QUESTIONNAIRE FOR SHAFTING AND PROPELLER

Q1. List of regulations and standards that would be complied in design, development and operation in marine environment of the system. Indicative list of classification societies & standards are as under :-

S.No	Description	Standard
(a)	Shafting	NES 304, Part 1
(b)	Shafting auxiliaries	NES 304, Part 2
(c)	Propeller	NES 304, Part 3
(d)	Air Borne Noise (ABN) levels	MIL STD 1474D
(e)	Structure Borne Noise(SBN) levels	MIL STD 740-2
(f)	Shock	BR 3021/ IN shock grade A
(g)	Mechanical vibrations	MIL STD 167-1
(h)	Class Rules	LRS rules & regulations for classification of ships
(j)	Valves	NES 360
(k)	Documentation	DME specifications 452
(l)	IETM-4 format	MIL-DTL-87268D MIL-DTL-87269D JSG 0852:2001
(m)	Tally/ diagram plates	NES 723

Q2. What is Propulsion System Integration (PSI) and how will PSI be undertaken?

Q3. How will following aspects of PSI be undertaken/ evaluated :-

(a) Engine-Propeller matching wrt Hull Form, speed, endurance, fuel consumption etc.

(b) Mathematical modeling and simulation

(c) Sound and Vibration Analysis, whirling calculations, torsional vibration analysis.

(d) ABN & SBN

(e) Shock studies

(f) Model testing

(g) Flow calculations

(h) Reliability studies

(j) U/W Acoustic Signature management

Q4. What are the various factors & features to be considered towards design of shaftline, unique to warship applications?

Q5. What is the material of construction for propulsion shafting?

Q6. How is shaft supported on the inboard and outboard ends and what are the factors that need to be considered towards design of shaftline bearings?

Q7. What is the material used for shaftline bearings (inboard and outboard ends)?

Q8. What are the types of vibrations that shaft is subjected to and how are they measured and absorbed?

Q9. How will propulsion system integration be carried out?

Q10. What is shaft alignment and how is it undertaken?

Q11. What are the assumptions made for the purpose of shaftline alignment calculations and how are shaftline alignment values arrived at?

Q12. What are the various factors that need to be considered in arriving at shaft line lengths for easily withdrawal and fitment?

Q13. What are various types of inspections carried out on shafting?

Q14. What are stern seals and what is their purpose?

Q15. How are the purposes of shaft turning, shaft brake and locking devices achieved?

Q16. How is thrust transmitted from propeller to hull and what are the factors to be considered towards design of thrust block bearings?

Q17. How will design of plummer block bearings be carried out?

Q18. How is thrust transmitted to hull measured?

Q19. What are the various tests, inspections and quality checks conducted while designing and manufacturing of shaft, propeller and other associated components?

Q20. What kind of measures will be provided for protecting the shafting and sub-assemblies from marine environment?

Q21. What are the Environmental and Quality Parameters followed?

Q22 What are the various life cycle aspects that will be considered for design, operation and maintenance of the shafting system through its life cycle?