, 5 petals). Answer 18 Correct Answer: B Explanation: The term 'gamosepalous' refers to a calyx where the sepals are united or fused. This is represented in the floral formula by putting the number of sepals in parentheses, as in K(5). Answer 19 Correct Answer: C Explanation: The Fabaceae family is renowned for its pulses (legumes), such as beans, lentils, peas, and soyabean. These are a staple food source globally and are particularly valued for their high protein content, making them a crucial 'meat substitute' in many diets. Answer 20 Correct Answer: C Explanation: The floral diagram is a cross-section view. In the diagram for Fabaceae (f), you can see the stamens (the whorl inside the petals) are drawn as two distinct groups: one large group where the filaments are fused, and one stamen drawn separately. This visually represents the A(9)+1 arrangement. Answer 21 Correct Answer: C Explanation: The bright colours, presence of nectar, and the complex