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CUET-UG—AGRICULTURE*

Entrance Exam, 2024

(Exam held on 19-07-2024)

Subject Code: 302

1. Arrange the following gases in descending order in terms of percentage in dry air of the lower atmosphere.

- (a) Carbon dioxide
- (b) Argon
- (c) Nitrogen
- (d) Oxygen

Choose the **correct** answer from the options given below:

- A. (d), (c), (a), (b)
- B. (c), (a), (d), (b)
- C. (c), (d), (a), (b)
- D. (c), (d), (b), (a)

2. Match List-I with List-II:

List-I (Parameter)	List-II (Instrument for measurement)
(a) Humidity	I. Anemometer
(b) Wind	II. Lysimeter
(c) Light intensity	III. Hygrometer
(d) Evapotranspiration	IV. Luxmeter

Choose the **correct** answer from the options given below:

- | | | | | |
|----|-----|-----|-----|-----|
| | (a) | (b) | (c) | (d) |
| A. | III | I | IV | II |
| B. | I | III | II | IV |
| C. | I | II | IV | III |
| D. | III | IV | I | II |

3. The evidence of particulate nature for the units of inheritance was first presented by

- A. Mendel
- B. Correns
- C. Mojica
- D. Morgan

4. Which of the following statements are **correct** about the genes?

- (a) Genes are located on chromosomes.
- (b) Split genes are composed of exons only.
- (c) Genes move from one linkage group to another.
- (d) Chromosomes with identical arms on which genes are located are known as isochromosomes.

Choose the **correct** answer from the options given below:

- A. (a), (b) and (d) only
- B. (a), (b) and (c) only
- C. (a), (b), (c) and (d)
- D. (a), (c) and (d) only

5. The term heterosis is coined by

- A. Hull, 1945
- B. Bruce, 1910
- C. East, 1908
- D. Shull, 1914

6. Arrange the following steps of plant breeding in **correct** sequence.

- (a) Selection of superior variants
- (b) Creation of variation
- (c) Multiplication and distribution
- (d) Evaluation of variants

Choose the **correct** answer from the options given below:

- A. (a), (b), (c), (d)
- B. (a), (c), (b), (d)
- C. (b), (d), (a), (c)
- D. (c), (b), (d), (a)

7. Who is the father of tissue culture?

- A. Jethro Tull
- B. Folke Karl Skoog
- C. Toshion Murashige
- D. Haberlandt

8. Protein is a polymer of

- A. Amino acids
- B. Lipids
- C. Nucleic acids
- D. Carbohydrates

- | | | | | | | | |
|------|------|------|------|------|------|------|------|
| 1. C | 2. A | 3. A | 4. D | 5. D | 6. C | 7. D | 8. A |
|------|------|------|------|------|------|------|------|

9. Which of the following are Cyanobacteria?

- (a) Nucleopolyhedrovirus
- (b) Anabaena
- (c) Nostoc
- (d) Oscillatoria

Choose the **correct** answer from the options given below:

- A. (a), (b) and (d) only
- B. (a), (b) and (c) only
- C. (a), (b), (c) and (d)
- D. (b), (c) and (d) only

10. Starch is an example of

- A. Monosaccharides
- B. Oligosaccharides
- C. Disaccharides
- D. Polysaccharides

11. Egg of poultry contains almost all the Vitamins with the exception of Vitamin

- A. B
- B. C
- C. A
- D. D

12. Match List-I with List-II:

List-I (Cattle Breed)	List-II (Place of Origin)
(a) Tharparkar	I. Netherland
(b) Holstein Friesian	II. United Kingdom
(c) Jersey	III. Sindh
(d) Gir	IV. Kathiawar

Choose the **correct** answer from the options given below:

- | | | | |
|--------|-----|-----|-----|
| (a) | (b) | (c) | (d) |
| A. I | II | III | IV |
| B. I | III | II | IV |
| C. III | I | II | IV |
| D. III | IV | I | II |

13. What is the name of the process required to make sperm competent for in-vitro fertilization?

- A. Capacitation
- B. Syngamy
- C. Parturition
- D. Ovulation

14. The colostrum should be fed at the rate of

- A. 25% of calf's body weight
- B. 30% of calf's body weight
- C. 10% of calf's body weight
- D. 40% of calf's body weight

15. Ranikhet disease is caused by

- A. Herpesvirus
- B. Paramyxovirus
- C. Avipoxvirus
- D. H1N1 influenza virus

16. Which of the following is an exotic breed of poultry?

- A. Busra
- B. Chittagong
- C. Plymouth rock
- D. Kadaknath

17. Match List-I with List-II:

List-I (Milk product)	List-II (Classification)
(a) Basundi	I. Fat rich milk product
(b) Paneer	II. Fermented milk product
(c) Dahi	III. Concentrated milk product
(d) Ghee	IV. Coagulated milk product

Choose the **correct** answer from the options given below:

- | | | | |
|--------|-----|-----|-----|
| (a) | (b) | (c) | (d) |
| A. III | IV | II | I |
| B. I | III | II | IV |
| C. I | II | IV | III |
| D. III | IV | I | II |

18. Jute is a

- A. Forage crop
- B. Fibre crop
- C. Drug crop
- D. Medicinal and aromatic crop

19. Forage crops include:

- | | |
|-------------|---------------|
| (a) Berseem | (b) Safflower |
| (c) Lucerne | (d) Sunflower |

Choose the **correct** answer from the options given below:

- A. (a), (b) and (d) only
- B. (a) and (c) only
- C. (a), (b), (c) and (d)
- D. (b), (c) and (d) only

20. Arrange the following soil particles in descending order of their diameter.

- | | |
|---------------|-----------------|
| (a) Clay | (b) Silt |
| (c) Fine sand | (d) Coarse sand |

Choose the **correct** answer from the options given below:

- A. (a), (b), (c), (d)
- B. (a), (c), (b), (d)
- C. (d), (c), (b), (a)
- D. (c), (b), (d), (a)

21. Which of the following statements are correct about function of essential plant nutrients?
- Nitrogen is not a component of nucleic acids.
 - Potassium plays important role in activation of enzymes.
 - Sulphur is part of some amino acids and coenzymes.
 - Phosphorus deficiency results in terminal bud necrosis.

Choose the **correct** answer from the options given below:

- (a), (b) and (d) only
 - (b) and (c) only
 - (a), (b) and (c) only
 - (b), (c) and (d) only
22. Which of the following concentrated organic manures has the highest percentage of P_2O_5 ?
- Neem cake
 - Raw bone-meal
 - Poultry manure
 - Fish manure
23. Volume of water required to apply 5 cm irrigation over one hectare area?
- 500 cubic meter
 - 50 cubic meter
 - 5000 cubic meter
 - 50000 cubic meter
24. National Rainfed Area Authority was established in
- 2000
 - 2013
 - 1998
 - 2006
25. Match List-I with List-II:

List-I (Methods of weed control)	List-II (Measures of weed control)
(a) Preventive method of weed control	I. Proper crop rotation
(b) Mechanical method of weed control	II. Control of <i>Lantana camara</i> (Ghaneri) by <i>Lantana bug</i>
(c) Cultural method of weed control	III. Use weed free crop seeds
(d) Biological method of weed control	IV. Hand weeding

Choose the **correct** answer from the options given below:

	(a)	(b)	(c)	(d)
A.	I	II	III	IV
B.	I	III	II	IV
C.	I	II	IV	III
D.	III	IV	I	II

26. Which of the following statements is **not** correct about the weeds?

- Weeds compete with crop for space
- Weeds compete with crops for light
- Weeds compete with crops for nutrients
- Weeds has no affect on the yield and quality of crops

27. Which of the following is **not** a pest of rapeseed-mustard crop?

- White rust
- Stalk borer
- Aphids
- Alternaria blight

28. Which of the following crops is NOT a legume crop?

- Berseem
- Rapeseed-mustard
- Soybean
- Groundnut

29. Which of the following crops requires relatively wider line to line and plant to plant spacing?

- Maize
- Chickpea
- Berseem
- Sugarcane

30. Match List-I with List-II:

List-I (Name of crop)	List-II (Disease of crop)
(a) Sugarcane	I. Red rot
(b) Cotton	II. Black arm
(c) Groundnut	III. Tikka (Leaf spot)
(d) Sorghum	IV. Grain smut

Choose the **correct** answer from the options given below:

	(a)	(b)	(c)	(d)
A.	I	II	III	IV
B.	I	III	II	IV
C.	I	II	IV	III
D.	III	IV	I	II

31. Gladiator and Super Star are the varieties of which crop?

- Tuberoose
- Rose
- Marigold
- Chrysanthemum

32. Arrange the process of preparation of jelly in proper sequence.

- Judging of end point and cooling.
- Addition of sugar and cooking of jelly.
- Peeling and extraction of pectin.
- Harvesting of firm ripe fruits and washing.

Choose the **correct** answer from the options given below:

- (a), (b), (c), (d)
- (d), (c), (b), (a)
- (b), (a), (d), (c)
- (c), (b), (d), (a)

33. Match List-I with List-II:

List-I (Vegetable)	List-II (Family)
(a) Onion	I. Cruciferae
(b) Carrot	II. Solanaceae
(c) Potato	III. Umbelliferae
(d) Cauliflower	IV. Liliaceae

Choose the **correct** answer from the options given below:

	(a)	(b)	(c)	(d)
A.	IV	III	II	I
B.	I	III	II	IV
C.	I	II	IV	III
D.	III	IV	I	II

34. Alphonso, Dasher, Ratna and Amrapali are the varieties of

- A. Citrus B. Pomegranate
C. Mango D. Banana

35. Brinjal belongs to the family

- A. Solanaceae B. Malvaceae
C. Cruciferae D. Amaryllidaceae

36. Rose is commercially propagated by

- A. Bulbs B. Seed
C. Tuber D. 'T' budding

37. Physical method of fruit juice preservation includes:

- (a) Refrigeration (b) Salt addition
(c) Sugar addition (d) Pasteurization

Choose the **correct** answer from the options given below:

- A. (a) and (d) only B. (a), (b) and (c) only
C. (a), (b), (c) and (d) D. (b), (c) and (d) only

38. Which of the following disease is caused by Vitamin D deficiency?

- A. Rickets B. Night blindness
C. Scurvy D. Beriberi

39. Botanical name of Spinach is

- A. *Allium cepa* B. *Spinacia oleracea*
C. *Bombax ceiba* D. *Cucumis sativus*

40. Which of the following methods are used for banana propagation?

- A. Cutting and grafting
B. Rhizomes and sword suckers
C. Grafting and layering
D. Budding and cutting

Directions (Qs. No. 41-45): Read the passage given below carefully and answer the questions that follow.

Oilseeds scenario of India

India is next to USA, China and Brazil in vegetable oils production. Areas and production of oilseeds crops is next to food crops. India account for 14% of world's oilseeds area, 8% of world's oilseeds output and 11% of world's edible oils consumption. India grows nine field oilseeds crops of which linseed and castor are non-edible. In the edible oilseeds crops, soybean has the highest acreage followed by rapeseed-mustard, groundnut, sesame, safflower, sunflower and niger. India is not self sufficient in oilseeds production and 50% requirement of vegetables oils is met through the import. Of the total import, about 60% is palm oil. Among the states, Madhya Pradesh ranks at top in area and production of vegetables oils followed by Rajasthan, Gujarat and Andhra Pradesh. Oilseeds occupies about 13-14% of the gross cropped area and account for nearly 1.4% to gross national product and 7% of the value of all agricultural commodities.

41. India's vegetable oils import is about % of its total requirement of vegetables oils.

- A. 40 B. 50
C. 15 D. 60

42. Arrange the following edible oilseed crops in increasing order of area under cultivation in each crop in India:

- (a) Sesame (b) Soybean
(c) Groundnut (d) Rapeseed-mustard

Choose the **correct** answer from the options given below:

- A. (a), (d), (c), (b) B. (a), (c), (b), (d)
C. (b), (a), (d), (c) D. (a), (c), (d), (b)

43. Which of the following statements are **correct** about the oilseed crops in India ?

- (a) India grows nine oilseed crops
(b) Gujarat contribution to total oilseed production is the highest
(c) India is not self-sufficient in vegetable oilseeds production
(d) India's oilseed production ranked fourth in the world

Choose the **correct** answer from the options given below:

- A. (a), (b) and (d) only B. (a), (c) and (d) only
C. (a), (b), (c) and (d) D. (b), (c) and (d) only

44. Which of the following is a non-edible oilseed crop?
 A. Safflower B. Niger
 C. Castor D. Sesame
45. What is the contribution of oilseed crops to Gross National Product?
 A. 7% B. 1.4%
 C. 10% D. 4%

Directions (Qs. No. 46-50): Read the passage given below carefully and answer the questions that follow.

Mandarin orange-Fruit Crop

Mandarin oranges (Botanical name - *Citrus reticulata*, Family - Rutaceae), commonly known as *Santra* are the most refreshing and health promoting juicy fruits. Besides Vitamin C, it is an excellent source of pectin and certain essential oils. The juice is advised to patients. Subtropical and tropical climate are required for growth of *santra*. The trees grow luxuriously in 1.5 m deep well-drained soils free from excess salts and having adequate content of organic matter. The important varieties are Nagpur santra (Maharashtra), Khansi mandarin (Assam), Coorg mandarin (Karnataka), Kinnow (Punjab), Emperor, Hill orange, Mudkhed seedless, Honey (for kitchen gardening). *Santra*

are commercially propagated by shield or 'T' budding on rootstocks like jamberi or rangpur lime. Average yield is 80 to 160 fruits/trees.

46. What is the botanical name of *santra*?
 A. *Citrus reticulata* B. *Annona squamosa*
 C. *Cocos nucifera* D. *Vitis vinifera*
47. Which is the family of mandarin orange?
 A. Rhamnaceae B. Myrtaceae
 C. Annonaceae D. Rutaceae
48. Mandarin orange commercially propagated by
 A. Stone grafting B. Air layering
 C. 'T' budding D. Suckers
49. Which of the following is a variety of *santra*?
 A. Muscat B. Gola
 C. Sardar D. Kinnow
50. What is the average yield of Mandarin orange crop?
 A. 80-160 fruits/trees
 B. 40-50 fruits/trees
 C. 200-280 fruits/trees
 D. 300-600 fruits/trees

EXPLANATORY ANSWERS

1. (C): In dry air of the lower atmosphere, Nitrogen (c) makes up about 78%, Oxygen (d) about 21%, Argon (a) roughly 0.93%, and Carbon dioxide (b) about 0.04%. Therefore, the correct descending order based on percentage composition is Nitrogen, Oxygen, Argon, and Carbon dioxide.
2. (A): Humidity is measured using a Hygrometer (III), Wind speed by an Anemometer (I), Light intensity by a Luxmeter (IV), and Evapotranspiration by a Lysimeter (II). This matches correctly with the instruments listed for each parameter.
3. (A): Gregor Mendel, through his experiments on pea plants, first presented clear evidence for particulate inheritance, identifying that traits are passed from parents to offspring in discrete units or genes.
4. (D): Genes are located on chromosomes (a) is correct. Genes move from one linkage group to another (c) is inaccurate in traditional genetics as genes do not typically change linkage groups;

however, translocation can occur during genetic recombination or mutations. Chromosomes with identical arms on which genes are located are known as isochromosomes (d) is correct. The statement that split genes are composed of exons only (b) is incorrect as split genes include both exons and introns.

5. (D): The term heterosis, which refers to the phenomenon where crossbred individuals exhibit superior qualities compared to their parents, was coined by George Harrison Shull in 1914. This term is synonymous with hybrid vigour, which has been extensively observed and utilized in agricultural practices.
6. (C): The correct sequence in plant breeding starts with the creation of variation (b) through methods like hybridization or mutation. This is followed by evaluation of variants (d) to assess their performance under different conditions. Next, selection of superior variants (a) is conducted based on desired traits.

44. C

45. B

46. A

47. D

48. C

49. D

50. A

- Finally, multiplication and distribution (c) of the selected variants is done to reach farmers and markets.
7. (D): Gottlieb Haberlandt is known as the father of tissue culture for his pioneering work in the early 1900s where he conceptualized the idea of growing plant cells in vitro, setting the foundation for modern plant tissue culture techniques.
 8. (A): Proteins are polymers of amino acids linked together by peptide bonds. Each protein is a sequence of amino acids which determines its structure and function in biological processes.
 9. (D): *Anabaena* (b), *Nostoc* (c), and *Oscillatoria* (d) are all examples of Cyanobacteria, a group of photosynthetic bacteria found in a variety of aquatic and terrestrial environments, known for their blue-green colour due to the pigment phycocyanin.
 10. (D): Starch is a polysaccharide consisting of a large number of glucose units joined by glycosidic bonds. It serves as a form of energy storage in plants and is broken down into glucose as needed by the organism.
 11. (B): Poultry eggs contain almost all vitamins except for Vitamin C. Unlike most animals, birds, including poultry, do not synthesize or store significant amounts of Vitamin C, and it is generally absent in eggs.
 12. (C): Tharparkar cattle originate from Sindh (III), Holstein Friesian from Netherland (I), Jersey from United Kingdom (II), and Gir from Kathiawar (IV). This matching reflects the correct geographical origin of each cattle breed.
 13. (A): The process required to make sperm competent for in-vitro fertilization is known as capacitation. This biological process involves the alteration of the sperm's head membrane to allow it to penetrate and fertilize an egg, essential for successful in-vitro fertilization.
 14. (C): The colostrum, which is the first form of milk produced immediately following the delivery of the newborn, should be fed at the rate of 10% of the calf's body weight. This is crucial for providing necessary antibodies and nutrition to the newborn calf, ensuring a strong start to its immune system.
 15. (B): Ranikhet disease, also known as Newcastle disease, is caused by a virus belonging to the *Paramyxoviridae* family, specifically classified as a *Paramyxovirus*. It is a contagious and often severe disease affecting birds with high rates of mortality.
 16. (C): Plymouth Rock is an exotic breed of poultry known for its distinctive appearance and utility in meat and egg production, originally bred in the United States, contrasting with native breeds like Busra, Chittagong, and Kadaknath from other regions.
 17. (A): Basundi, a concentrated milk product (III), involves reducing milk to make it thick and creamy. Paneer is a coagulated milk product (IV) formed by curdling milk with an acid. Dahi is a fermented milk product (II), made by bacterial fermentation of milk. Ghee is a fat-rich milk product (I) derived from butter.
 18. (B): Jute is a widely known fibre crop used for making burlap, hessian, or gunny cloth. Its fibres are sourced from the stems of jute plants and are highly valued for their length, softness, and lustrous finish, commonly used in textiles.
 19. (B): Forage crops are primarily grown to feed animals, not for oil production as in the cases of safflower and sunflower. Berseem (a) and Lucerne (c) are typical forage crops, used commonly as animal fodder due to their high nutritional content.
 20. (C): In terms of soil particle size, coarse sand (d) has the largest diameter, followed by fine sand (c), then silt (b), and clay (a) has the smallest diameter. This order helps in understanding soil texture and its implications on water retention and aeration.
 21. (B): Nitrogen is a crucial component of nucleic acids, contrary to statement (a), making it incorrect. Potassium does play an important role in the activation of enzymes (b), and Sulphur is indeed a part of some amino acids and coenzymes (c), confirming their correctness. Phosphorus deficiency typically results in stunted growth and dark green colouring, not necessarily terminal bud necrosis as stated in (d), making it incorrect.
 22. (B): Among the options given, raw bone-meal typically has the highest percentage of P_2O_5 (phosphorus pentoxide), which is a key nutrient for plant growth. It's particularly valued in organic farming for its slow-release properties of phosphorus.
 23. (A): To apply 5 cm of irrigation over one hectare (10,000 square meters), the volume of water required is calculated as follows: 5 cm = 0.05 meters, and 0.05 meters \times 10,000 square meters = 500 cubic meters.
 24. (D): The National Rainfed Area Authority (NRAA) was established in 2006 to coordinate and manage

the development of rainfed areas in India, aiming to increase agricultural productivity and address water scarcity in non-irrigated regions.

25. **(D):** The Preventive method of weed control includes using weed-free crop seeds (III), Mechanical method involves hand weeding (IV), Cultural method incorporates proper crop rotation (I), and Biological method refers to the use of natural predators or control agents like the Lantana bug to control weeds such as Lantana camara (II). This matching accurately reflects the methods and their appropriate measures of weed control.
26. **(D):** Weeds has no affect on the yield and quality of crops: This statement is incorrect as weeds significantly affect both yield and quality of crops by competing for space, light, nutrients, and sometimes even by secreting harmful substances that inhibit crop growth.
27. **(B):** Stalk borer is not typically a pest of rapeseed-mustard crops. White rust and Alternaria blight are fungal diseases affecting these crops, and aphids are common insect pests, but stalk borers primarily target cereal and maize crops.
28. **(B):** Rapeseed-mustard is not a legume crop. Legume crops, like soybean (C) and groundnut (D), are known for their ability to fix atmospheric nitrogen through symbiotic relationships with bacteria in their root nodules. Berseem (A) is a forage crop but also belongs to the legume family.
29. **(D):** Sugarcane requires relatively wider line to line and plant to plant spacing compared to other listed crops. This is due to its tall, dense growth habit which necessitates more space to maximize exposure to sunlight and to support extensive root systems for water and nutrient uptake.
30. **(A):** This matching is correct as follows:
 - Sugarcane is susceptible to Red rot (I).
 - Cotton is affected by Black arm disease (II).
 - Groundnut suffers from Tikka disease, also known as leaf spot (III).
 - Sorghum can be affected by Grain smut (IV).This correct matching reflects each crop's association with specific diseases.
31. **(B):** Gladiator and Super Star are varieties of roses, known for their distinct characteristics and popularity in horticulture and landscaping due to their aesthetic appeal and variety in colour and form.

32. **(B):** The correct sequence for the preparation of jelly begins with harvesting of firm ripe fruits and washing (*d*), followed by peeling and extraction of pectin which is crucial for jelly's gelatinous consistency (*c*). Next, addition of sugar and the cooking process of the jelly mixture occur (*b*), and finally, judging the end point and cooling the jelly to set properly (*a*).
33. **(A):** The matching of vegetables to their families is correct as follows:
 - Onion belongs to the Liliaceae family (IV).
 - Carrot is a member of the Umbelliferae family, known for its aromatic compounds and roots (III).
 - Potato is classified under the Solanaceae family, which includes other staple crops like tomatoes and eggplants (II).
 - Cauliflower is from the Cruciferae family, which includes many other leafy green vegetables (I).
34. **(C):** Alphonso, Dasher, Ratna, and Amrapali are all popular varieties of mangoes, widely cultivated in India for their unique flavors, textures, and suitability to various climates and soils.
35. **(A):** Brinjal, also known as eggplant, belongs to the Solanaceae family. This family also includes other important agricultural crops such as tomatoes, potatoes, and bell peppers, sharing common characteristics such as the type of flowers and seed structure.
36. **(D):** Rose is commonly propagated commercially by 'T' budding. This method involves inserting a bud from a selected variety into the stock of another plant, typically a rootstock that provides robust roots, thereby combining desirable flower qualities with hardy growth characteristics.
37. **(A):** The physical methods of fruit juice preservation that do not involve chemical additives include refrigeration (*a*) and pasteurization (*d*). Refrigeration slows down microbial growth by lowering the temperature, and pasteurization involves heating the juice to kill pathogens and spoilage organisms, thereby extending its shelf life without changing its chemical composition.
38. **(A):** Rickets is a disease caused by a deficiency of Vitamin D, which is crucial for the absorption of calcium and phosphate in the body. This deficiency leads to softening and weakening of bones in children, often resulting in skeletal deformities.

39. (B): The botanical name of spinach is *Spinacia oleracea*. This name reflects its classification within the plant kingdom and distinguishes it from other vegetables by specifying its unique genus and species.

40. (B): Banana plants are typically propagated through rhizomes and sword suckers. Rhizomes are horizontal underground stems that produce new shoots, and sword suckers are vigorous shoots that grow from these rhizomes.

This method ensures genetic uniformity and quicker establishment compared to seed propagation, which is rarely used for commercial banana production.

41. (B): India is not self-sufficient in oilseeds production and meets approximately 50% of its vegetable oils requirement through imports, as mentioned in the passage.

42. (D): According to the passage, among the edible oilseeds crops listed, sesame has the smallest acreage followed by groundnut, rapeseed-mustard, and soybean, which has the highest acreage.

43. (B): The passage confirms that India grows nine oilseed crops (a), is not self-sufficient in vegetable oilseeds production (c), and ranks fourth in the world in oilseed production (d).

The statement about Gujarat having the highest contribution to total oilseed production is incorrect (b); Madhya Pradesh is noted as the leading state.

44. (C): Among the options listed, castor is specified in the passage as a non-edible oilseed crop grown in India.

45. (B): The passage mentions that oilseeds account for nearly 1.4% of the Gross National Product in India, highlighting their economic contribution relative to other agricultural commodities.

46. (A): The botanical name for santra is *Citrus reticulata*, as detailed in the passage. This specifies its classification within the citrus family and distinguishes it from other fruit crops.

47. (D): Mandarin orange, or santra, belongs to the Rutaceae family. This family is noted for including various citrus fruits, which share similar characteristics and growth requirements.

48. (C): The passage specifies that santra (mandarin orange) is commercially propagated by shield or 'T' budding on rootstocks like jamberi or rangpur lime. This method involves grafting a selected bud onto a rootstock to combine desirable fruit qualities with robust root systems.

49. (D): Among the listed options, Kinnow is mentioned in the passage as an important variety of santra. Kinnow is a high yield mandarin developed to thrive in specific climatic conditions.

50. (A): The passage states that the average yield of mandarin orange trees is between 80 to 160 fruits per tree, reflecting the productivity range typical for these fruit trees under good growing conditions.