



BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – B.Sc.(Ag)-Hons-2023

Course Name – System Simulation and Agro-advisory

Course Code - EC-BAG671B(T)

(Semester VI)

Full Marks : 50

Time : 2:0 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 20=20

1. Choose the correct alternative from the following :

- (i) Who first used the term “crop-weather modelling” in 1979?
 - a) R.O. Slatyer
 - b) Wolfgang Baier
 - c) H. Nix
 - d) Jones et al.
- (ii) Which wavelength band is called Photosynthetically Active Radiation (PAR)?
 - a) 0.1–0.3 μm
 - b) 0.4–0.7 μm
 - c) 0.8–1.1 μm
 - d) 1.5–2.5 μm
- (iii) Which of the following is a deterministic crop model?
 - a) WOFOST
 - b) DSSAT-CERES
 - c) Both A & B
 - d) None
- (iv) Choose. Nowcasting” refers to forecasts valid for:
 - a) 3 h – 24 h
 - b) 1 day – 3 days
 - c) 3 days – 10 days
 - d) >10 days
- (v) What is the primary purpose of sensitivity analysis in crop modelling ?
 - a) Calibrate the model
 - b) Validate the model
 - c) Check model response to changes in input factors
 - d) Increase model resolution
- (vi) Which weather element is most crucial for deciding the sowing date of rain-fed crops?
 - a) Wind speed
 - b) Rainfall onset
 - c) Relative humidity
 - d) Cloud cover
- (vii) A district bulletin advises spraying imidacloprid if RH >80 % and temp 25–30 °C. This advisory targets:
 - a) Aphids on vegetables
 - b) Rust in wheat
 - c) Downy mildew in grapes
 - d) Frost injury in potato
- (viii) Choose the correct one. The Threat Score (TS) for rain forecast is calculated as:
 - a) Hits / (Hits + Misses + False alarms)
 - b) Hits / (Hits + Correct negatives)

7. Infer why bright sunshine hours of the 4th fortnight carry the highest positive coefficient in wheat yield regression. (2.5)
8. Evaluate the impact of a 1 °C night temperature rise during kernel filling on wheat quality and market price. (2.5)
9. Review the optimum mean temperature range for wheat grain filling given in the crop-weather calendar and justify why temperatures above 30 °C are discouraged. (2.5)
10. Assume the full form of "SPAC" and list its stated purpose in one sentence from the notes. (2.5)
11. Design a crop-weather calendar layout that can be understood by literate and illiterate farmers alike. (2.5)

OR

Design a feedback loop that allows farmers to correct model predictions in real time. (2.5)

Group-C

(Long Answer Type Questions)

5 x 1=5

12. Evaluate the trade-offs between model complexity and farmer usability in operational agro-advisory systems. (5)

OR

Evaluate the potential of integrating Indigenous Technical Knowledge (ITK) with numerical weather prediction for hyper-local advisories. (5)

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