ICS Paper

(Physics Section)

1. **In case of motion of paratrooper, when weight of paratrooper and air resistance become equal then paratrooper falls with:**
   A) Variable acceleration
   B) Zero acceleration
   C) Uniform acceleration
   D) Gravitational acceleration

2. **Which of the following has no acceleration?**
   A) Man driving a car on busy road
   B) Rock rolling down a mountain
   C) A luggage in flying airplane
   D) A bike moving on a rough road

3. **When collision between the bodies in a system is inelastic in nature then for system?**
   A) Momentum changes but K.E remain conserve
   B) K.E changes but momentum remain conserve
   C) Both momentum and K.E change
   D) Both momentum and K.E remain conserve

4. **A man pulling a bag with force of 20 N at an angle 60° with horizontal plane. If bag covers a distance of 15 m, then work done by the man is:**
   A) 50 J
   B) 75 J
   C) 150 J
   D) 100 J

5. **The acceleration of a body traveling with uniform speed in a circle is:**
   A) Zero
   B) Directed towards center of circle
   C) Directed away from center of circle
   D) Directed along tangent line

6. **The power required to raise a block of mass 500 kg vertical to height 15 m in a time of 50s is:** A) 1 hp
   B) 2 hp

C) 3 hp

D) 4 hp

7. **According to Faraday's law of electromagnetic induction:**

   A) The direction of induced current is such that it opposes the cause producing it

   B) The magnitude of induced emf produced in a coil is directly proportional to the rate of change of magnetic flux

   C) The direction of induced emf is such that it opposes the cause producing it

   D) None of these

8. **The energy stored in a parallel plate capacitor is 24 J. What is the potential difference between the plates if the capacitance of the capacitor is 3F?**

   A) 4kV

   B) 8 kV

   C) 16kV

   D) 64 kV

9. **The half-time of a radioactive sample (in minutes), if its mean life is 200s is:**

   A) 0.69 min

   B) 2 min

   C) 2.57 min

   D) 2.31 min

10. **A coil having an area 5 m² placed in a magnetic field which changes from 1 Wb/m² to 4 Wb/m² in an interval of 3 seconds. The emf induced in the coil will be:**

    A) 15 V

    B) 10 V

    C) 1 V

    D) 5 V 11. **What is the measure in radians of the angle A = 330°?**

    A) 5π/6

    B) 11π/6

    C) π/6

    D) 7π/6

12. **A stationary wave is formed in a pipe which is open at one end. If two complete loops are formed and the wavelength of the wave is 10 cm, what is the length of the pipe?** A) 10 cm

    B) 15 cm

C) 12.5 cm

D) 7.5 cm

13. **100 W heater is used for 5 minutes to heat 500 g of water. What is the change in temperature of water? Specific heat capacity of water is 4.2 J/g°C.**

A) 140°C

B) 40°C

C) 0.2°C

D) 14°C

14. **The force between two charges Q and q, separated by a distance d is F. What will be the force between them when distance between them is d/2?**

A) 4F

B) 2F

C) F

D) F/2 15. **Time constant is defined as the time required by the capacitor:**

A) To deposit 63% of the equilibrium charge

B) To deposit 36% of the equilibrium charge

C) To deposit 63 times of the equilibrium charge

D) To deposit 36 times of the equilibrium charge

16. How many Tesla in equal to 25000 Guass?

A) 5T

B) 2.5 T

C) 0.5 T

D) 2 T

17. **Radon-222 has 136 neutrons, how many neutrons are there in Radon-220?**

A) 131

B) 134

C) 136

D) none of these

18. **The length of a string is 1m, tension in it is 40N, and mass of the string is 0.1 kg. Then the velocity of transverse waves produced in the string will be:**

A) 400 m/s

B) 80 m/s

C) 180 m/s D) 20 m/s

19. **What should be the length of a closed pipe to produce resonance with sound waves of wavelength 62 cm?**

A) 31 cm

B) 15.5 cm

C) 45 cm

D) 20.5 cm

20. **A stretched wire of length 1 m and weighing 1 gram is in unison with a tuning fork of frequency 200 Hz. The tension in the wire will be:**

A) 160 N

B) 80 N

C) 320 N

D) 200 N

21. **A body is projected with kinetic energy E so as to attain maximum horizontal range. Its potential energy at the highest point is:**

A) 2E

B) E/2

C) 4E

D) E

22. **The work done by gravity during the descent of a projectile:**

A) Is negative

B) Depends for its sign on the direction of the y axis

C) Zero

D) Is positive 23. **The concept of the lines of force in the study of electric field was introduced by:**

A) Edison

B) Faraday

C) Kirchhoff

D) Fleming

24. **A particle of mass m and charge Q moving with velocity V enters the region of a uniform magnetic field at right angle to the direction of its motion. How does its kinetic energy get affected?** A) Its kinetic energy will be affected

B) Its kinetic energy will not be affected

C) Its kinetic force

D) None of the above

25. **What is the half-life of Iodine I-125?**

A) 1 weeks

B) 6 weeks

C) 8 weeks

D) 10 weeks

26. **A car travels 30 m toward east, then it takes turn and travels 40 m towards north. It takes 50 seconds. Its average velocity is:**

A) 7/5 m/s

B) 1 m/s

C) 1/5 m/s

D) 5 m/s

27. **Which physical quantity is a vector?**

A) Speed

B) Distance

C) Displacement

D) Work

28. **Which of the following has the same unit as energy?**

A) Power

B) Force

C) Work

D) Pressure

29. **The SI unit of electric charge is:**

A) Coulomb

B) Ampere

C) Volt

D) Ohm

30. **Acceleration is defined as:**

A) Rate of change of speed

B) Rate of change of distance

C) Rate of change of velocity

D) None of these

(English Section)

31. **Fill in the blank: I am waiting ___ the bus stop.**
    A) in
    B) at
    C) on
    D) by

32. **Fill in the blank: I have been working here ___ two years.**
    A) for
    B) since
    C) during
    D) in

33. **Find the error: She don't like playing tennis.**
    A) She
    B) don't
    C) like
    D) playing

34. **Choose the correct option: He is the ___ student in the class.** A) more intelligent
    B) most intelligent
    C) most intelligence
    D) intelligent more

35. **Fill in the blank: We will leave ___ 9 o'clock.**
    A) at
    B) in
    C) on
    D) by

36. **Find the error: They is going to the park later.**
    A) They
    B) is
    C) going
    D) to

37. **Choose the correct option: ___ you want to join us for dinner?**
    A) Do

B) Are
C) Would
D) Can

38. **Fill in the blank: She has been studying ___ 8 AM.**
A) for
B) since
C) during
D) by

39. **Find the error: I have many books than him.**
A) I
B) have
C) many
D) than

40. **Fill in the blank: She is more interested ___ science than math.**
A) to
B) with
C) in
D) for

(Computer Section)

41. **Which of the following is not an input device?**
A) Keyboard
B) Mouse
C) Monitor
D) Printer

42. **Which of the following is the main function of the CPU?**
A) Store data
B) Process data
C) Display output
D) Input data

43. **What does URL stand for?**
A) Uniform Resource Locator
B) Universal Resource Locator

C) Uniform Resource Locator

D) Uniform Relative Locator

44. **Which of the following is a type of software?**

A) Operating System

B) All of the above

C) Word Processor

D) Spreadsheet

45. **Which language is used to create web pages?** A) Java

B) C++

C) HTML

D) Python 46. **What does CPU stand for?**

A) Central Processing Unit

B) Central Performance Unit

C) Control Program Unit

D) Control Processing Unit

47. **What is an example of an operating system?**

A) Microsoft Word

B) Google Chrome

C) Windows 10

D) Adobe Acrobat 48. **Which of these is not a programming language?**

A) Python

B) Java

C) HTML

D) C++

49. **What is the full form of "RAM"?**

A) Read Access Memory

B) Random Access Memory

C) Random Active Memory

D) Run Active Memory 50. **What is the primary function of the ALU (Arithmetic Logic Unit)?**

A) Perform arithmetic and logical operations

B) Store data

C) Input data

D) Control data

51. **Which of these is a correct example of a database?**
    A) Microsoft Word
    B) MySQL
    C) Adobe Photoshop
    D) Windows 10

52. **Which of the following is a type of computer network?**
    A) LAN
    B) WAN
    C) Both A and B
    D) None of the above

53. **Which of the following is used to surf the internet?**
    A) Email
    B) Web Browser
    C) Printer
    D) Monitor

54. **Which of these is the primary function of an operating system?**
    A) Manage hardware and software resources
    B) Perform calculations
    C) Store files and data
    D) Design websites

55. **Which of the following is a common output device?**
    A) Keyboard
    B) Mouse
    C) Scanner
    D) Printer

56. **What is the function of a modem?** A) Convert digital data into analog signals

B) Increase the speed of the computer

C) Convert analog data into digital signals

D) Manage the computer's power supply

57. **Which of the following is an example of application software?**
    A) Windows 10

B) Microsoft Word
C) Linux
D) DOS

58. **Which of the following is a common file extension for an image file?**
A) .jpg
B) .exe
C) .doc
D) .ppt

59. **What does "HTTP" stand for?**
A) Hyper Text Transport Protocol
B) Hyper Text Transmission Protocol
C) Hyper Text Transfer Protocol
D) Hyper Tool Text Protocol

60. **Which of the following is used to store data permanently in a computer?**
A) RAM
B) Cache memory
C) Hard Drive
D) CPU

61. **What is the function of the “Escape” key on a keyboard?**
A) Deletes a character
B) Exits the current screen or operation
C) Saves a document
D) Starts a new line

62. **What does a "bit" stand for?**
A) Binary digit
B) Binary data
C) Binary index
D) Binary information

63. **What is the function of a spreadsheet?**
A) Organize and calculate data
B) Store files
C) Write letters
D) Manage email

64. **What is a URL used for?**
    A) To identify a web page address
    B) To store information
    C) To create files
    D) To manage the database

65. **What does "Wi-Fi" stand for?**
    A) Wireless Fidelity
    B) Wireless Frequency
    C) Wide Internet Fidelity
    D) Wireless Internet Frequency

66. **What is the purpose of a firewall in computer security?**
    A) Increase speed
    B) Block unauthorized access
    C) Store passwords
    D) Encrypt messages

67. **What is the function of the Control Panel in Windows?**
    A) To change system settings
    B) To organize files
    C) To browse the internet
    D) To manage your email accounts

68. **What is the primary function of a motherboard?**

    A) Store files
    B) Provide power to all components
    C) Connect all internal components
    D) Control external devices

69. **Which of the following is a search engine?** A) Google
    B) Adobe
    C) Yahoo
    D) Windows

70. **What is a database used for?**
    A) Storing and organizing data

B) Editing text

C) Displaying images

D) Listening to music

Mathematics

71) The number of words that can be formed from the letters of the word, "COMMITTEE" are

A) ${}^{9}P_{9}$

B) ${}^{9}C_{9}$

C) $\frac{9!}{2!2!2!}$

D) 9

72) Let $a, b \in R$ with $a < b$ then set of $(a, b) = \{x \in R | a < x < b\}$ is called

A) closed interval

B) open interval

C) semi-open interval

D) semi-closed interval

73) The value of $Lim_{x\to 0} \frac{\sin ax}{bx}$ is

A) a

B) $\frac{a}{b}$ (Correct)

C) b

D) $\frac{b}{a}$

74) $2\cos\alpha \cos\beta =$

A) $\cos(\alpha+\beta)+\cos(\alpha-\beta)$

B) $\cos(\alpha+\beta)-\cos(\alpha-\beta)$

C) $\sin(\alpha+\beta)+\sin(\alpha-\beta)$

D) $\sin(\alpha+\beta)-\sin(\alpha-\beta)$

75) $\sin 5\theta + \sin 3\theta =$

A) $2\cos 2\theta \sin\theta$
B) $-2\cos 4\theta \sin\theta$
C) $-2\sin 4\theta \cos\theta$
D) $2\sin 4\theta \cos\theta$

76) $\sin\frac{\alpha}{2} =$

A) $\pm\sqrt{\frac{s(s-c)}{ab}}$
B) $\pm\sqrt{\frac{s(s-b)}{ac}}$
C) $\pm\sqrt{\frac{s(s-a)}{bc}}$
D) $\pm\sqrt{\frac{s(s-b)(s-c)}{bc}}$

77) $\frac{d}{dx}(Sin^{-1}x) =$ _____
A) $-\frac{1}{\sqrt{1-x^2}}$
B) $\frac{1}{\sqrt{1-x^2}}$
C) $\frac{1}{\sqrt{x^2-1}}$
D) $-\frac{1}{\sqrt{x^2-1}}$

78) $\frac{d}{dx}\ln(ax^2+b) =$ _____
A) $\frac{a}{ax^2+b}$
B) $\frac{2a}{ax^2+b}$
C) $\frac{2ax}{ax^2+b}$
D) $\frac{b}{ax^2+b}$

79) For an equilateral triangle which of the following must be true.
A) r = 4R B) $r=\frac{R}{2}$ C) $r=\frac{R}{3}$ D) None

80) Equation $P^x + q.P^{2x} = y$ is known as.
A) Reciprocal equation B) Exponential Equation C) Quartic equation D) None

81) The period of Tan3θ is.
A) $2\overline{\Lambda}$ B) $\frac{2\overline{\Lambda}}{3}$ C) $\frac{\overline{\Lambda}}{3}$ D) $\overline{\Lambda}$

82) nth harmonic mean between a & b is given as;

A) $\frac{ab(n+1)}{b+na}$ B) $\frac{nab}{2(a+b)}$ C) $\frac{2ab}{n(a+b)}$ D) $\frac{b+na}{ab(n+1)}$

83) If $\tan^{-1}(2x) + \tan^{-1}(3x) = \frac{\pi}{4}$ then x =?

A) -1 B) 6 C) $\frac{1}{6}$ D) 1

84) The number of triangle formed by 4 points. When no three points are collinear is:

A) 4 B) 6 C) 8 D) 9

85) The matrix $\begin{bmatrix} \lambda & -1 & 4 \\ -3 & 0 & 1 \\ -1 & 1 & 2 \end{bmatrix}$ is non singular if;

A) $\lambda \neq -5$ B) $\lambda \neq -17$ C) $\lambda \neq -16$ D) $\lambda \neq -18$

86) If $f(x) = 3x^2 - 1$ then $\frac{f(x)-f(1)}{x-1}$ =?

A) x B) x+1 C) x-1 D) 1

87) What is the range of x=sec θ.

A) $-1 < x < 1$ B) $x < -1$ and $x > 1$ C) $x \geq -1$ and $x \leq 1$ D) $x \geq 1$ and $x \leq -1$

88) If Sin $\theta = \frac{1}{3}$ and $\frac{-\pi}{4} \leq \theta \leq \frac{\pi}{4}$, then cos(2θ) =

A) $-\frac{7}{9}$ B) $-\frac{2}{3}$ C) $\frac{2}{3}$ D) $\frac{7}{9}$

89) Binomial theorem is used to following series

A. Divergent
B. Convergent
C. Any
D. None

90) The solution of 1+cos X=0 is

A. $\pi+2k\pi$, $k \in z$
B. 2k, π
C. π 2kπ
D. None

91) sine(180+θ)

A. -Sinθ
B. –cosθ
C. Both

D. None

92) If eccentricity e>1,then the equation of rectum is

a) X=3/4

b) Y=4/3

c) Y=1/3

d)Y=5/7

93) Let A=[a_{ij}] be a square matrix. If $a_{ij} \neq 0 \vee i=j$ and $a_{ij}=0$ for all $i \neq j$, then A is

A. scalar Matrix
B. identity Matrix
C. diagonal Matrix
D. null Matrix

94) Two or more vectors are said to be coplanar if they

A. are perpendicular to the same plane
B. are not parallel to the same plane
C. lie in the same plane
D. do not lie in the same plane $an+1 + bn+1$

95) _____^{n} b is arithmetic mean between a and b if n = a + $_{n}$

A. –1
B. 1
C. 0
D. 2

96) If 2 + 1 + 1/2 + …..is infinite geometric series then S□

A. 2
B. 4
C. 1/2
D. ¼

97) If $r \geq 1$ in a geometric sequence such sequence is called_____

A. convergent
B. divergent
C. both A and B
D. imaginary

98) A bag contains 30 balls, some of which are red and the remaining are blue. The probability of drawing red is 1/6, then the number of blue balls are

A. 25

B. 20
C. 48
D. 16

99) Let S = {3, {1,4}, 2}, then |P (s)| will be.

A) 16 B) 8 C) 12 D) 32

100) If $\mathbf{1 + \frac{1}{4} + \frac{1.3}{4.8} + \frac{1.3.5}{4.8.12} + \cdots + \infty}$ **is**

A) $\sqrt{2}$ B) $\sqrt{3}$ C) $\sqrt{5}$ D) $\sqrt{7}$