Tribhuvan University

Institute of Science and Technology

4 Years Bachelor in Computer Science and Information Technology

Entrance Examination

Model set 2

Physics

1. The dimension of length for coefficient of viscosity is
   a. -1
   b. +1
   c. -2
   d. +2
2. What determines the nature of the path followed by a particle?
   a. Velocity
   b. Speed
   c. Acceleration
   d. None of the above
3. During summer sault, a swimmer bends his body to
   a. Increase moment of inertia
   b. Decrease moment of inertia
   c. Decrease angular momentum
   d. Reduce angular velocity
4. The rays of different colors fail to converge at a point after going through a converging lens. This defect is called
   a. Spherical aberration
   b. Distortion
   c. Coma
   d. Chromatic aberration
5. A star is going away from earth. An observer on the earth will see the wavelength of light coming from the star
   a. Decreased
   b. Increased
   c. Depends upon the velocity of star
   d. No change
6. Electric flux at a point in an electric field due to a positive charge is
   a. Positive
   b. Negative
   c. Zero
   d. None
7. A capacitor works in……circuit.
   a. AC
   b. DC
   c. Both i) & ii)
   d. None
8. A cyclotron is used for accelerating
   a. Mesons
   b. Leptons
   c. Protons
   d. Atoms
9. The antiparticle of electron is
   a. Positron
   b. Alpha-particle
   c. Proton
   d. Beta-particle

10. Zener diode is used for
    a. Amplification
    b. Rectification
    c. Stabilization
    d. All of the above
11. A body cannot have
    a. Zero speed and non-zero acceleration
    b. Nonzero speed and zero acceleration
    c. Constant velocity and varying speed
    d. Constant speed and varying velocity
12. A hunter aims at a monkey sitting on a tree at a considerable distance. At the instant he fires at it, the monkey drops. Will the bullet hit the monkey
    a. No
    b. Yes
    c. Sometimes
    d. Never
13. Two identical rectangular strips, one of copper and other of steel, are riveted together to form a bimetallic strip. On heating, the strip will
    a. Remains straight
    b. Bend with copper on convex side
    c. Bend with steel at convex side
    d. Get twisted
14. Suppose a tunnel is dug along a diameter of the earth. A particle is dropped from a point, a distance h directly above the tunnel, the motion of the particle is
    a. Simple harmonic
    b. Parabolic
    c. Oscillatory
    d. Linear
15. In a region with a uniform electric field, the number of lines of force per unit area is E. If a spherical metallic conductor is placed in the area, the field inside the conductor will be
    a. Zero
    b. E
    c. More than E
    d. Less than E
16. CRT stands for
    a. Cathode ray tube
    b. Compact ray tube
    c. Compact ray terminal
    d. Cathode ray terminal
17. In petrol engine suction consists of
    a. Air only
    b. A mixture of air and fuel
    c. Fuel only
    d. None
18. Transfer of electric power from primary to secondary in a transformer takes place……
    a. Electrically
    b. Electromagnetically
    c. Magnetically
    d. None
19. The rate at which electricity is dissipated or consumed by an appliance is called electrical
    a. Current
    b. Power
    c. Potential
    d. Energy
20. MBR stands for
    a. Master boot record

b. Master byte record
c. Mother board rating
d. None

21. Gypsum is added in cement
    a. After burning
    b. Before burning
    c. After grinding
    d. blending
22. Which of the following is not the example of renewable energy?
    a. Bioethanol
    b. Wind energy
    c. Tar sand
    d. Tidal energy
23. The characteristics of fuse wire is
    a. High melting point
    b. Low melting point
    c. Low resistivity and high melting point
    d. High resistivity and low melting point
24. The SI unit of electric current is
    a. Ohm
    b. Ampere
    c. Volt
    d. Faraday
25. Two bulbs in a house ,one glows brighter than other .The bulb with larger resistance is
    a. Dim bulb
    b. The brighter bulb
    c. Both have same
    d. None

English

26. The telephone _____ several times before I answered.
    a. rang
    b. was ringing
    c. had rung
    d. has rung
27. Somebody likes tea, _____?
    a. Wasn't they
    b. Didn't they
    c. Aren't they
    d. Don't they
28. You are _____ the finance committee.
    a. in
    b. at
    c. on
    d. with
29. I have acceded _____ his request.
    a. by
    b. to
    c. in
    d. of
30. The two person resemble ____ each other
    a. with
    b. to
    c. of
    d. None

31. The boy you met yesterday in in class _____
    a. ninth
    b. the ninth
    c. the nine
    d. nine
32. He likes being talked ___
    a. for
    b. at
    c. about
    d. with
33. He _____ ages to master the subject.
    a. Has taken
    b. Will be taken
    c. Would taken
    d. Had taken
34. Only through diplomatic means can a formal agreement be _____
    a. reach
    b. to reach
    c. reached
    d. reaching
35. The doctor has given _____ all helps of her recovery.
    a. in
    b. away
    c. up
    d. off
36. Money paid for the use of road or bridge is known as:
    a. toll
    b. fees
    c. penalty
    d. donation
37. No sooner _____ one of the engines caught fire
    a. We'd taken off
    b. Had we taken off
    c. We took off
    d. We'd took off
38. I need ____ jug to store some water for tomorrow
    a. a
    b. an
    c. the
    d. some
39. Does this door knob _____ ?
    a. Come out
    b. Come off
    c. Comes in
    d. Comes out
40. They are happy and get along like
    a. Fish in water
    b. House on fire
    c. Best friends
    d. Twin sisters
41. It was not until she arrived in class_____ realized she had forgotten books.
    a. And she
    b. When she
    c. she
    d. that she
42. He is grown up now, and can look after himself. You ____ worry about him.

a. must
b. can not
c. need not
d. have to

43. The disease _____ wide spread destruction.
    a. brought up
    b. brought
    c. bought out
    d. brought off
44. This is the first time I _____ to a large audience.
    a. Am singing
    b. sang
    c. will sing
    d. have ever sung
45. The western part of Nepal receives less rainfall than _____ the eastern part.
    a. It does in
    b. does
    c. in
    d. in it does
46. He is as stubborn as a _____
    a. child
    b. bull
    c. donkey
    d. mule
47. The snake _____ as we approached
    a. Slipped away
    b. Ran away
    c. Slithered away
    d. Moved away
48. The majority _____ that the king will solve the problem soon
    a. believe
    b. believes
    c. have believed
    d. believed
49. He got into a fight yesterday afternoon while he was _____ a football match.
    a. watching
    b. looking
    c. seeing
    d. viewing
50. He was sorry to find that he had _____ leisure left
    a. A little
    b. little
    c. some
    d. few

Maths

51. If A and B are two sets, A-B is equal to
    a. $A \cap \bar{B}$ □
    b. $A \cup \bar{B}$
    c. $\bar{A} \cap B$
    d. $\bar{A} \cup B$
52. If the ordered pairs (x+y,1) and (2,2x-y) are equal then
    a. x=0 y=1
    b. x=1 y=0
    c. x=1 y=1

d. x=1 y=-1

53. The range of the function $y=x^2-6x+6$ is:
    a. $(-3,\infty)$
    b. $[-3,\infty)$
    c. $(0,\infty)$
    d. $[0,\infty)$
54. What is the value of log a $\sqrt{a\sqrt{a\sqrt{a^2}}}$
    a. 4
    b. 3
    c. 2
    d. 1
55. The value of cosA + cos(120°+A) + cos(120°-A) is
    a. 0
    b. 1
    c. -1
    d. 2
56. Solve : $2\cos^2 x - 5\cos x + 2 = 0$ for $180° < x < 360°$
    a. 300°
    b. 60°
    c. 240°
    d. 360°
57. In triangle ABC, if a = 3, b = 4 and c = 5, find $\cos\frac{A}{2}$
    a. $\frac{2}{\sqrt{10}}$
    b. $\frac{-3}{\sqrt{10}}$
    c. $\frac{3}{\sqrt{10}}$
    d. $\frac{-2}{\sqrt{10}}$
58. In a triangle if A = 75° and B=60° then the ratio a:b:c is
    a. $\sqrt{6}:\sqrt{3}+1:2$
    b. $\sqrt{3}+1:\sqrt{6}:2$
    c. $2:\sqrt{3}+1:\sqrt{6}$
    d. $\sqrt{6}:2:\sqrt{3}+1$
59. The sum $1+\frac{3}{2}+\frac{5}{4}+\frac{7}{8}+\ldots\ldots$ to infinity is
    a. 6
    b. 7
    c. 8
    d. 9
60. Solve for x $\begin{vmatrix} x & 2 & 3 \\ -1 & 0 & 1 \\ 2 & -2 & 0 \end{vmatrix} = 0$
    a. -5
    b. 5
    c. 0
    d. 4
61. Simplify : $3\sqrt{-4}+5\sqrt{-9}-4\sqrt{-25}$
    a. $-i$
    b. 1
    c. i
    d. -1
62. Express $2+2\sqrt{3}i$ in polar form
    a. $4(cos30°+isin30°)$
    b. $4(cos60°+isin60°)$

c. $4(cos90° + isin90°)$
d. $4(cos120° + isin120°)$

63. The equation whose one root is $2 + \sqrt{3}$ is
    a. $x^2 + 4x + 1 = 0$
    b. $x^2 + 4x - 1 = 0$
    c. $x^2 - 4x + 1 = 0$
    d. $x^2 - 4x - 1 = 0$
64. The acute angle between the lines $x - 3y - 6 = 0$ and $y = 2x + 5$ is
    a. 30°
    b. 60°
    c. 45°
    d. 135°
65. Length of perpendicular from (1,1) to line 4x+3y-12=0 is
    a. 2
    b. 1
    c. 3
    d. 4
66. The length of the intercept made by the straight line x+y=3 with the circle x^2+y^2-2x-3=0
    a. 2
    b. $2\sqrt{3}$
    c. $2\sqrt{2}$
    d. $2\sqrt{5}$
67. Evaluate $lim_{x\to 0}\frac{5x^2+3x}{x}$
    a. 0
    b. 3
    c. ∞
    d. 5
68. Evaluate $lim_{x\to 0}\frac{tanx}{x}$
    a. 1
    b. 0
    c. -1
    d. ∞
69. If $x = t + \frac{1}{t}$ and $y = t - \frac{1}{t}$ find $\frac{dy}{dx}$
    a. $\frac{t^2-1}{t^2+1}$
    b. $\frac{t^2+1}{t^2-1}$
    c. $\frac{2t-1}{2t+1}$
    d. $\frac{2t+1}{2t-1}$
70. Find the derivative of $\frac{1-tanx}{secx}$
    a. sinx+cosx
    b. sinx-cosx
    c. cosx-sinx
    d.–sinx-cosx
71. Find the interval in which the function f(x)=$2x^3$-$15x^2$+36x+1 is increasing
    a. (-∞,2)∪(3,∞)
    b. (-∞,2)
    c. (3,∞)
    d. (-∞,2]∪[3,∞)
72. The maximum value of f(x)=$2x^3$-$3x^2$-36 is
    a. -81
    b. 81
    c. -44

d. 44

73. Evaluate $\int \sqrt{1-sin2x}dx$
    a. sinx+cosx+c
    b. sinx-cosx+c
    c. cosx-sinx+c
    d. –sinx-cosx+c
74. Calculate the integral $\int logx\, dx$
    a. xlogx-x+c
    b. logx+c
    c. xlogx+x+c
    d. –logx+c
75. Evaluate $\int_0^{\sqrt{\frac{3}{2}}} \frac{dx}{\sqrt{(1-x^2)}}$
    a. $\frac{\pi}{2}$
    b. $\frac{\pi}{3}$
    c. $\frac{\pi}{4}$
    d. π

Chemistry

76. Number of tertiary carbon atoms in 2-methyl butan-2-ol is

a. 1 b. 2 c. 3 d. 4

77. $CHCl_3$ is stored in dark colored bottles, because it is

a. Anesthetic b. Oxidized to CCl_4 in light c. Oxidized to $COCl_2$ in light d. Reduced to $CHCl_2$ in light

78. Primary and secondary alcohols on action of reduced copper give

a. Aldehyde only b. Aldehydes and ketones respectively c. Ketones only

d. Ketones and aldehydes respectively

79. The reaction $C_2H_5ONa+C_2H_5I \rightarrow C_2H_5OC_2H_5+NaI$ is called

a. Hoffmann reaction b. Williamson synthesis c. Wurtz synthesis d. Wolff-Kishner reduction

80. Acetaldehyde and benzaldehyde can be distinguished by

a. Tollen's test b. 2,4-DNP test c. Iodoform test d.Wolff-Kishner reduction

81. Formic acid is obtained when

a. $(HCOO)_2Ca$ is heated with $(CH_3COO)_2Ca$ b.$(CH_3COO)_2Ca$ is heated with conc. H_2SO_4

c. Glycerol is heated with $(COOH)_2$ d. CH_3CHO is oxidized with $K_2CrO_7+H_2SO_4$

82. Which of the following is the weakest base

a.NH_3 b. CH_3NH_2 c. $(CH_3)_2NH$ d. $(CH_3)_3N$

83. Benzene diazonium chloride when heated with water produces

a. Cholorobenzene b. Phenol c. Benzyl alcohol d. Aniline

84. What will be the mass of 6.023 X 10^{23} molecules of carbon dioxide?

a. 17.01g b.16.00g c.44 g d. 56.20g

85. What is aqua regia

a. $3HCl + HNO_3$ b. $HCl + 3HNO_3$ c. $H_3PO_4 + H_2SO_4$ d. HCl

86. Which of the following compounds are used as refrigerant?

a. CH_3COCH_3 b. CCl_4 c. CF_4 d. CCl_2F_2

87. The shortest bond length is in

a. Ethylene b. Benzene c. Ethane d. Acetylene

88. Aniline reacts with diazonium salt to form

a. Diazonium benzene b. Hydrazonium benzene c. Aminoazobenzene d. Azoxybenzene

89. The heat of neutralization is highest in

a. $NaOH+CH_3COOH$ b.HCl+NaOH c.$NH_4OH+HCl$ d.$CH_3COOH+NH_4OH$

90. The formula of blue vitriol is:

a.$CuSO_4.5H_2O$ b.$CuSO_4$ c. $CuSO_4.H_2O$ d. CuSO4.7H2O

91. What is the pH of 0.1M sulphuric acid

a. 1 b. 2 c. 1.5 d. none

92. $FeSO_4.7H_2O$ is also known as:

a. Blue vitriol b. Malachite c. Calomel d. Green vitriol

93. The product of the reaction: $CH_3Cl+AgCN\rightarrow$ is

a. CH_3CN b. CH_3COOH c.CH_3CONH_2 d. CH_3NC

94. How many moles of Hydrogen atom are present in 180g of water?

a. 1 b.16 c. 18 d. 20

95. Permanent hardness of water may be caused by:

a. Calcium chloride b. Magnesium chloride

c. Calcium sulphate and magnesium sulphate d. All of the above

96. When alcohols are heated with sodium metal then treated with alkyl halides, to give:

a. Alkene b. Ether c. Aldehyde d. Alcohol

97. The C-C-C bond angle in benzene is

a.128^o b.120^o c.134^o d.180^o

98. How many grams of calcium are present in 250 g of calcium carbonate?

a. 160g b. 100g c. 170g d. 120g

99. Normality of 2m sulphuric acid is

a. 2 N b. N/2 c. 4N d. N/4 5.

100. The PH of normal KOH is

a. 1 b. 0 c. 14 d. 7

ANSWERS

Physics:

1. a	**2. a**	**3. b**	**4. d**	**5. b**
6. a	**7. b**	**8. c**	**9. a**	**10. c**
11. d	**12. b**	**13. b**	**14. a**	**15. a**
16. a	**17. b**	**18. b**	**19. b**	**20. a**
21. a	**22. c**	**23. d**	**24. b**	**25. a**

English:

26. c	**27. d**	**28. c**	**29. b**	**30. d**
31. d	**32. c**	**33. a**	**34. c**	**35. c**
36. a	**37. b**	**38. a**	**39. b**	**40. b**
41. d	**42. c**	**43. b**	**44. d**	**45. a**
46. d	**47. c**	**48. b**	**49. a**	**50. b**

Maths:

51. a	**52. c**	**53. b**	**54. d**	**55. a**
56. a	**57. c**	**58. b**	**59. a**	**60. a**
61. c	**62. b**	**63. c**	**64. c**	**65. b**
66. c	**67. b**	**68. a**	**69. b**	**70. d**
71. a	**72. d**	**73. c**	**74. a**	**75. b**

Chemistry

76. a	**77. c**	**78. b**	**79. b**	**80. c**
81. c	**82. a**	**83. b**	**84. c**	**85. a**
86. b	**87. d**	**88. c**	**89. b**	**90. a**
91. a	**92. d**	**93. d**	**94. d**	**95. d**
96. b	**97. b**	**98. b**	**99. c**	**100. c**