E-JUST's Sample Entrance Exam

Faculty of Engineering

Subject: Physics

Time: 1 hour

Student Name:.....

Application ID No:.....

Undergraduate Entrance Examination Instructions

1. Examinees will be provided with question booklet and answer sheet.
2. Questions are on both the front and back of the page.
3. Question booklet contains scratch papers for use in solving exams.
4. Answer ALL questions to the best of your abilities. Be sure to write legibly and choose your answers clearly using HB or B pencil, not pen.
5. Question booklet will be collected back.

Choose the right answer:

1. The force exerted by an ideal spring is a conservative force, and the vertical forces do no work, so the total mechanical energy of the system is_____.
   (A) conserved
   (B) infinity "∞"
   (C) zero
   (D) none of the above

2. Laser beam with initial diameter 3 mm and intensity (I). At a distance of 13 m from the source, its intensity and diameter will _____.
   (A) increase
   (B) decrease
   (C) overlap
   (D) all of the above

3. The energy of a photon is _____.
   (A) constant
   (B) dependent on its mass
   (C) dependent on its wavelength
   (D) none of the above

4. In order to reduce current in an electric circuit, a resistor R should be connected in the circuit. In this case R will be _____.
   (A) >0
   (B) <0
   (C) =0
   (D) none of the above

5. Interaction between the constituents of atom follows significantly, _____.
   (A) general gravitational law and Coulomb's law
   (B) Coulomb's law but not the general gravitational law
   (C) general gravitational law but not Coulomb's law
   (D) none of the above

6. When the north-pole end of a bar magnet is held near to a positively charged piece of plastic. The plastic will be _____.
   (A) attracted to the magnet
   (B) repelled away from the magnet
   (C) rotate around the magnet

(D) none of the above

7. The average value of an alternating current (AC) which passes through a wire connected to a power supply of 220 V is _____.
   (A) 220 A
   (B) infinity
   (C) zero
   (D) none of the above

8. The electric force acting on a neutron in magnetic field, moving perpendicular to the magnetic field direction, is _____.
   (A) in the same direction of the magnetic field
   (B) in the opposite direction of the magnetic field
   (C) zero
   (D) none of the above

9. Since radiation is an electromagnetic wave, then according to classical physics, it was expected that the radiation intensity increases when its frequency_____.
   (A) decreases
   (B) increases
   (C) becomes zero
   (D) none of the above

10. The logic gates are usually applied in ____.
   (A) Analog electronic circuits.
   (B) Digital electronic circuits
   (C) Capacitors
   (D) none of the above

11. When two or more waves overlap in the same region of space, the resulting effects are called _____.
   (A) interference
   (B) adhesion
   (C) specific heat
   (D) oscillation

12. Electrons have _____.
   (A) Waves only
   (B) Waves and mass
   (C) Mass only
   (D) All of the above

13. If the base current of transistor npn is zero, while the current amplification coefficient is 0.97, then the collector current becomes_____.
   (A) infinity
   (B) zero
   (C) 97
   (D) none of the above

14. For the same net force, the ratio of the masses of two bodies is the inverse of the ratio of their _____.
   (A) volumes
   (B) velocities
   (C) accelerations
   (D) none of the above

15. npn transistor can be used as an amplifier of: _____.
   (A) charge
   (B) capacitance
   (C) current
   (D) none of the above

16. In "Compton" effect, when a photon of Gamma ray coincides with a moving electron, then the wavelength of the dispersed photon _____.
   (A) increases
   (B) decreases
   (C) does not change
   (D) none of the above

17. Among the following waves, the shortest wavelength are _____.
(A) Radio waves
(B) X-ray waves
(C) Ultraviolet waves
(D) Light waves with blue colour

18. The electron microscope relies on utilization of _____.
(A) Accelerated photon waves
(B) Accelerated electron waves
(C) Accelerated nucleus waves
(D) non of the above

19. A magnet with single pole exists and should produce strong alternative magnetic field. _____.
(A) Yes
(B) No
(C) May be
(D) none of the above

20. Mutual induction is an electromagnetic effect which occurs between two coils_____
(A) close to each others
(B) far from each others
(C) connected directly to each others
(D) none of the above

Good Luck