

PGT PHYSICS

1. Who launched the 90-day campaign 'Azadi Se Antyodaya Tak'?

- (A) Amit Shah
- (B) Piyush Goyal
- (C) Kiren Rijiju
- (D) Giriraj Singh

Correct Answer: (D)

2. Which country signed agreements on training staff and IT cooperation to deepen railway cooperation In Sep 2022?

- (A) Russia-India
- (B) Ukraine-Turkey
- (C) India-Bangladesh
- (D) America-India

Correct Answer: (C)

3. The “Donbas War” is currently being fought in

- (A) Serbia
- (B) Ukraine
- (C) Syria
- (D) Lebanon

Correct Answer: (B)

4. Pedagogy is the study of

- (A) education
- (B) learning process
- (C) teaching methods
- (D) guiding students

Correct Answer: (C)

5. Dyslexia is associated with

- (A) mental disorder
- (B) mathematical disorder
- (C) reading disorder
- (D) behavioural disorder

Correct Answer: (C)

6. Which government organizations will develop guidelines for the education of gifted children?

- (A) NCERT and NCFCS
- (B) NCERT and NCTE
- (C) NCERT and NTA
- (D) NCERT and SCERT

Correct Answer: (B)

7. The resistance $R = V/I$ where $V = (100 \pm 5)V$ and $I = (10 \pm 0.2)A$. Find the percentage error in R .

- (A) 2%
- (B) 3%
- (C) 5%
- (D) 7%

Correct Answer : (D)

8. Which of following are known as universal gates?

- (A) NAND & NOR
- (B) AND & OR
- (C) XOR & OR
- (D) None of above

Correct Answer : (A)

9. "The rate of change of momentum of a body is directly proportional to the applied force and takes place in the direction in which the force acts" is called

- (A) Newton's third law of motion
- (B) Newton's first law of motion
- (C) Newton's second law of motion
- (D) Universal gravitational law

Correct Answer : (C)

10. What are the dimensions of gravitational potential?

- (A) $M^1L^2T^{-2}$
- (B) $M^0L^2T^{-2}$
- (C) $M^1L^1T^{-2}$
- (D) $M^1L^2T^3$

Correct Answer : (B)

11. Which is the dimensional formula for surface tension?

- (A) $[M^2T^{-2}]$
- (B) $[MT^{-2}]$
- (C) $[ML^{-1}T^{-2}]$
- (D) $[M^2L^{-1}T^{-2}]$

Correct Answer : (B)

12. An electron, an α -particle, and a proton have the same kinetic energy. Which of these particles has the shortest de Broglie wavelength?

- (A) An electron
- (B) An α -particle
- (C) A proton
- (D) all have identical de Broglie wavelength

Correct Answer : (B)

13. Coal consists of carbon and one kilogram of it when burnt releases 3×10^7 J of energy, the reaction is called

- (A) exothermic
- (B) endothermic
- (C) nuclear
- (D) atomic

Correct Answer : (A)

14. The average energy of a neutron produced in fission of ${}_{92}^{235}\text{U}$ is

- (A) 1 MeV
- (B) 2 MeV
- (C) 3 MeV
- (D) 4 MeV

Correct Answer : (B)

15. A 100 turn closely wound circular coil of radius 10 cm carries a current of 3.2 A. What is the field at the center of the coil? ($\mu_0 = 4\pi \times 10^{-7}$)

- (A) 0.002 T
- (B) 0.001 T
- (C) 0.2 T
- (D) 0.1 T

Correct Answer : (A)

16. Assume that light of wavelength 6000\AA is coming from a star. What is the limit of resolution of a telescope whose objective has a diameter of 100 inch?

- (A) 29×10^{-7} radians
- (B) 1.45×10^{-7} radians
- (C) 2.9×10^{-7} radians
- (D) 5.8×10^{-7} radians

Correct Answer : (C)

17. Sunlight enters the top of the earth's atmosphere with an electric field whose rms value is $E_{rms} = 720$ N/C. Find the average total energy density of this electromagnetic wave.

- (A) $2.3 \times 10^{-6} \text{ J/m}^3$
- (B) $2.3 \times 10^6 \text{ J/m}^3$
- (C) $4.6 \times 10^6 \text{ J/m}^3$
- (D) $4.6 \times 10^{-6} \text{ J/m}^3$

Correct Answer : (D)

18. Red light of $\lambda=664$ nm is used in young's experiment with the slits separated by a distance $d=0.12$ mm. The screen is located at a distance $L=2.75$ m from the slits. Find the distance y on the screen between the central bright fringe and the third order bright fringe.

- (A) 4.56 cm
- (B) 1.23 cm
- (C) 6.64 cm
- (D) 6.80 cm

Correct Answer : (A)

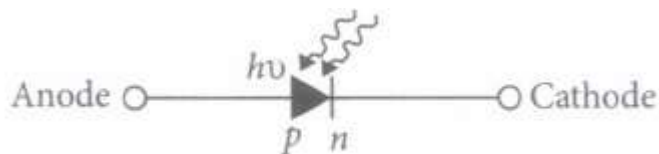
19. What is the theoretical minimum angular separation of two stars that can just be resolved by the 200 inch telescope which is operated at visible light of 550 nm?

- (A) 0.11×10^{-7} radians
- (B) 0.75×10^{-7} radians
- (C) 1.70×10^{-7} radians
- (D) 1.90×10^{-7} radians

Correct Answer : (C)

CASE STUDY BASED QUESTIONS:

A photodiode is an optoelectronic device in which current carriers are generated by photons through photoexcitation i.e., photo conduction by light. It is a p-n junction fabricated from a photosensitive semiconductor and provided with a transparent window so as allow light to fall on its function. A photodiode can turn its current ON and OFF in nanoseconds. So, it can be used as a fastest photo-detector.



20. A p-n photo diode is fabricated from a semiconductor with a band gap of 2.5 eV' It can detect a signal of wavelength

- (a) 4000 nm
- (b) 6000 nm
- (c) 4000 Å
- (d) 6000 Å

Correct Answer: C (4000 Å)