****

**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_\_

**End Semester Examination – Nov/Dec - 2016**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **11PH202** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **ENGINEERING PHYSICS** | **Max. marks :** | **100** |

|  |  |  |
| --- | --- | --- |
| **Q. No.** | **Questions** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | |
| 1. | A particular car can go from rest to 90 km/h in 10s. What is its acceleration? | (1) |
| 2. | We know that the Earth pulls on the Moon. Does it follow that the Moon also pulls on the Earth? | (1) |
| 3. | The motion of a pendulum of a wall clock and a girl swinging on a swing are to and fro motion about a fixed point and periodic. These motions are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | (1) |
| 4. | How many times in one vibration, kinetic energy and potential energy become maximum? | (1) |
| 5. | Is superposition principle applicable to electromagnetic waves? | (1) |
| 6. | When a stone is thrown on the surface of water, waves travel out. From where does the energy come? | (1) |
| 7. | Rate of conduction of heat is given by \_\_\_\_\_\_\_\_\_\_\_. | (1) |
| 8. | Which mode of transfer of heat is quickest? | (1) |
| 9. | Field lines start on positive charges and end on negative charges. True or false? | (1) |
| 10. | The electric field is \_\_\_\_\_ at the midpoint of two equally charged particles. | (1) |

|  |  |  |
| --- | --- | --- |
| **PART B(5 X 3= 15 MARKS)** | | |
| 11. | Briefly discuss the three types of inertia. | (3) |
| 12. | A body is executing simple harmonic motion of amplitude 1 m. Its velocity, while passing through the mean position is 10 m/s. Find its frequency | (3) |
| 13. | Explain transverse and longitudinal mode of vibration. | (3) |
| 14. | Define the terms “reversible” and “irreversible” process in thermodynamics. | (3) |
| 15. | Discuss any one application of Gauss’s law. | (3) |

|  |  |  |  |
| --- | --- | --- | --- |
| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. | a. | State and Explain the Newton’s three laws of motion with diagrams. | 12 |
| b. | A 40 kg shell is flying at a speed of 72 km/hr. It explodes into two pieces, one piece of mass 15 kg stops. Calculate the velocity of the other piece. | 3 |
| (OR) | | | |
| 17. |  | Explain the different types of forces with examples. | 15 |
| 18. | a. | Explain (i) undamped and damped oscillations and (ii) free, forced and resonant oscillations with illustrations. | 12 |
| b. | A body of mass 12 kg is suspended by a coil spring of natural length 50 cm and force constant 2.0 x 103 N/m. What is the stretched length of the spring? If the body is pulled down further stretching the spring to a length of 5.9 cm and then reteared, what is the frequency of oscillation of the suspended mass? (Neglect the mass of the spring) | 3 |
| (OR) | | | |
| 19. |  | Write notes on the following:  a. Damped harmonic motion.  b. Forced oscillations  c. Resonance. | 15 |
| 20. | a. | Give an account of the superposition of waves. | 8 |
| b. | Discuss the interference of waves. | 7 |
| (OR) | | | |
| 21. |  | Give an account of the constructive and destructive interference of waves. Deduce an expression for wave speed on a stretched string. | 15 |
| 22. |  | State and explain first law of thermodynamics. Use this law to obtain relation between two principal specific heats of a gas. | 15 |
| (OR) | | | |
| 23. | a. | Explain the terms heat capacity and specific heat capacity. Derive the expressions for work associated with volume change. | 10 |
| b. | A given mass of a gas at -73°C, exerts a pressure of 50 cm of mercury. What pressure will it exert at 27°C if the volume remains constant? | 5 |
| 24. | a. | Derive the electric potential at a point due to a point charge. | 12 |
| b. | Find the potential at the centre of a1.0 m square having charges q, -2q, 3q and 2q at its corners (q= 1.0 x 10-8C) | 3 |
| (OR) | | | |
| 25. |  | Discuss the Millikan’s oil drop experiment to find the electronic charge of an electron. | 15 |

ALL THE BEST