الجامعة المصرية اليابانية للعلوم والتكنولوجيا
E-JUST
Egypt - Japan University of Science and Technology
エジプト日本科学技術大学

جامعة مصرية بحثية حكومية
ذات شراكة يابانية وطبيعة خاصة

E-JUST Entrance Exam model

Faculty of Engineering, Computer Science and Information Technology,

(Art & Design) (sustainability Architecture)

Subject: Physics

Time: 20 minutes

Marks: 20 Marks

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 correct answer for the following questions: (1 Mark for each question)

1. **The density of an object increases with increasing volume**

A) False B) True

C) None

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2. **The pressure at 1 m depth under the water surface equals the change in pressure between depths 11 m and 10 m depth of the same water. Ignoring the atmospheric pressure in both cases:**

A) False B) True

C) None

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3. **Atmospheric pressure increases with heights**

A) False B) True

C) None

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4. **Potential Energy of an object moving with a maximum speed on the surface of the Earth**

A) Maximum mass B) Minimum

C) Zero D) None

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5. **Which is a type of heat transferred by convection:**

A) Atmos oscillate around their equilibrium B) A fan forces hot air to flow

C) Heating a rode on a flame D) None

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6. **The X-ray is faster than the radio waves**

A) False B) True

C) None of the above

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7. **Sound waves are faster than radio waves**

A) False B) True

C) None of the above

8. **The frequency of light waves decreases in water than in air**

A) False B) True

C) None of the above

9. **A convex lens of radius of curvature 4 m focuses the rays of infinite object at:**

A) 8 m B) 4 m

c) 2 m D) 1 m

10. **The red visible light moves faster than blue visible light wavelength**

A) False B) True

C) None

11. **A quantity of charges 10 coulomb moves through a wire in 1 second. Then the current produced equals:**

A) 1/10 A B) 1 A

C) 10 A D) 100 A

Answer: $I = \frac{10}{1} = 10\ A$

12. **A wire carrying current directed to the left, the magnetic field produced above the wire is directed to:**

A) Left B) Right

C) Into the paper D) Out of the paper

13. **In case of step-up transformers, the power of the secondary coil is …….the power of the primary coil:**

A) Larger than
B. Equal to
C) Less than
D) Zero

14. **The power of current 10A flowing through a wire of 5Ω equals:**

A) 0.5W
B. 50W
C) 250W
D) 500W

Answer: $P = I^2R = 100 \times 5 = 500W$

15. **In radioactive fission processes, the combined mass of particle products always ……. the mass of the initial radioactive particle:**

A) Less than
B) Equals
C) Larger than

16. **What is the approximate rotational speed of the earth, if the radius of the Earth equals 6371 km, and the time of one complete rotation is 24 hours:**

A) 40 km/s
B) 0.074 km/s
C) 0.46 km/s
D) 13.5 km/s

Answer: $v = \frac{2\pi R}{T} \rightarrow 2\pi \times \frac{6371}{24\times3600} = 0.46\frac{km}{s}$

17. **Two capacitors, 4F and 8F connected in series to 24V battery. Total capacitance equals:**

A. 12F
A) 4F
C. 2.67F
D. 0.37F

Answer: $C_T = \frac{4\times8}{4+8} = 2.67F$

18. **In a parallel circuit:**

A) Current is same in all branches

B) Voltage is same across all branches

C) Resistance increases

D) Current decreases

19. **A wire of 1m length and cross-sectional area 1 cm^2, carrying a current 1A. If the current is doubled, then the resistivity of the wire:**

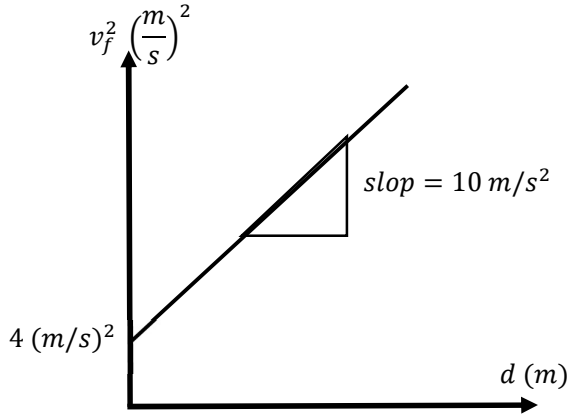
A) Doubled

B) Decrease to half

C) Increases linearly

D) Not change

20. **The schematic diagram illustrates the relationship between the square of the final speed and the distance of an object. If the line interfaces the y axis at 4 (m/s)^2, what is the initial speed of the object:**



A) Zero m/s

B) 4 m/s

C) 2 m/s

D) 0.4 m/s