

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

Test Booklet No. :

00021

TEST BOOKLET

PHYSICS AND GENERAL STUDIES

Series



Time Allowed : 2 Hours

Full Marks : 200

Read the following instructions carefully before you begin to answer the questions :

1. The name of the Subject, Roll Number as mentioned in the Admission Certificate, Test Booklet No. and Series are to be written legibly and correctly in the space provided on the Answer-Sheet with Black/Blue ballpoint pen.
2. Answer-Sheet without marking Series as mentioned above in the space provided for in the Answer-Sheet shall not be evaluated.
3. All questions carry equal marks.

The Answer-Sheet should be submitted to the Invigilator.

Directions for giving the answers : Directions for answering questions have already been issued to the respective candidates in the 'Instructions for marking in the OMR Answer-Sheet' along with the Admit Card and Specimen Copy of the OMR Answer-Sheet.

Example :

Suppose the following question is asked :

The capital of Bangladesh is

- (A) Chennai
- (B) London
- (C) Dhaka
- (D) Dhubri

You will have four alternatives in the Answer-Sheet for your response corresponding to each question of the Test Booklet as below :



In the above illustration, if your chosen response is alternative (C), i.e., Dhaka, then the same should be marked on the Answer-Sheet by blackening the relevant circle with a Black/Blue ballpoint pen only as below :

**The example shown above is the only correct method of answering.**

4. Use of eraser, blade, chemical whitener fluid to rectify any response is prohibited.
5. Please ensure that the Test Booklet has the required number of pages (23) and 100 questions immediately after opening the Booklet. In case of any discrepancy, please report the same to the Invigilator.
6. No candidate shall be admitted to the Examination Hall/Room 20 minutes after the commencement of the examination.
7. No candidate shall leave the Examination Hall/Room without prior permission of the Supervisor/Invigilator. No candidate shall be permitted to hand over his/her Answer-Sheet and leave the Examination Hall/Room before expiry of the full time allotted for each paper.
8. No Mobile Phone, Electronic Communication Device, etc., are allowed to be carried inside the Examination Hall/Room by the candidates. Any Mobile Phone, Electronic Communication Device, etc., found in possession of the candidate inside the Examination Hall/Room, even if on off mode, shall be liable for confiscation.
9. No candidate shall have in his/her possession inside the Examination Hall/Room any book, notebook or loose paper, except his/her Admission Certificate and other connected papers permitted by the Commission.
10. Complete silence must be observed in the Examination Hall/Room. No candidate shall copy from the paper of any other candidate, or permit his/her own paper to be copied, or give, or attempt to give, or obtain, or attempt to obtain irregular assistance of any kind.
11. This Test Booklet can be carried with you after answering the questions in the prescribed Answer-Sheet.
12. Noncompliance with any of the above instructions will render a candidate liable to penalty as may be deemed fit.
13. No rough work is to be done on the OMR Answer-Sheet. You can do the rough work on the space provided in the Test Booklet.

N.B. : There will be negative marking @ 0.25 per 1 (one) mark against each wrong answer.

/63-A

[No. of Questions : 100]

SEAL

1. A star A is observed to emit a peak intensity of radiation in the infrared region of the electromagnetic spectrum, while another star B peaks in the ultraviolet region. Based on Wien's displacement law, which of the following statements is true about their temperatures?
 - (A) Star A has higher temperature than star B .
 - (B) Star B has higher temperature than star A .
 - (C) Their temperatures cannot be determined from this information alone.
 - (D) The color of the peak radiation is not related to the star's temperature according to Wien's law.

2. A paramagnetic material exhibits a weak attraction to an external magnetic field. When this material is brought into contact with a heat reservoir at a very low temperature (T_{cold}), it undergoes a spontaneous magnetization process. Which of the following statements about the entropy (S) of the system and the surroundings is true?
 - (A) The entropy (S) of the system decreases and the entropy (S) of the surroundings increases. (Violates the second law)
 - (B) The entropy (S) of the system increases and the entropy (S) of the surroundings remains constant. (Entropy can't stay constant in irreversible processes)
 - (C) The entropy (S) of the system decreases and the entropy (S) of the surroundings decreases. (Violates the second law)
 - (D) The entropy (S) of the system increases, and the entropy (S) of the surroundings also increases. (Consistent with the second law)

3. A car is travelling at a constant speed of 20 m/s on a circular track with a radius of 100 m. What is the magnitude of the centripetal acceleration experienced by the car?
 - (A) 2 m/s²
 - (B) 4 m/s²
 - (C) 6 m/s²
 - (D) 8 m/s²

4. Which of the following statements is false about the first law of thermodynamics?
 - (A) It is a statement of conservation of energy.
 - (B) It implies that the heat and work are equivalent.
 - (C) It states that the internal energy of an isolated system is constant.
 - (D) It implies that the perpetual motion machines are possible.

5. A wave packet is composed of multiple waves with slightly different frequencies travelling in the same direction. The group velocity of the wave packet is always greater than the phase velocity of the individual waves within the packet. Which of the following is true regarding this statement?
 - (A) This statement is always true
 - (B) This statement is only true for dispersive media
 - (C) This statement is never true
 - (D) The relationship between group and phase velocity depends on the wavelength

6. Geophysicists use sound waves to probe the Earth's interior. The speed of sound waves can vary depending on the material properties of different layers within the Earth. How can analyzing the variations in sound speed help us to understand the Earth's internal structure?
- (A) Higher sound speed indicates the presence of denser materials like iron
 - (B) Lower sound speed indicates the presence of less dense materials like the crust
 - (C) Abrupt changes in sound speed can indicate boundaries between different layers
 - (D) All of the above are true
7. A strong wind is blowing from left to right. A boat is anchored in the water and the wind pushes against the boat's sail. The boat remains stationary. Which of the following best explains why the boat **does not** move?
- (A) The force of the wind is balanced by the normal force of the water
 - (B) The force of the wind is cancelled out by the boat's inertia
 - (C) There is an equal and opposite reaction force from the water on the boat
 - (D) Since the boat is anchored, it is not subject to Newton's laws of motion
8. In an inelastic collision between two particles of different masses, where one particle is initially at rest and the other particle is moving toward it, which of the following statements is true if the particles stick together after the collision?
- (A) The final kinetic energy of the combined system is equal to the initial kinetic energy of the moving particle.
 - (B) The final kinetic energy of the combined system is greater than the initial kinetic energy of the moving particle.
 - (C) The final kinetic energy of the combined system is less than the initial kinetic energy of the moving particle.
 - (D) The final kinetic energy of the combined system depends on the ratio of the masses of the two particles.
9. Which of the following statements is true about Carnot cycle?
- (A) It is a reversible cycle operating between two heat reservoirs.
 - (B) It is the most efficient cycle for converting heat into work.
 - (C) It is the only cycle that can convert heat into work.
 - (D) Both (A) and (B) are correct

- 10.** In a transverse wave, the particles of the medium oscillate in a direction
- (A) parallel to the direction of wave propagation
 - (B) perpendicular to the direction of wave propagation
 - (C) at an angle of 45 degrees to the direction of wave propagation
 - (D) randomly in any direction
- 11.** Name the database which has all the informations related to the tool marks imaging.
- (A) TRAX
 - (B) GRIM
 - (C) SICAR
 - (D) CAFSS
- 12.** In forensic analysis, if the odds against the crime scene paint originating from another randomly chosen vehicle are approximately 1 to 33000, what is the most accurate interpretation of this statistical relationship?
- (A) The evidence suggests a weak link between the suspect sample and the reference sample
 - (B) The statistical information is inconclusive and does not provide meaningful insights
 - (C) There is a moderate probability that the crime scene paint originated from another randomly chosen vehicle
 - (D) A strong link is indicated, suggesting that the crime scene paint is highly likely to originate from the same source as the reference sample
- 13.** Which category of features is computed from short frames of about 20 to 30 milliseconds in duration and describe the resonance properties of the supralaryngeal vocal tract?
- (A) Voice source features
 - (B) Spectro-temporal features
 - (C) Short-term spectral features
 - (D) Prosodic features
- 14.** What is the purpose of a levelogram in audio analysis?
- (A) To indicate morphed voice
 - (B) To indicate center dynamics
 - (C) To reflect fragments that were amplified, compressed, or merged
 - (D) To indicate trimming of audio file
- 15.** What is the purpose of shot identification in the analysis of videotape?
- (A) To identify the location of shots
 - (B) To observe observable distortions in video content
 - (C) To create a high-resolution video
 - (D) To analyze the waveform

16. How are intensity (I), amplitude (A), and frequency (F) related in the context of sound energy?
- (A) $I^2 = A^2 + F^2$
- (B) $I^2 = A^2 * F^2$
- (C) $I^2 = \frac{A^2}{F^2}$
- (D) $I^2 = A^2 - F^2$
17. First, complete closure of the passage of air at the same point in the vocal tract, then the removal of the closure, causing a sudden release of the blocked air with some explosive noise is known as
- (A) nasality
- (B) flow of speech
- (C) plosives formation
- (D) speech rate
18. How is the precision of the measurement expressed in the quantization process of digitization?
- (A) Sampling rate
- (B) Digital bits used for each sample
- (C) Analog bits used for each sample
- (D) Time duration between samples
19. According to Nyquist theorem what should be the sampling rate of a loss-less conversion of analog to digital?
- (A) Equal to the highest frequency of interest
- (B) Thrice the highest frequency of interest
- (C) Twice the pitch of the sound
- (D) Twice the highest frequency of interest
20. Which force, working in conjunction with the Bernoulli effect, helps to close the vocal folds for each cycle of vibration during phonation?
- (A) Subglottal air pressure
- (B) Elastic recoil force
- (C) Nasal cavity pressure
- (D) Glottal pressure
21. Pairs of consonant sounds that differ only with regard to their voicing classification are known as
- (A) cognates
- (B) anti-resonance
- (C) sibilants
- (D) continuants

22. Which of the following is **not** a feature considered in the quality of speech?

- (A) Pronunciation
- (B) Rhythm
- (C) Pitch
- (D) Speech sounds like vowels and consonants

23. What is the rule of thumb to calculate the maximum altitude that a bullet will reach when fired vertically into the air?

- (A) It will be approximately equal to the maximum horizontal range
- (B) It will be approximately half of the maximum horizontal range
- (C) It will be approximately two-thirds of the maximum horizontal range
- (D) It will be approximately three-fourths of the maximum horizontal range

24. Which of the following statements about early priming compounds is **not** true?

- (A) Mercury fulminate was used in the Forsyth scent-bottle priming system introduced around 1806, but was highly sensitive and liable to spontaneous explosion.
- (B) In 1807, Forsyth introduced a priming compound containing potassium chlorate, sulfur and charcoal, which was more stable than mercury fulminate but corrosive.
- (C) The first real percussion cap containing mercury fulminate was introduced by Joshua Shaw in 1814, but it was later replaced by a mixture with potassium chlorate due to unpredictability.
- (D) The 1873 standard US military priming compound was a mixture of mercury fulminate, potassium chlorate, glass dust, and gum arabic, but did not suffer from any major drawbacks.

25. What was the purpose of using charger clips in firearms?

- (A) To provide a convenient way to load cartridges directly into the chamber of the weapon
- (B) To enable soldiers to quickly reload detachable magazines in the field
- (C) To store ammunition in a compact and protective container
- (D) To transfer a predetermined quantity of cartridges to the magazine when appropriate

26. Which of the following is **not** one of the criteria set by the US Supreme Court in the *Daubert vs. Merrell Dow Pharmaceuticals* case for the acceptability of expert evidence?
- (A) Testability of the scientific principle
 - (B) Known or potential error rate
 - (C) Peer review and publication
 - (D) Endorsement by a government agency
27. Which of the following statements about gilding on lead bullets is true?
- (A) Gilding is a thick coating of copper or copper alloy used to completely encase the lead bullet.
 - (B) Gilding is an extremely thin coating of copper or copper alloy used to harden and lubricate the bullet.
 - (C) Gilding is a process of adding grooves or cannelures to the lead bullet.
 - (D) Gilding is a process of electroplating the lead bullet with a thick and hard coat of lead.
28. What is the primary function of a 'gas check' in lead bullets?
- (A) To provide additional lubrication for the bullet
 - (B) To improve the aerodynamics of the bullet
 - (C) To prevent the bullet from melting or fragmenting due to high velocity
 - (D) To increase the weight and hardness of the bullet
29. Which of the following statements is true regarding the temporary cavity formed by a bullet passing through tissue?
- (A) The size of the temporary cavity is directly related to the muzzle velocity of the bullet.
 - (B) The size of the temporary cavity is directly related to the amount of kinetic energy absorbed by the tissue.
 - (C) The size of the temporary cavity is inversely related to the amount of kinetic energy lost by the bullet in the tissue.
 - (D) The size of the temporary cavity is not affected by the amount of kinetic energy involved.

30. Which of the following statements is **not** true regarding bullet emboli?

- (A) Embolization usually occurs immediately after the bullet enters the circulation, but delays up to 26 days have been reported.
- (B) Bullet emboli are typically associated with high-caliber and high-velocity missiles.
- (C) The site of lodgement for bullets entering the venous system is predominantly the right side of the heart and the pulmonary arteries.
- (D) Embolization to the brain is rare and typically involves shotgun pellets.

31. Which one of the following methods is mentioned for removing blood from a gunshot wound without removing the shoot pattern?

- (A) Using a dry cloth to absorb the blood
- (B) Applying a solvent like acetone to dissolve the blood
- (C) Pouring hydrogen peroxide on the wound to dissolve the blood
- (D) Scrubbing the area with a brush and soap

32. What is the main composition of the primer surfacer in automotive paint?

- (A) Acrylic-based polymer
- (B) Epoxy-based resins
- (C) Polyurethane clear coats
- (D) Powder consisting of highly pigmented epoxy-modified polyester/urethanes

33. When does hardening of non-hydraulic cement occur?

- (A) When lime carbonation occurs with atmospheric carbon dioxide
- (B) When soda lime carbonation occurs with atmospheric carbon dioxide
- (C) When lime carbonation occurs with atmospheric nitrogen
- (D) When soda lime carbonation occurs with atmospheric nitrogen

34. What is the percentage range of Al_2O_3 in ordinary Portland cement?

- (A) 4–10%
- (B) 3–8%
- (C) 2–8%
- (D) 8–12%

35. Pozzolana cement is rich in which mineral?
- (A) Silicate
 - (B) Soda lime
 - (C) Aluminosilicate
 - (D) Aluminium oxide
36. Which cement is known as iron-free cement?
- (A) White cement
 - (B) Alumina cement
 - (C) OPC
 - (D) PPO
37. The main composition of cement are
- (A) Dicalcium silicate, Tricalcium silicate, Dicalcium aluminate, Tricalcium aluminoferrite
 - (B) Dicalcium silicate, Tricalcium silicate, Tricalcium aluminate, Tetracalcium aluminoferrite
 - (C) Calcium silicate, Tricalcium silicate, Calcium aluminate, Calcium alumino
 - (D) Calcium silicate, Tricalcium silicate, Calcium aluminate, Tetracalcium alumino
38. What kind of action results when telephone wire is cut?
- (A) Scraping
 - (B) Pinching
 - (C) Shearing
 - (D) Gripping
39. Which of the following materials is applied on the tool mark casting using an extruder gun?
- (A) AccuTrans automix casting system
 - (B) Powdered sulphur
 - (C) Liquid silicon
 - (D) Dental stone or plaster of Paris
40. Wrap runs in _____ direction.
- (A) vertical
 - (B) horizontal
 - (C) diagonal
 - (D) None of the above

41. Becke line helps in determination of

- (A) refractive index of glass
- (B) refractive index of liquid
- (C) density of glass
- (D) density of liquid

42. The tangential parts of rib marks are always in which direction?

- (A) Direction of force
- (B) Direction of radial marks
- (C) Both (A) and (B)
- (D) None of the above

43. A fiber having circular cross-section and longitudinally appear smooth, regular and rod-like is which type of fiber?

- (A) Hemp
- (B) Jute
- (C) Silk
- (D) Polyester

44. In VIN number the first digit represents which of the following?

- (A) Manufacturer name
- (B) Country name
- (C) Model of vehicle
- (D) Type of vehicle

45. If the DOT number on the tyre is 'DOT MF L9 AHIJ 2401' then what does 2401 define?

- (A) Tyre was manufactured on 1st week of 2024
- (B) Tyre was manufactured on 24th week of 2001
- (C) Tyre was attached in the vehicle on 1st week of 2001
- (D) Tyre was attached in the vehicle on 24th week of 2001

46. What is the purpose of the dithiooxamide test?
- (A) To detect the presence of copper residue from a copper-jacketed bullet passing through an object
 - (B) To determine the range at which a firearm was discharged
 - (C) To detect the presence of lead residue around an entrance wound
 - (D) To identify the type of bullet used in a shooting incident
47. For restoration of numbers on the surfaces such as engine surface of the motorbikes, auto-rickshaw engine, vehicle identification plates etc. which reagent is used?
- (A) Fry's reagent
 - (B) Vilella's solution
 - (C) Jet of steam
 - (D) None of the above
48. The marks produced on the metal surfaces can be collected by using which technique?
- (A) Wood metal
 - (B) Silicon mould
 - (C) Clay
 - (D) Plaster of Paris
49. Which of the following best describes the purpose and composition of 'smokeless powder' used as a propellant in modern firearms?
- (A) Smokeless powder is a physical mixture of charcoal, sulfur and potassium nitrate, designed to produce less smoke than traditional black powder
 - (B) Smokeless powder is a chemical compound of cotton lint or wood pulp nitrated with a mixture of hydrochloric and sulfuric acids, providing a potent propellant with minimal smoke
 - (C) Smokeless powder is a combination of approximately 70% cellulose nitrate and 30% nitroglycerine, offering a more energetic propellant with reduced water content
 - (D) Smokeless powder is a mixture of barium nitrate, antimony sulfide and tetracene, formulated to minimize the production of smoke and provide a reliable ignition source
50. Name the fiber which burns slowly with shiny ash and smell like burning hair.
- (A) Nylon
 - (B) Silk
 - (C) Acrylic
 - (D) Asbestos

51. The name of the present king of Bhutan is

- (A) Jigme Dorji Wangchuck
- (B) Jigme Khesar Namgyel Wangchuck
- (C) Jigme Singye Wangchuck
- (D) Sir Ugyen Wangchuck

52. On 17 October, 2023 at the Vigyan Bhawan, New Delhi, the 69th National Film Awards ceremony was held and the Dadasaheb Phalke Award for the year 2021 was given to the veteran actor/actress

- (A) Waheeda Rehman
- (B) Hema Malini
- (C) Amitabh Bachchan
- (D) Sharmila Tagore

53. Who won the Wimbledon 2023 Men's final?

- (A) Novak Djokovic
- (B) Rafael Nadal
- (C) Carlos Alcaraz
- (D) None of them

54. According to the data of Project Approval Board (PAB) meetings held under the Ministry of Education, the dropout rate for secondary school in Assam in 2021–2022 was

- (A) 23.0%
- (B) 21.3%
- (C) 23.3%
- (D) 20.3%

55. In Artificial Intelligence, Deepfake is a tool to create

- (A) datasheet creator
- (B) underwater simulation
- (C) artificial video or image creator
- (D) fake deep sea simulation

56. ISRO recently tested India's first Reusable Launched Vehicle (RLV) LEX-2 successfully. The winged vehicle was released from 4.5 km altitude and 4 km away from airport and the vehicle landed on the runway successfully. The name of the winged vehicle is

(A) Gaganyaan

(B) XPoSAT

(C) INSAT-3DS

(D) Pushpak

57. The Indian football team dropped 15 places to 117th in the FIFA rankings, after the recent debacle in the AFC Asian Cup. What is the rank of India among the Asian nations?

(A) 22nd

(B) 17th

(C) 11th

(D) 23rd

58. A traditional basketball team has 12 players. How many players of a basketball team play on court at a time?

(A) 6

(B) 5

(C) 4

(D) 7

59. Who wrote the Assamese book, *Aghari Atmar Kahini* (Tale of a Nomadic Soul)?

(A) Syed Abdul Malik

(B) Lakshminath Bezbarua

(C) Chandra Kumar Agarwala

(D) None of them

60. How many MPs are there in the Upper House of India's bicameral Parliament?

(A) 543 elected and 6 nominated

(B) 243 elected and 12 nominated

(C) 238 elected and 12 nominated

(D) 343 elected and 6 nominated

61. Which of the following States of India has coastline?

(A) Chhattisgarh

(B) Punjab

(C) Jharkhand

(D) Karnataka

62. The Parliament passed the North-Eastern Areas (Reorganisation) Act, 1971, which conferred full Statehood on the autonomous State of Meghalaya. When did Meghalaya become a full-fledged State under the North-Eastern Areas (Reorganisation) Act, 1971?

(A) 21st January, 1972

(B) 21st January, 1971

(C) 21st January, 1973

(D) 15th August, 1971

63. The people belonging to the Khelma tribe also known as Sakachep tribe lives in the Indian State of

(A) Sikkim

(B) Ladakh

(C) Assam

(D) Tamil Nadu

64. The Silk Road (also known as the Silk Routes), a road network extended approximately 6437 kilometers of trade routes, connected China and the Far East with Europe and the Middle East from 130 BC to 1453 AD. The Silk Road earned its name from

(A) Indian silk

(B) European silk

(C) Iranian silk

(D) Chinese silk

65. Which bird among the following is marked as critically endangered?
- (A) Abbott's Babbler
 - (B) White-bellied Heron
 - (C) Ashy Bulbul
 - (D) Asian Fairy-Bluebird
66. What is the name of the only sister of 100 Kaurava brothers?
- (A) Ulupi
 - (B) Uttara
 - (C) Duhsala
 - (D) Hidimba
67. Which of the following is the correct?
- (A) Facebook owns and operates WhatsApp, Instagram, Threads and Meta
 - (B) Meta owns and operates Facebook, WhatsApp, Instagram and Threads
 - (C) Threads owns and operates Facebook, WhatsApp, Instagram and Meta
 - (D) WhatsApp owns and operates Facebook, Meta, Instagram and Threads
68. The furthest point on Earth from Earth's center is
- (A) Mount Everest peak
 - (B) Mount Chimborazo peak
 - (C) Mount Kilimanjaro peak
 - (D) Kanchenjunga peak
69. Bum La Pass is a mountain pass between
- (A) India and China
 - (B) India and Myanmar
 - (C) China and Myanmar
 - (D) China and Afghanistan
70. Assam Baibhav is the highest civilian award of the State of Assam, India. Who was the first recipient of Assam Baibhav award?
- (A) Tapan Saikia
 - (B) Ranjan Gogoi
 - (C) Gilbertson Sangma
 - (D) Ratan Tata

71. Find the potential energy stored in a ball of mass 5 kg placed at a height of 3 m above the ground.
- (A) 121.20 J
 - (B) 147.15 J
 - (C) 227.31 J
 - (D) 182.21 J
72. The centre of mass of a body
- (A) lies inside the body
 - (B) lies outside the body always
 - (C) lies on the surface of the body always
 - (D) None of the above
73. The electric potential inside a conducting sphere
- (A) is zero
 - (B) increases from centre to the surface
 - (C) decreases from centre to the surface
 - (D) remains constant from centre to the surface
74. The particle nature of light was established by
- (A) interference of light
 - (B) photoelectric effect
 - (C) diffraction of light
 - (D) mass spectroscopy
75. The resistivity of metal lies in the range
- (A) $10^{-2} - 10^{-8} \Omega\text{m}$
 - (B) $10^2 - 10^{-2} \Omega\text{m}$
 - (C) $10^2 - 10^8 \Omega\text{m}$
 - (D) $10^8 - 10^{12} \Omega\text{m}$
76. Which of the following particles is emitted during beta decay?
- (A) Alpha particle
 - (B) Proton
 - (C) Neutron
 - (D) Electron

77. Which of the following **does not** belong in the category of electro-chemical cells?
- (A) Voltaic cell
 (B) Photovoltaic cell
 (C) Electrolytic cell
 (D) Fuel cell
78. At 287 K, which of the following is a gas?
- (A) Propanal
 (B) Acetaldehyde
 (C) Formaldehyde
 (D) Acetone
79. How are different colours used to make gold colloidal solutions?
- (A) Different diameters of colloidal gold particles
 (B) Variable valency of gold
 (C) Different concentrations of gold particles
 (D) Impurities produced by different methods
80. The correct bond order in the following species is
- (A) $O^{2+} < O^{2-} < O_2^{2+}$
 (B) $O_2^- < O_2^+ < O_2^{2+}$
 (C) $O_2^{2+} < O_2^+ < O_2^-$
 (D) $O_2^{2+} < O_2^- < O_2^+$
81. Hardness of water is due to the pair of ions
- (A) Ca^{2+} and K^+
 (B) Mg^{2+} and K^+
 (C) Ca^{2+} and Mg^{2+}
 (D) Ba^{2+} and Zn^{2+}
82. Benzene reacts with CH_3Cl in the presence of anhydrous $AlCl_3$ to form
- (A) chlorobenzene
 (B) benzyl chloride
 (C) xylene
 (D) toluene
83. Blue-green algae belong to which group?
- (A) Protista
 (B) Prokaryotes
 (C) Fungi
 (D) Bryophytes

84. Cyclin is associated with
- (A) leptospirosis
 - (B) glycolysis
 - (C) cyclosis
 - (D) mitosis
85. _____ is not a skull bone.
- (A) Sternum
 - (B) Occipital bone
 - (C) Vomer
 - (D) Pterygoid
86. The area on the left hemisphere related to speech is
- (A) amygdala
 - (B) Broca's area
 - (C) occipital lobe
 - (D) None of the above
87. The property of an undifferentiated cell that has the potential to develop into an entire plant is called
- (A) budding
 - (B) cloning
 - (C) subpotency
 - (D) totipotency
88. A man marries a woman and both do not show any apparent traits of inherited disease. Five sons and two daughters are born, and three of their sons suffer from a disease. However, none of the daughters is affected. The following mode of inheritance for the disease is
- (A) sex-linked recessive
 - (B) sex-linked dominant
 - (C) autosomal dominant
 - (D) None of the above
89. *Bacillus thuringiensis* is used for
- (A) fermentation of beer
 - (B) biopesticide
 - (C) antibiotic
 - (D) None of the above
90. A group of individuals from different species living in the same habitat and exhibiting functional interactions is called
- (A) biotic community
 - (B) population
 - (C) ecosystem
 - (D) None of the above

91. Pick the correct option :

Before I started the car, all of the passengers _____ their seat belts.

(A) will buckle

(B) will have buckled

(C) had buckled

(D) buckle

92. Pick the correct option :

After they _____ the race the celebrations began.

(A) won

(B) have won

(C) win

(D) had won

93. Pick the correct option :

_____ when he was painting the ceiling.

(A) He found his passport

(B) He burnt his hand

(C) He fell off the ladder

(D) He bought a new car

94. Which word means the same as *Enigmatic*?

(A) Energetic

(B) Fascinating

(C) Egoist

(D) Puzzling

95. Which word is the opposite of *Surreptitious*?

(A) Open

(B) Secret

(C) Clandestine

(D) Definite

96. In the following sentence, replace the italicized word or phrase with a more descriptive word or phrase that means the same thing :

The front page article reported that the senator *suffered* a serious injury in the car crash.

- (A) Sustained
- (B) Retained
- (C) Maintained
- (D) Preserved

97. For the following sentence, choose the correct homophone for the missing word :

She had to buy a _____ of shoes to match her dress.

- (A) peer
- (B) pear
- (C) pair
- (D) None of the above

98. Fill in the blanks with the most appropriate collective noun.

A _____ of singers were teaching a _____ of students.

- (A) pack, nest
- (B) host, crowd
- (C) troop, bunch
- (D) choir, class

99. Identify the adjective mentioned in the following sentence :

The room was dimly lit so we could meditate.

- (A) lit
- (B) dimly
- (C) meditate
- (D) so

100. Choose the most appropriately punctuated sentence.

- (A) How did you come here?
- (B) How did you, come here?
- (C) How did you come here.
- (D) How! Did you come here?

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SEAL