

Part A: General Engineering

1. The probability of hitting a target from one gun $\frac{9}{10}$, from another gun is $\frac{7}{10}$. If both gun are fired at the same time, the probability of hitting the target is

- (A) $\frac{2}{20}$
- (B) $\frac{63}{100}$
- (C) $\frac{16}{20}$
- (D) $\frac{63}{20}$

2. If the three vectors a , b and c are coplanar , then the missed product $a \times b \cdot c$ is

- (A) Zero
- (B) Non-Zero
- (C) Unity
- (D) Non of these

6. When a body hits an obstacle, the force with which it hits the obstacle depends upon its

- (A) average velocity
- (B) velocity at the instant of collision
- (C) initial velocity
- (D) all of these

7. The wavelength of visible light is of the order of

- (A) $1\mu\text{m}$
- (B) $100\mu\text{m}$
- (C) 1mm
- (D) 1Å

8. Whenever a source of sound moves towards an observer

- (A) the frequency heard by the observer is less than that of the source
- (B) the frequency heard by the observer is greater than that of the source
- (C) the frequency heard by the observer is unchanged
- (D) the wavelength of sound heard is greater than that of the sound emitted

9. Moving electric charges will interact with

- (A) electric field only
- (B) magnetic field only
- (C) both of these
- (D) none of these

10. Gamma radiation is most similar to

- (A) sound waves (B) X-ray
- (C) Alpha particles (D) neutrons

11. The fundamental particle responsible for keeping the nucleus together is

- (A) meson

- (B) anti proton
- (C) positron
- (D) muon

12. Air contains 21% oxygen by volume and the rest nitrogen. If the barometer pressure is 740 mm of Hg the partial pressure of oxygen is close to

- (A) 155 mm of Hg
- (B) 310 mm of Hg
- (C) 465 mm of Hg
- (D) 162 mm of Hg

13. In the electrolytic cell

- (A) electrical energy is converted into chemical energy
- (B) chemical energy is converted into electrical energy
- (C) mechanical energy is converted into potential energy
- (D) potential energy is converted into kinetic energy

14. The force required to maintain a body at constant speed in free space is equal to

- (A) the mass of the body
- (B) zero
- (C) the weight of the body
- (D) the force required to stop it

15. If the length of a spring is halved, the spring constant becomes

- (A) half
- (B) 1/4th
- (C) double
- (D) four times

16. The coefficient of static friction depends on

- (A) the material of the bodies in contact
- (B) the quality of surface finish of the bodies
- (C) the presence of foreign matter between the surface
- (D) all of these

17. The units of angular impulse in SI system are

- (A) Nms
- (B) Ns
- (C) Nm/s
- (D) Ns/m

19. Stainless steel contains iron and

- (A) Chromium and nickel
- (B) Chromium and carbon
- (C) Nickel and carbon
- (D) Chromium and manganese

20. The property of material by which it offers resistance to scratching or indentation is called

- (A) Brittleness
- (B) Hardness
- (C) Toughness
- (D) Resilience

21. The failure of a material due to repeated stressing is known as

- (A) Creep
- (B) Fracture
- (C) Fatigue
- (D) Brittle Fracture

22. The electric device which blocks DC but allows AC is called

- (A) Capacitor
- (B) Inductor
- (C) Amplifier
- (D) Transducer

23. When a charge is moved from one point to another in an electric field, the work done is

- (A) independent of the path
- (B) zero along the direction of the field
- (C) measured in Joules per metre
- (D) measure in Volt per metre

24. A capacitor with lowest leakage is

- (A) Paper
- (B) Ceramic
- (C) Polyester (D) Mica

25. A zener diode operates

- (A) In an extremely high forward bias
- (B) In an extremely low reverse bias
- (C) In an extremely low forward bias
- (D) In a reverse bias higher than laid down voltage

26. The specific gravity of a lead acid cell is often used as a measure of its

- (A) Rate of discharge
- (B) Operating temperature
- (C) State of charge
- (D) Life expectancy

27. An uniformly distributed load is one which

- (A) Acts at a point on a beam
- (B) Spreads uniformly over the whole length of a beam

- (C) Varies uniformly over the whole length of a beam
- (D) loads the beam from one end only

28. A steam engine device which keeps the speed of the engine, all loads, constant is known as

- (A) Flywheel
- (B) Eccentric
- (C) Connecting rod
- (D) Governor

29. The refrigerant having the lowest freezing point is

- (A) Ammonia
- (B) Carbon dioxide
- (C) Freon – 11
- (D) Freon – 22

30. Heat and work are

- (A) Path functions
- (B) Properties of a substance
- (C) Point functions
- (D) Absolute units