

**VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM  
(Deemed to be University)  
M.SC.(ECHOCARDIOGRAPHY) DEGREE EXAMINATION – August 2019  
First Year**

**PHYSICS OF INSTRUMENTATION RELATED TO  
ECHOCARDIOGRAPHY**

Time: Three hours

Maximum: 100 marks

Answer **ALL** questions

**I. Write an Long essay on :**

**(2 x 20 = 40)**

1. Techniques of Proximal Isovelocity Surface Area (PISA) in assessing severity of Regurgilation
2. Explain views, preparation, indications contra indication and complication in Transesophageal Echocardiography with diagram.

**II. Write short notes on :**

**(10 x 6 = 60)**

3. Fresnel and Fraunhofer's zones
4. Properties of Ultrasound cycle and wavelength
5. Factors influencing artifacts – reverberation
6. Pulse Repetition frequency
7. Explain pulse and continuous wave Doppler
8. Technical limitations of Doppler flow imaging
9. Explain principles of 3 Dimensional Echocardiography
10. Nyquist Limit
11. Billiard Ball Effect
12. Explain Doppler Shift

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