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Question Paper Code:R8766

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

One Credit Course

R21UME866- LIMITS, FITS AND TOLERANCES

Mechanical Engineering

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Apply your knowledge of fits to determine the type of fit for $\text{Ø}40 \text{ H7/f7}$ assembly CO1- U
2. Apply the interference fit concept to select a suitable system for mounting a pulley on a shaft CO1- U
3. Apply the ISO system of fits to interpret 50 H7/g6. CO1- U
4. Apply your knowledge of fits to suggest the class of fit required for transmitting heavy torque without slipping. CO1- U
5. Apply the concept of run-out tolerance to explain its importance in rotating shafts CO1- U
6. Apply the definition of tolerance to calculate the tolerance value for a shaft $\text{Ø}20$ mm with $+0.01 / -0.03$ mm. CO1- U
7. Apply the tolerance principle to calculate maximum and minimum sizes for 60 ± 0.05 mm. CO1- U
8. Apply the concept of form tolerance to explain why flatness is important for machine tool beds. CO1- U
9. Apply your knowledge of positional tolerances to select a tolerance for aligning a hole with a reference axis. CO1- U
10. Apply geometric characteristic symbols to identify the symbol used for controlling concentricity of gears CO1- U

PART – B (2 x 15= 30 Marks)

11. (a) Apply the concept of clearance, interference, and transition fits to explain with examples. Suggest suitable applications for each. CO1- App (15)
- Or
- (b) Apply the concept of selection of fits to explain how the right fit improves assembly performance and manufacturing economy with examples from mechanical systems. CO1- App (15)
12. (a) Apply the method of indicating tolerances on linear and angular dimensions to draw and explain with examples. CO2- App (15)
- Or
- (b) Apply the datum system in GD&T to explain how datum A-B-C controls the position of a hole in a component. CO2- App (15)