

**CHRIST**(DEEMED TO BE UNIVERSITY)  
BANGALORE | DELHI NCR | PUNE

## Notice for the PhD Viva Voce Examination

Mr Jojo Paulose, Registration Number: 2290015, PhD Scholar at the Department of Life Sciences, School of Sciences, CHRIST (Deemed to be University) will defend his PhD thesis at the public viva-voce examination on Wednesday, 25 February 2026 at 02.30 pm in Room No. 044, Ground Floor, R&D Block, CHRIST (Deemed to be University), Bengaluru - 560029, Karnataka, India.

- Title of the Thesis** : **Study on the Impact of Heavy Metals on the Biosphere in the Abandoned Gold Mine Region, KGF; Kolar, Karnataka, India.**
- Discipline** : **Zoology**
- External Examiner - I** : **Dr Sharangouda J Patil**  
Associate Professor  
Department of Zoology  
NMKRV College, Jayanagar  
Bengaluru - 560011  
Karnataka
- External Examiner - II** : **Dr S Kishore**  
Professor  
Department of Zoology  
Sri Venkateswara University  
Tirupati – 517502  
Andhra Pradesh
- Supervisor** : **Dr Jobi Xavier**  
Associate Professor  
Department of Life Sciences  
School of Sciences  
CHRIST (Deemed to be University)  
Bengaluru - 560029  
Karnataka

The members of the Research Advisory Committee of the Scholar, the faculty members of the Department and the School, interested experts and research scholars of all the branches of research are cordially invited to attend this open viva-voce examination.

**Registrar (Academics)**

**Place:** Bengaluru  
**Date:** 23 February 2026

## ABSTRACT

Kolar Gold Fields (KGF), also known as the Golden Peninsula, today faces a major ecological challenge as a result of the unplanned closure of the mine in 2001. This study is a comprehensive environmental impact evaluation of the region by integrating abiotic geochemical analysis, plant stress bioassays, mammalian toxicology modeling, and socio-economic surveys. The abiotic analysis reveals a high degree of edaphic variability and acidification, with the Oorgaum area registering a critical pH of 4.10 and sulfur content of 110.95 ppm, thus confirming the presence of Active Acid Mine Drainage (AMD). The groundwater evaluation reveals a severe potability deficit with Lead (Pb) and Cadmium (Cd) concentrations 28.8 and 22.7 times the World Health Organization (WHO) safety limits, respectively. In *Solanum lycopersicum* (Tomato), the stress bioassays reveal a total inhibition of photosynthesis with total chlorophyll content reducing to 0.028 mg/100g of tissue, with a high degree of morphological retardation. The mammalian toxicology modeling of the plant extract reveals a universal splenomegaly with a 10% reduction in body weight of the female Wistar rats. The socio-economic surveys reveal a “Toxic Poverty Cycle” with 40% of the labour force undergoing daily long-distance migration and 62% of the regional population suffering chronic respiratory problems. The household economy reveals a severe allocation of 15% of the regional salary towards the procurement of purified water. The study concludes with the observation that the Kolar Gold Fields serves as an “active pollution source” and thus requires an integrated approach to pollution remediation involving phytotechnology and medical surveillance.

**Keywords:** Kolar Gold Fields, Acid Mine Drainage, Heavy Metal Bioaccumulation, Phytotoxicity, *Solanum lycopersicum*.

### Publications:

1. **Paulose, J., & Xavier, J. (2025).** Liquid gold: Assessing groundwater quality at the historic Kolar gold fields, Karnataka, India. *Journal of Degraded and Mining Lands Management*, 12(2), 7071-7077. DOI: [10.15243/jdmlm.2025.122.7071](https://doi.org/10.15243/jdmlm.2025.122.7071)
2. **Paulose, J., & Xavier, J. (2025).** Unveiling the Soil Contamination Of Kolar Gold Mines: An Environmental Assessment. *International Journal of Environmental Sciences*, 11(11s), 81-94.