

2023  
JHARGRAM RAJ COLLEGE  
CHEMISTRY

TIME: 2 HOUR      M. Sc 3<sup>RD</sup> SEMESTER INTERNAL EXAMINATION  
INORGANIC SPECIAL

F. M: 40

Paper-301

1. (a) What are the conditions to observe NQR signals?
- (b) What is the significance of  $K_{\alpha}$  in the X-ray light source of  $MgK_{\alpha}$  used in XPS?
- (c) How many ESR lines will be obtained for 'N' ( $I=1$ ) in **dp<sup>+</sup>ph** and why?
- (d) How many hyperfine peaks will obtain for anthracene anion and  $\cdot CPh_3$  ?
- (e) Why **O-phen** gives turn-on response for  $Mg^{2+}$  but turn-off response for  $Fe^{2+}$ ?

5x2=10

Paper-302

- 1) Show with an example that Tebbe's reagent mimics the Wittig reagent in organic synthesis.
- 2) Give an example of a complex containing M-C, M=C,  $M\equiv C$  bonds.
- 3) Trans  $[Ir(CO)(PPh_3)_2(X)]$  vaska's complex  $+O_2 \rightarrow [Ir(CO)(PPh_3)(O_2)(X)]$   
In the product for  $X=Cl$  it is Ir(II) while for  $X=I$  it is Ir(III)-Expalin it.
- 4) How can you manufacture isoprene rubber using Ziegler -Natta catalyst?

2+2+4+2=10

Paper-303

- (1) Cytochrome P450 is an oxidative enzyme whereas **Hb** is an oxygen carrier protein although they both contain heme group- Justify.
- (2) How replication process occurs and what are the factors which hamper replication process?
- (3) Write a short note on 'DOSENCO' state.
- (4) What is E-type and P-type delayed fluorescence?
- (5) How nitrate reductase functions in biological system?

5X2=10