



ALLAMA IQBAL OPEN UNIVERSITY
Semester Terminal Exam Autumn 2020

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| Program /level: | B.Ed | Maximum Marks | 100 |
| Title /Course Code | Physics-I (6441) | Pass marks | 50 |

Instructions for Exams:

1. Attempt All Questions.
2. Write answers in your own words and avoid copying from an internet source or any book.
3. Be precise, avoid unnecessary details, answer to each question must be between 600-800 words.
4. Students are advised to upload their answer sheets/solutions on LMS portal as soon as they complete their answers and not to wait for 8:30 PM.
5. Submissions after due date & time will not be entertained. Attach undertaking with each course code which were allowed to attempt in Urdu.
6. If plagiarism found, Student may be declared fail.

| Q. No. | Questions | Marks |
|--------|---|----------|
| Q.No.1 | a) What are curvilinear co-ordinate systems? Discuss this system in cylindrical and polar coordinate system. b) Write geometrical interpretation of curl of vector field. Express this in spherical polar and cylindrical coordinates. c) What is Galilean transformation? Drag force can have complicated speed dependence. Explain this concept with examples. | 10+13+10 |
| Q.No.2 | a) How can we say that vector force is negative of the gradient of potential energy? b) Find center of mass of right circular cone of height h and density ρ . c) A 10 kg mass travelling 3m/s meets and collide elastically with a 4 kg mass travelling 6m/s in the opposite direction. Find the final velocities of both objects. | 13+10+10 |
| Q.No.3 | a) Find moment of inertia of solid sphere about its central axis. b) A circular ring of mass m and radius r lies on a smooth horizontal surface. An insect of mass m sits on it and crawls round the ring with a uniform speed v relative to the ring. Derive an expression for the angular velocity of the ring. c) Kepler's third law says that a^3/P^2 is the same for all objects orbiting the sun. Vesta is a minor planet that takes 3.63 years to orbit the sun. Calculate the average sun-vesta distance. | 12+12+10 |