Physics Grade 12 — Chapter 9

Cosmology

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Independent practice MCQs from the supplied Class 12 Physics DeepSeek notes PDF. Total: 40 questions.

A. Important / Main Topics

1. A black body is an object that:

(A) Absorbs all radiation that falls on it
(B) Reflects all radiation
(C) Emits no radiation
(D) Is always black

Correct Answer: A

Explanation: A black body absorbs all radiation that falls on it.

2. A black body is also a good:

(A) Reflector
(B) Emitter
(C) Absorber of only visible light
(D) Insulator

Correct Answer: B

Explanation: A black body is also a good emitter.

3. The best examples of black bodies are:

(A) Planets
(B) Moons
(C) Stars
(D) Comets

Correct Answer: C

Explanation: Stars are the best examples of black bodies.

4. Luminosity is the total amount of electromagnetic energy emitted per unit time by a star. Its SI unit is:

(A) Joule
(B) Newton
(C) Coulomb
(D) Watt

Correct Answer: D

Explanation: Luminosity is measured in watts (W).

5. Radiant flux intensity is defined as: 5.67×10 W m K−8 −2 −4 6.63×10 J s−34 3×10 m s8 −1 9.1×10 kg−31 5.67×10 W m K−8 −2 −4 σ=5.67×10 W m K−8 −2 −4 L=4πrσT4 L=4πrσT2 4 L=πrσT2 4 L=σT4 L=4πrσT2 4 L=4πrσT2 4 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1450/1830

(A) The luminosity per unit area measured on Earth
(B) The total power output of a star
(C) The distance to a star
(D) The temperature of a star

Correct Answer: A

Explanation: Radiant flux intensity is the luminosity per unit area.

6. The radiant flux intensity follows:

(A) A direct square law
(B) An inverse square law

(C) A linear law
(D) An exponential law

Correct Answer: B

Explanation: The radiant flux intensity follows An inverse square law.

7. A standard candle is an object with a known:

(A) Distance
(B) Mass
(C) Luminosity
(D) Temperature F=L×4πd2 F=L/(4πd)2 F=4πd/L2 F=L/(2πd)2 F=L/(4πd)2 F=L/(4πd)2 F□1/d2 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1451/1830

Correct Answer: C

Explanation: A standard candle is an object with a known Luminosity.

8. Which of the following is an example of a standard candle?

(A) The Sun
(B) The Moon
(C) Planets
(D) Cepheid variable stars

Correct Answer: D

Explanation: Cepheid variable stars are standard candles.

9. The cosmic distance ladder is:

(A) A succession of methods for measuring distances
(B) A physical ladder in space
(C) A type of telescope
(D) A constellation

Correct Answer: A

Explanation: The cosmic distance ladder is a succession of distance measurement methods.

10. Redshift occurs when the source of light is:

(A) Moving toward the observer
(B) Moving away from the observer
(C) Stationary
(D) Rotating

Correct Answer: B

Explanation: Redshift occurs when the source is receding. 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1452/1830.

11. As the temperature of a black body increases, the intensity of radiation at each wavelength:

(A) Decreases
(B) Remains the same
(C) Increases
(D) Becomes zero

Correct Answer: C

Explanation: As the temperature of a black body increases, the intensity of radiation at each wavelength Increases.

12. As the temperature of a black body increases, the wavelength of peak intensity:

(A) Increases
(B) Remains the same
(C) Becomes infinite
(D) Decreases

Correct Answer: D

Explanation: As the temperature of a black body increases, the wavelength of peak intensity Decreases.

13. If the temperature of a black body is doubled, the peak wavelength:

(A) Halves
(B) Doubles
(C) Quadruples
(D) Remains the same

Correct Answer: A

Explanation: , so doubling halves .λ □max 1/T T λ max 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1453/1830.

14. If the temperature of a black body is doubled, the total energy emitted per unit area per unit time:

(A) Doubles
(B) Increases by a factor of 16
(C) Halves
(D) Remains the same

Correct Answer: B

Explanation: If the temperature of a black body is doubled, the total energy emitted per unit area per unit time Increases by a factor of 16.

15. If the temperature of a star is doubled, its luminosity increases by a factor of:

(A) 2
(B) 4
(C) 16
(D) 8

Correct Answer: C

Explanation: If the temperature of a star is doubled, its luminosity increases by a factor of 16.

16. If the radius of a star is doubled (at constant temperature), its luminosity increases by a factor of:

(A) 2
(B) 8
(C) 16
(D) 4

Correct Answer: D

Explanation: If the radius of a star is doubled (at constant temperature), its luminosity increases by a factor of 4.

17. E□T4 T E 2 =4 16 L□T4 2 =4 16 L□r2 2 =2 4 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1454/1830 If the distance to a star is doubled, the radiant flux intensity becomes:

(A) One-quarter
(B) Twice
(C) Half
(D) Four times

Correct Answer: A

Explanation: E□T4 T E 2 =4 16 L□T4 2 =4 16 L□r2 2 =2 4 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1454/1830 If the distance to a star is doubled, the radiant flux intensity becomes One-quarter.

18. If the distance to a star is tripled, the radiant flux intensity becomes:

(A) One-third
(B) One-ninth
(C) Three times
(D) Nine times

Correct Answer: B

Explanation: If the distance to a star is tripled, the radiant flux intensity becomes One-ninth.

19. A greater radiant flux intensity indicates that the star is:

(A) Farther away
(B) Hotter
(C) Closer to Earth
(D) Larger

Correct Answer: C

Explanation: Greater intensity → closer star (for a given luminosity).

20. Cepheid variable stars have a relationship between their:

(A) Mass and radius
(B) Temperature and colour
(C) Distance and brightness
(D) Period and luminosity F□1/d2 d 1/4 F□1/d2 d 1/9 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1455/1830

Correct Answer: D

Explanation: Cepheid variable stars have a relationship between their Period and luminosity F□1/d2 d 1/4 F□1/d2 d 1/9 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1455/1830.

B. Less Important / Secondary Topics

21. Type 1A supernovae have:

(A) Consistent peak luminosity
(B) Variable peak luminosity
(C) No luminosity
(D) Very low luminosity

Correct Answer: A

Explanation: Type 1A supernovae have Consistent peak luminosity.

22. Edwin Hubble used Cepheid variables to determine:

(A) The mass of the Sun
(B) The distances to nebulae
(C) The temperature of stars
(D) The age of the Earth

Correct Answer: B

Explanation: Edwin Hubble used Cepheid variables to determine The distances to nebulae.

23. The radius of a star can be estimated by combining:

(A) Newton's law and Coulomb's law
(B) Ohm's law and Faraday's law
(C) Wien's displacement law and the Stefan-Boltzmann law
(D) The photoelectric effect and the Compton effect 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1456/1830

Correct Answer: C

Explanation: Wien's law and the Stefan-Boltzmann law are combined.

24. Wien's displacement law is used to find the star's:

(A) Radius
(B) Luminosity
(C) Mass
(D) Surface temperature

Correct Answer: D

Explanation: Wien's displacement law is used to find the star's Surface temperature.

25. An absorption spectrum consists of:

(A) Dark lines on a continuous (rainbow) background
(B) Bright lines on a dark background

(C) No lines
(D) Only bright lines

Correct Answer: A

Explanation: An absorption spectrum consists of Dark lines on a continuous (rainbow) background.

26. An emission spectrum consists of:

(A) Dark lines on a continuous background
(B) Bright lines on a dark background
(C) No lines
(D) Only dark lines

Correct Answer: B

Explanation: An emission spectrum consists of Bright lines on a dark background.

27. Each element has a unique:

(A) Colour
(B) Mass
(C) Spectral signature
(D) Charge

Correct Answer: C

Explanation: Each element has a unique Spectral signature.

28. The absorption and emission spectra of an element are:

(A) Identical
(B) Unrelated
(C) Always continuous
(D) Inverses of each other

Correct Answer: D

Explanation: The absorption and emission spectra of an element are Inverses of each other.

29. The redshift of light from a galaxy indicates that the galaxy is:

(A) Moving away from us
(B) Moving toward us
(C) Stationary
(D) Rotating

Correct Answer: A

Explanation: Redshift indicates motion away from us.

30. Almost all galaxies show:

(A) Blueshift
(B) Redshift
(C) No shift
(D) Only absorption lines

Correct Answer: B

Explanation: Almost all galaxies show Redshift.

31. The redshift of galaxies is due to: Δλ/λ=v/c Δλ/λ=c/v Δλ/λ=v×c Δλ/λ=λ/v Δλ/λ=v/c Δλ/λ=v/c 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1459/1830

(A) The motion of the Earth through space
(B) The rotation of the galaxies
(C) The expansion of space between the galaxies
(D) The gravitational pull of the galaxies

Correct Answer: C

Explanation: "The expansion of space between the galaxies" is correct: it matches the idea asked in the question ("The redshift of galaxies is due to: Δλ/λ=v/c Δλ/λ=c/v Δλ/λ=v×c Δλ/λ=λ/v Δλ/λ=v/c Δλ/λ=v/c 10/21/26, 10:18 PM

notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1459/1830"), while the other choices do not.

32. The greater the redshift of a galaxy, the:

(A) Closer it is to us
(B) Slower it is moving
(C) Larger it is
(D) Faster it is moving away from us

Correct Answer: D

Explanation: The greater the redshift of a galaxy, the Faster it is moving away from us.

33. The inflating balloon analogy is used to explain:

(A) The expansion of the universe
(B) The formation of stars
(C) The rotation of galaxies
(D) The colour of stars

Correct Answer: A

Explanation: The inflating balloon analogy is used to explain The expansion of the universe.

34. Hubble's Law states that:

(A) The recession speed of a galaxy is inversely proportional to its distance from Earth
(B) The recession speed of a galaxy is directly proportional to its distance from Earth
(C) The distance of a galaxy is directly proportional to its mass
(D) The recession speed is constant for all galaxies 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1460/1830

Correct Answer: B

Explanation: Hubble's Law states that The recession speed of a galaxy is directly proportional to its distance from Earth.

35. Hubble's constant represents:

(A) The speed of light
(B) The age of the universe
(C) The rate of expansion of the universe
(D) The mass of the universe

Correct Answer: C

Explanation: Hubble's constant represents The rate of expansion of the universe.

36. The graph of recession velocity against distance is:

(A) A parabola
(B) A hyperbola
(C) A horizontal line
(D) A straight line through the origin

Correct Answer: D

Explanation: The graph is a straight line through the origin. v=H d0 v=H /d0 v=H d0 v=d/H 0 v=H d0 2 v=H d0 v=H d0 H 0 H 0 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1461/1830.

37. The further away a galaxy is, the:

(A) Faster it recedes
(B) Slower it recedes
(C) Closer it is to us
(D) Smaller it is

Correct Answer: A

Explanation: The further away a galaxy is, the Faster it recedes.

38. Hubble's Law provides evidence for:

(A) The static universe
(B) The expanding universe
(C) The contracting universe
(D) The rotation of the universe

Correct Answer: B

Explanation: It provides evidence for the expanding universe.

39. The Big Bang theory states that the universe began:

(A) About 4.6 billion years ago
(B) About 100 billion years ago
(C) About 13.8 billion years ago
(D) About 1 million years ago

Correct Answer: C

Explanation: The Big Bang theory states that the universe began About 13.8 billion years ago.

40. The Big Bang theory is supported by:

(A) The blueshift of galaxies
(B) The static universe model
(C) The geocentric model
(D) The redshift of galaxies

Correct Answer: D

Explanation: The redshift of galaxies is key evidence. Answer Summary 1. B 2. B 3. B 4. A H 0 1/H 0 H 02 1/H 02 1/H 0 T =0 1/H 0 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1463/1830 5. B 6. A 7. B 8. B 9. B 10. B 11. A 12. B 13. B 14. B 15. B 16. B 17. B 18. B 19. C 20. D 21. B 22. C 23. B 24. B 25. B 26. B 27. B 28. B 29. C 30. A 31. B 32. B 33. B 34. B 35. A 36. B 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1464/1830 37. B 38. A 39. B 40. A 41. A 42. B 43. B 44. B 45. A 46. B 47. A 48. B 49. B 50. A Correct Option Distribution A: 12 / 50 B: 33 / 50 C: 3 / 50 D: 2 / 50 Total: 50 Note: The distribution is heavily skewed toward B. Before final classroom use, options should be reordered to achieve a balanced distribution (A ≈ 12–13, B ≈ 12–13, C ≈ 12–13, D ≈ 12–13) while preserving correct answers. This is flagged as a REVIEW REQUIRED item. MCQ Pack Validation Chapter: Cosmology (Unit 23) Total MCQs: 50 10/21/26, 10:18 PM notes class 12 physics - DeepSeek https://chat.deepseek.com/a/chat/s/be615b48-b2a6-4823-9589-b75a972ffaa1 1465/1830 Easy: 15 Medium: 20 Hard: 15 Complete chapter Notes reviewed: PASS Main topics covered: PASS Subtopics covered: PASS All questions supported by Notes: PASS Four options per MCQ: PASS Exactly one best answer per question: PASS Every correct answer verified: PASS Explanation for every MCQ: PASS Numericals verified: PASS Mathematical formatting: PASS Exact duplicates: 0 Near duplicates: 0 Outside knowledge used: NO Answer summary checked: PASS Correct-option distribution counted: PASS Answer-position bias: REVIEW (heavily skewed toward B) Limitations or unresolved issues: Answer-position distribution is heavily skewed toward option B. The options should be reordered to balance the distribution before final use, without changing the correct answers. STATUS: REVIEW REQUIRED NEXT CHAPTER: Chapter 24 — Earth's Climate Waiting for your permission to continue. next.