

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019

Course Code: AU486

Course Name: Noise, Vibration and Harshness

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks.

Marks

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| 1 | a) With a neat diagram explain natural frequency and resonance. | (3) |
| | b) Write short notes on vibration measuring instruments and NVH analyser. | (4) |
| | c) What are the various vibrating forces in automobiles and transmission path? | (3) |
| 2 | a) With a neat diagram explain the classification of vibrations. | (5) |
| | b) With a neat diagram explain the classification of degree of freedom. | (5) |
| 3 | a) Write a short on the effects of infrasound in humans? | (3) |
| | b) Write a short note on the effects of low frequency noise in humans? | (3) |
| | c) What are the effects of ultrasound on people? How the noise exposures effect the children? | (4) |
| 4 | a) Write a short note on 1) whole body vibration, 2) hand arm vibration. | (4) |
| | b) With a neat diagram explain the working principle of accelerometer. | (6) |

PART B

Answer any three full questions, each carries 10 marks.

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| 5 | a) How the noise characteristic of vehicle is classified? | (3) |
| | b) Mention the various noise control techniques used in industry. | (3) |
| | c) Write a short note on engine overall noise level. | (4) |
| 6 | a) Diagnose the engine noise in vehicle. | (5) |
| | b) How the mechanical noise in vehicle can be assessed? | (5) |
| 7 | a) With an example define tuned vibration absorbers. | (5) |
| | b) With an example define unturned viscous damper. | (5) |
| 8 | a) Explain the term engine isolation and write down benefits of engine isolation. | (5) |
| | b) With a neat diagram explain crank shaft damping process | (5) |

PART C

Answer any four full questions, each carries 10 marks.

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| 9 | a) With an example explain noise dose level and noise criteria. | (6) |
| | b) Write a short note on noise legislation or regulation. | (4) |

- 10 a) Define frequency and explain the frequency analysis of sound waves. (4)
- b) Define the terms 1) fundamental frequency 2) 2nd harmonic 3) 3rd harmonic 4) composite waves. (3)
- c) Define the terms partial tracking analysis and chord sequence analysis. (3)
- 11 a) Explain predictive analysis of noise control. (3)
- b) Write a short note on effect of noise in palliative treatment. (2)
- c) Define the general sources of noise control in automotive. (5)
- 12 Write a short note on velocity sensors and capacitive sensors. (10)
- 13 With neat diagram explain 1) shear mode accelerometer, 2) flexural mode accelerometer 3) compression mode accelerometer. (10)
- 14 a) How the sound power level and emission sound pressure level are described. (7)
- b) Write a short note on sound intensity measurement. (3)
