مقدمه

این نمونه سوالات میتواند هم جهت اشنایی داوطلب مورد استفاده قرار گیرد و هم به عنوان آزمون تعیین سطح و یا سوالات شبیه سازی (برای تمرین بیشتر)

در صفحه اخر پاسخ کلیدی آورده شده است. لذا بهتر است داوطلب ابتدا سوالات را حل کند و سپس به کمک پاسخ کلیدی، سطح خود را سنجش کند.

این سوالات بسیار مشابه با آزمون فیزیک TIL-I (Engineering) طراحی شده است.(آزمون ورودی رشته های مهندسی دانشگاه پلی تکنیک تورین)

طراح این سوالات اقای دکتر عماد میرابی است.

چنانچه ایراد و اشکالی در پاسخها میبینید، میتوانید از طریق راههای تماس آموزشگاه با ما مکاتبه کنید.

به جهت آمادگی داوطلبان، دوره آموزشی افلاین فیزیک TIL آماده شده است که برای تهیه انها میتوانید از لینک زیر اقدام کنید.

https://mirabiedu.com/product-category/entrance-exams/til

1. Two wires made of copper have the same length but different cross-section areas of A1, A2. What is the relation between the resistances R_1 , R_2 of the two wires if $A_1 = \frac{1}{4}A_2$

   A) $R_1 = 4R_2$

   B) $R_1 = R_2$

   C) $R_1 = \frac{1}{4}R_2$

   D) $R_1 = 2R_2$

   E) $R_1 = \frac{1}{2}R_2$

2. A heavy box of mass m is at height h above the ground in Mirabi institute. We want to bring it to the ground floor. There are two possibility. One way is to use an inclined plane and 2nd way is to lower it vertically using a pulley. Which of the following choices is correct about work of gravitational work(W_{mg})?

   A) W_{mg} is the same in the two cases.

   B) W_{mg} is greater when we use pulley because force and displacement are in the same direction.

   C) W_{mg} is greater when we use inclined plane because the path is longer.

   D) We cannot compare the two cases because we have no information about friction.

   E) We cannot compare the two cases because we have no information about the angle, the inclined plane makes with horizon.

3. A projectile is fired so that it has an angle of 60° with horizon. If V_x , V_y are the components of the velocity vector at the moment the projectile thrown, which of the following statements are correct?

   A) $V_x = V_y$

   B) $V_x = \sqrt{3}\, V_y$

   C) $V_y = \sqrt{3}\, V_x$

   D) $V_x = \sqrt{2}\, V_y$

   E) $V_y = \sqrt{2}\, V_x$

4. Two capacitors $C_1 = 4\ \mu F$, $C_2 = 2\ \mu F$ are connected in series. If q_1, q_2 are the charges on the plates of the two capacitors, which of the following relations is correct?

A) $q_1 = 2\ q_2$

B) $q_2 = 2\ q_1$

C) $q_1 = q_2$

D) $q_1 = 4\ q_2$

E) $q_2 = 4\ q_1$

5. Which of the following statements is false, about thermodynamics of ideal gases:

A) In isothermal expansion of ideal gas P , V are inversely proportional.

B) In adiabatic expansion of ideal gas, internal energy decreases.

C) In ideal gases internal energy is a function of temperature only.

D) In adiabatic compression of ideal gases, work and internal energy change are the same.

E) In isobaric expansion of ideal gases, volume and temperature are inversely proportional.

6. Which choice is incorrect about volt?

A) $volt = ohm \times ampere$

B) $volt = \frac{coulomb}{Farad}$

C) $volt = \frac{joule}{coulomb}$

D) $volt = \frac{coulomb}{second}$

E) $volt = ohm \times \frac{coulomb}{second}$

7. Can the temperature of a system remain constant, even if the system is heated?

A) Yes, if the system is at absolute zero.

B) Yes, if the system undergoes a phase change.

C) Yes, if the system has a latent heat equal to zero.

D) Yes, if the system has a specific heat equal to zero.

E) No, it is not possible.

8. If we throw a ball vertically upward, between the time ball is thrown until it reaches back to the initial point:

A) There is a time interval in which average speed is zero.

B) There is a moment in which acceleration is zero.

C) There is a moment in which velocity is zero.

D) There is a time interval in which average acceleration is zero.

E) There is a time interval in which distance is zero.

9. in uniform circular motion

A) Acceleration is zero

B) Acceleration is proportional to speed at every moment

C) Acceleration is radial in a direction toward out of the center as the word “centrifugal” suggest.

D) You can find a time interval in which average velocity is zero.

E) We have both radial and tangential acceleration.

10. An ideal fluid is in stationary motion inside a duct which has a cross-section S for a certain length, and then narrows so that its cross-section is halved. What happens when the fluid passes from the wide to the narrow part of the duct?

A) The speed remains unchanged

B) The speed is halved

C) The flow-rate is halved

D) The flow-rate is doubled

E) The speed is doubled

Answer key:

1. A	6. D
2. A	7. B
3. C	8. C
4. C	9. D
5. E	10. E