Answer Key - Grades 10

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Figure 5.21 (d) shows the stamens (androecium) and the pistil (gynoecium) isolated from the pea flower, which are the male and female reproductive parts, respectively. Answer 2 Correct Answer: B Explanation: Zygomorphic symmetry, or bilateral symmetry, means the flower can be divided into two equal halves along only one vertical plane. This is a key characteristic of pea flowers. Answer 3 Correct Answer: C Explanation: The text explicitly describes the corolla of Fabaceae as 'papilionaceous', which refers to the butterfly-like arrangement of its five petals: one large standard, two lateral wings, and two fused anterior keels. Answer 4 Correct Answer: C Explanation: The notation 'A(9)+1' describes a diadelphous condition where the androecium (A) consists of ten stamens arranged in two bundles. One bundle is formed by the fusion of nine stamens (in parentheses), and the other consists of a single free stamen. Answer 5 Correct Answer: C Explanation: The text lists gram, arhar, sem, and moong as examples of pulses from the Fabaceae family. Arhar dal is a staple food in India. Answer 6 Correct Answer: D Explanation: 'Diadelphous' literally means 'two brothers'. In botany, it refers to the condition where stamens are fused together to form two distinct groups or bundles, as seen in the pea flower with its (9)+1 arrangement. Answer 7 Correct Answer: C Explanation: A legume, commonly known as a pod, is the characteristic fruit type for plants in the family Fabaceae. It develops from a monocarpellary, superior ovary and typically dehisces along two sutures. Answer 8 Correct Answer: A Explanation: 'Ovary superior' means the ovary is attached to the receptacle above the attachment of other floral parts. 'Monocarpellary' means the gynoecium is composed of a single carpel. Answer 9 Correct Answer: B Explanation: The text lists 'groundnut' under 'edible oil'. Groundnut is the English name for 'moongphali', a major oilseed crop in India. Answer 10 Correct Answer: B Explanation: In non-endospermic (or exalbuminous) seeds, the food reserves of the endosperm are used up 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 11 Correct Answer: B Explanation: The outermost whorl is the calyx (sepals). The diagram shows five sepals that are fused together (indicated by the connecting lines between them), which is a condition known as gamosepalous. Answer 12 Correct Answer: C Explanation: This specific overlapping arrangement is called vexillary or papilionaceous aestivation, a defining characteristic of the Fabaceae family. Answer 13 Correct Answer: D Explanation: *Indigofera tinctoria*, from the Fabaceae family, is the source of indigo, a deep blue dye that was a major export from India for centuries. Answer 14 Correct Answer: C Explanation: The term 'pentamerous' indicates that the floral parts (sepals, petals, stamens) are present in multiples of five. This is a common characteristic of the Solanaceae family (e.g., a potato flower has 5 sepals, 5 petals, 5 stamens). Answer 15 Correct Answer: D Explanation: The text explicitly states that the seeds of Fabaceae are 'non-endospermic'. All other options (diadelphous stamens, papilionaceous corolla, superior ovary) are listed as key characteristics of the family. Answer 16 Correct Answer: C Explanation: Mullathi is the Hindi name for Licorice, which is obtained from the root of *Glycyrrhiza glabra*, a plant belonging to the Fabaceae family mentioned in the text. Answer 17 Correct Answer: B Explanation: Moong (Vigna radiata) is in the Fabaceae family. Key features of this family are zygomorphic (bilateral) flower symmetry and a legume fruit (pod). Answer 18 Correct Answer: C Explanation: The keel petals are fused and enclose the essential reproductive organs (stamens and pistil), protecting them from rain and insects. This structure also forces specific pollinators (like bees) to land in a particular way to access nectar, thus ensuring efficient cross-pollination. This is often called a 'piston mechanism'. Answer 19 Correct Answer: B Explanation: The pea plant is a dicot. Gram, Soyabean, and Groundnut are also dicots, sharing features like taproot systems and reticulate leaf venation. Sugarcane, listed in the handwritten notes, is a monocot, which has a fibrous root system and parallel leaf venation. Answer 20 Correct Answer: B Explanation: In a floral formula, 'G' represents the Gynoecium. The number '1' indicates it is monocarpellary (one carpel). The line drawn beneath the 'G1' signifies that the ovary is superior, meaning it is located above the other floral whorls. Answer 21 Correct Answer: C Explanation: The text states that the family Solanaceae is 'widely distributed in tropics, subtropics and even temperate zones', indicating its broad geographical range. Answer 22 Correct Answer: A Explanation: The ovary develops into the fruit, and the ovules develop into seeds. A unilocular ovary (single chamber) containing many ovules will mature into a single-chambered fruit (like a pea pod) that contains many seeds (the peas). Answer 23 Correct Answer: B Explanation: The handwritten note indicates Brassicaceae flowers are 'tetramerous', meaning their parts are in fours