**HS302 MidSem Exam**

**IIT Patna: 22/2/2021**

**Total Marks (5\*3)= 15 Duration= 1 Day**

***Submit at*** [***rajendra@iitp.ac.in***](mailto:rajendra@iitp.ac.in) ***(do not cc anyone else) the scanned copy of your answer script with name and roll number on it by 5 PM on 23 February, 2021.***

1. **Derive the ACF at lag 1 for an ARMA process, Yt = a+ b\*Yt-1 + c\* εt-1 + εt , where a, b, c are constant terms.**
2. **Explain the concept of unit root test and stationarity.**
3. **Derive the OLS (ordinary least square) estimator for ‘b’ for a regression model, Y= a+ b\*X +error.**

**Where Y and X are variables.**