2023

BOTANY — HONOURS

Paper : DSE-B-3

(Research Methodology)

Full Marks : 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* questions : 2×5

   (a) Distinguish between field and laboratory research in two points.

   (b) Mention two key areas of plant science research at present times.

   (c) How the numbers and units are written in a research article. Give example. (any two)

   (d) Name two fixatives used in cytological study.

   (e) What is mordanting? Give example.

   (f) What is the molarity of 0.75% Glycine solution?

   (g) Calculate the dry weight of sodium hydroxide needed to prepare 0.2 (N) solution.

   (h) Distinguish between smear and squash technique for chromosome observation.

2. Answer *any two* questions : 5×2

   (a) Justify the use of *Arabidopsis* as model organism in plant research. 5

   (b) Briefly mention the importance of fluorescence and scanning electron microscopy in research methods. 2½+2½

   (c) Draw a layout of a powerpoint presentation of any area of plant science research. 5

3. Answer *any three* questions : 10×3

   (a) Mention the contribution of literature review in laboratory research. What are the techniques of handling micropipettes? Discuss the art of field photography. 3+4+3

   (b) Write briefly about whole mount, peel mount and maceration technique. Mention the safety protocol for handling toxic chemicals in laboratory. Briefly classify stains used in plants microtechnique depending on chemical nature. 3+4+3

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(c) Write short notes on : 2½×4

    (i) Serial dilution technique

    (ii) Empirical research

    (iii) Plagiarism

    (iv) Microtome technique.

(d) Distinguish between research method and research methodology. Name any two leading scientific journals exclusively dedicated to plant science. What is the full form of 'DOI' in a research article? What is 'conflict of interest' and 'impact factor' of a research article?   2+2+2+2+2

(e) Define 'data'. Distinguish between primary and secondary data. Mention types of graphical representation used for qualitative and quantitative data. What is magnification of an image? Explain the application of scale bar.   1+2+4+1+2

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