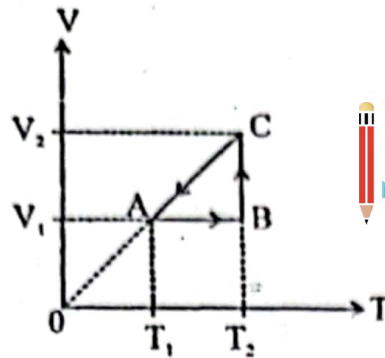


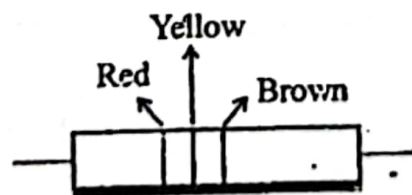
- The dimensions of $\frac{1}{\mu_0 \epsilon_0}$, where symbols have their usual meaning, are
 - $[L^{-1} T^1]$
 - $[L^{-1} T^2]$
 - $[L^2 T^{-2}]$
 - $[L^1 T^{-2}]$
- If the side of a cube is measured with 2% error, its volume would have an error of
 - $\frac{2}{3}\%$
 - 2%
 - 8%
 - 6%
- If \vec{A} and \vec{B} are two vectors, then the incorrect statement is :
 - $\vec{A} + \vec{B} = \vec{B} + \vec{A}$
 - $\vec{A} \cdot \vec{B} = \vec{B} \cdot \vec{A}$
 - $\vec{A} \times \vec{B} = \vec{B} \times \vec{A}$
 - $\vec{A} - \vec{B} = -(\vec{B} - \vec{A})$
- A flywheel rotates at a constant speed of 3000 revolutions per minute (r.p.m.). The angle des by the shaft in radian in one second is
 - 2π
 - 30π
 - 100π
 - 3000π
- A particle of mass 0.5 kg travels in a straight line with a velocity $v = (5x^{\frac{5}{2}})$ m/s. The work by the net force during the displacement from $x = 0$ to $x = 2$ m would be
 - 100 J
 - 200 J
 - 300 J
 - 400 J
- A particle is revolving in circular path of radius 'r' with angular velocity ' ω '. The radius is made 4% of the initial radius. What should be the value of new angular velocity so th centripetal force is same.
 - 3ω
 - 5ω
 - ω
 - 2ω
- The energy emitted per second by a black body at 27°C is 10 J. If the temperature of the black is increased to 327°C , the energy emitted per second will be
 - 80 J
 - 160 J
 - 2.15×10^5 J
 - 120 J
- A bomb at rest explodes into two fragments of masses 3 kg and 1 kg. The total kinetic energy fragments is 6×10^4 J. The kinetic energy of the bigger fragment is
 - 1.5×10^4 J
 - 3×10^4 J
 - 6×10^4 J
 - 4.5×10^4 J
- The density inside a solid sphere of radius 'R' varies linearly with the distance 'r' from the centre as $\rho = \frac{\rho_0 r}{R}$; where ρ_0 is the density at surface. The Gravitational field at a distance $\frac{3R}{2}$ from centre is :
 - $\frac{1}{2} \pi G \rho_0 R$
 - $\frac{4}{9} \pi G \rho_0 R$
 - $2 \pi G \rho_0 R$
 - $\frac{9}{4} \pi G \rho_0 R$

10. Figure shows a process ABCA performed on an ideal gas. The net work done by the gas in the process ABCA is



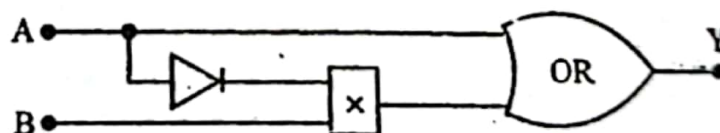
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- (a) $-nR(T_2 - T_1)$ (b) $nRT_2 \log_2 \left(\frac{P_2}{P_1}\right)$
 (c) $nR \left[T_2 \log_e \left(\frac{P_2}{P_1}\right) - (T_2 - T_1) \right]$ (d) 0
11. If the size of water droplet in clouds is 'a' and the wavelength of light is ' λ ' with $a \gg \lambda$, the clouds will appear generally
- (a) Reddish (b) Blue
 (c) White (d) Black
12. An engine running with a speed v , away from a mountain, emits whistle of frequency ν_0 . The frequency of the echo from mountain as heard by the engine driver is (c is velocity of sound)
- (a) $\nu = \nu_0 \left(1 - \frac{v}{c}\right)$ (b) $\nu = \nu_0 \left(1 - \frac{2v}{c}\right)$
 (c) $\nu = \nu_0 \left(1 - \frac{v}{c}\right)^2$ (d) $\nu = \nu_0$
13. An electron having energy of 12 eV, is circulating in a plane at right angle to uniform magnetic field of 10^{-4} Wb/m^2 . What is the orbital radius of the electron?
- (a) 20 cm (b) 12 cm
 (c) 18 cm (d) 9 cm
14. The resistance of a carbon resistor whose colour bands are shown in the figure is



- (a) 240Ω (b) $240 \Omega \pm 20\%$
 (c) 140Ω (d) $440 \Omega \pm 10\%$
15. A radio tuner has a frequency range from 500 kHz to 1.5 MHz. If its LC circuit has an effective inductance of $400 \mu\text{H}$, the range of its variable capacitor will be
- (a) 25 pF to 230 pF (b) 28 pF to 253 pF
 (c) 31 pF to 270 pF (d) 35 pF to 285 pF

16. An electromagnetic wave travels in a medium at a speed of 1.5×10^8 m/s. If the relative permittivity of the medium is 2.0, then the relative permeability of the medium will be
- (a) 3.0 (b) 2.5
(c) 2.0 (d) 1.5
17. In a hydrogen like atom e makes transition from an energy level with quantum number n to energy level with quantum number $(n - 1)$. If $n \gg 1$, then the frequency of radiation e is proportional to :
- (a) $\frac{1}{n}$ (b) $\frac{1}{n^2}$
(c) $\frac{1}{n^{3/2}}$ (d) $\frac{1}{n^3}$
18. If λ is the wavelength of a photon which decays into a pair of electron and positron via γ - the wavelength of the produced electron will be proportional to
- (a) $(\lambda)^{3/2}$ (b) λ
(c) $\frac{1}{\sqrt{\lambda}}$ (d) $\sqrt{\lambda}$
19. A Geiger Muller counter may be used to
- (a) measure energy of alpha particles (b) measure energy of beta particles
(c) differentiate between alpha and beta particles (d) None of the above
20. A Zener diode works on the principle of
- (a) tunneling of charge carriers across the junction (b) thermionic emission
(c) diffusion of charge carriers across the junction (d) hopping of charge carriers across the junction
21. The logic circuit shown in the following figure is equivalent to a OR-gate



The gate 'X' in the diagram is

- (a) NOR (b) NAND
(c) AND (d) XOR
22. Two conducting circular loops of radii R_1 and R_2 are placed in the same plane with their centers coinciding. If $R_1 > R_2$, the mutual inductance M between them will be directly proportional to
- (a) $\frac{R_1}{R_2}$ (b) $\frac{R_2}{R_1}$
(c) $\frac{R_2^2}{R_1}$ (d) $\frac{R_1^2}{R_2}$
23. A fully charged capacitor C with initial charge q_0 is connected to a coil of self inductance L . The time at which the energy is stored equally between the electric and the magnetic fields is
- (a) $\pi\sqrt{LC}$ (b) $\frac{\pi}{4}\sqrt{LC}$
(c) $2\pi\sqrt{LC}$ (d) \sqrt{LC}

24. In a uniform magnetic field of induction 'B', a wire in the form of a semicircle of radius 'r' rotates about the diameter of the circle with angular frequency ' ω '. The axis of rotation is perpendicular to the field. If the total resistance of the circuit is 'R' the mean power generated per period of rotation is :
- (a) $\frac{B\pi r^2 \omega}{2R}$ (b) $\frac{(B\pi r^2 \omega)^2}{8R}$
 (c) $\frac{(B\pi r \omega)^2}{2R}$ (d) $\frac{(B\pi r \omega^2)^2}{8R}$
25. A linear harmonic oscillator of force constant 2×10^6 N/m and amplitude 0.01 m has a total mechanical energy of 160 J. The values of maximum kinetic energy and minimum potential energy respectively, are :
- (a) 160 J and 40 J (b) 100 J and 60 J
 (c) 160 J and 0 J (d) 100 J and 0 J
26. The pK_a of acetic acid and pK_b of ammonium hydroxide are 4.76 and 4.75 respectively. The pH of ammonium acetate solution is
- (a) 7.005 (b) 8.005
 (c) 9.005 (d) 10.005
27. What pressure is exerted by a mixture of 2g of H_2 and 8g of N_2 at 273 K in a 5 litre vessel ? ($R = 0.821$ atm litre K^{-1} mol $^{-1}$)
- (a) 5.71 atm (b) 2.86 atm
 (c) 11.42 atm (d) 1.0 atm
28. A buffer is prepared by mixing 50 ml of 0.1M NaOH and 75 ml of 0.2M CH_3COOH (pK_a of $CH_3COOH = 4.74$). The pH of solution will be
- (a) 4.44 (b) 4.74
 (c) 4.04 (d) 5.04
29. A reaction $A + B \rightarrow C + D + q$ is found to have favourable entropy change. The reaction will be
- (a) possible at high temperature (b) possible at low temperature
 (c) not possible at any temperature (d) possible at any temperature
30. Which of following property decreases with dilution?
- (a) Specific conductance (b) Equivalent conductance
 (c) Molar conductance (d) Both (b) and (c)
31. If the ionic product of $Ni(OH)_2$ is 2.0×10^{-15} , then the molar solubility of $Ni(OH)_2$ in 0.10M NaOH will be
- (a) $[Ni^{2+}] = 2 \times 10^{-13}$ M (b) $[Ni^{2+}] = 3 \times 10^{-14}$ M
 (c) $[Ni^{2+}] = 2 \times 10^{-14}$ M (d) $[Ni^{2+}] = 1 \times 10^{-13}$ M
32. A cubic unit cell has one atom at each corner, one atom at each edge and one inside the body. Total number of atoms per unit-cell are .
- (a) 3.5 (b) 7
 (c) 5 (d) 10



33. An aqueous solution contains $5 \times 10^{-3} \text{M}$ NaOH and $7.5 \times 10^{-3} \text{M}$ Ca(OH)_2 . If both NaOH and Ca(OH)_2 be fully dissociated, the pH of this solution shall be
 (a) 1.7 (b) 12.3
 (c) 2.1 (d) 11.1
34. CMC value of any surfactant
 (a) decreases with increase of hydrophobic chain (b) increases with increase of hydrophobic chain
 (c) decreases with increase of hydrophobic chain (d) is independent of chain length
35. Which of the following is Wiegand's reagent used for the estimation of iodine number of oils and fats?
 (a) I_2 (b) ClI
 (c) ICl (d) IBr
36. The geometry and hybridization in $\text{N(CH}_3)_3$ and $\text{N(SiH}_3)_3$, respectively are
 (a) tetrahedral, sp^3 and pyramidal, sp^3 (b) pyramidal, sp^3 and triangular planar, sp^2
 (c) triangular planar, sp^2 and pyramidal, sp^3 (d) triangular planar, sp^2 and triangular planar
37. The correct ionization energy sequence is
 (a) $\text{IE}_1(\text{N}) < \text{IE}_1(\text{O})$ (b) $\text{IE}_1(\text{P}) < \text{IE}_1(\text{S})$
 (c) $\text{IE}_1(\text{Sb}) > \text{IE}_1(\text{Te})$ (d) $\text{IE}_1(\text{Po}) > \text{IE}_1(\text{Bi})$
38. Which metal shows maximum Malleable character?
 (a) Au (b) Ag
 (c) Cu (d) Pt
39. The number of hydrogen-bonded water molecule(s) in $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ is / are
 (a) one (b) three
 (c) five (d) two
40. Which of the following 'lanthanide ions' has the strongest tendency towards complex formation?
 (a) Sm^{3+} (b) Lu^{3+}
 (c) La^{3+} (d) Yb^{3+}
41. Which of the following metal ions is an important constituent of Ziegler-Natta catalyst?
 (a) Cr^{3+} (b) Fe^{3+}
 (c) Zn^{2+} (d) Ti^{4+}
42. The magnetic behaviour of NO and NO_2 are, respectively,
 (a) Diamagnetic and Paramagnetic (b) Paramagnetic and Diamagnetic
 (c) Paramagnetic and Paramagnetic (d) Diamagnetic and Diamagnetic
43. Alkyl halides react with Mg in dry ether to form
 (a) Magnesium halide (b) Grignard's reagent
 (c) Alkene (d) Alkyne

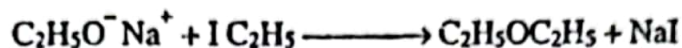
44. The best and latest technique for isolation, purification and separation of organic compound is

- (a) Crystallization (b) Distillation
(c) Sublimation (d) Chromatography

45. Which of the following class of compounds can be detected by Molisch's test ?

- (a) Nitrocompounds (b) Carbohydrates
(c) Amines (d) Primary alcohols

46. The reaction given below is known as

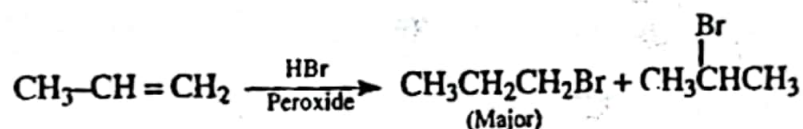


- (a) Kolbe's synthesis (b) Wurtz's synthesis
(c) Williamson's synthesis (d) Grignard's synthesis

47. A compound 'X' on ozonolysis forms two molecules of HCHO. The compound 'X' is

- (a) C_2H_4 (b) C_2H_2
(c) C_2H_6 (d) C_6H_6

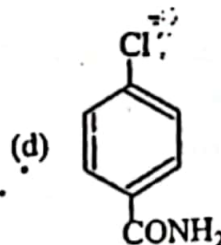
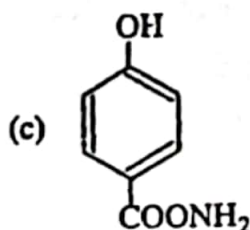
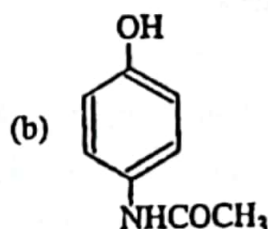
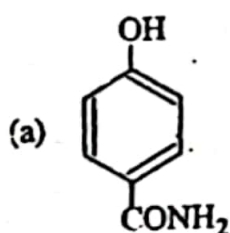
48. The reaction



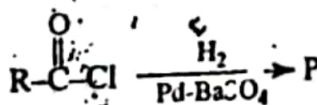
is classified as

- (a) Nucleophilic addition (b) Electrophilic addition
(c) Free radical addition (d) Electrophilic substitution

49. The correct structure of paracetamol is



50. What is 'P' in the following reaction ?



- (a) RCH_2OH
(c) RCHO

- (b) RCOOH
(d) RCH_3



51. The direction cosines of a line equally inclined to the axes are
 (a) $\frac{1}{3}, \frac{1}{3}, \frac{1}{3}$ (b) $-\frac{1}{3}, -\frac{1}{3}, -\frac{1}{3}$
 (c) $\pm\frac{1}{\sqrt{3}}, \pm\frac{1}{\sqrt{3}}, \pm\frac{1}{\sqrt{3}}$ (d) None of these
52. If α, β are roots of the equation $x^2 - p(x+1) - c = 0$, then $(\alpha+1)(\beta+1) =$
 (a) c (b) $c-1$
 (c) $1-c$ (d) None of these
53. The maximum value of $z = x + 3y$ subject to constraints —
 $2x + y \leq 20, x + 2y \leq 20, x \geq 0, y \geq 0$ is
 (a) 10 (b) 60
 (c) 30 (d) $\frac{50}{3}$
54. The locus of the point whose distance from x-axis is twice that from y-axis, is
 (a) $y = x$ (b) $y = 2x$
 (c) $x = 2y$ (d) $y = 4x$
55. If $\tan \frac{\theta}{2} = \frac{1}{2}$, then $\tan \theta$ is
 (a) $\frac{3}{4}$ (b) $\frac{4}{3}$
 (c) 1 (d) $\frac{1}{4}$
56. If the vectors $2\hat{i} - 3\hat{j} + 4\hat{k}$, $\hat{i} + 2\hat{j} - \hat{k}$ and $x\hat{i} - \hat{j} + 2\hat{k}$ are co-planer, then x is equal to
 (a) $\frac{8}{5}$ (b) $\frac{5}{8}$
 (c) 0 (d) i
57. The probability of getting an even number in a single throw of a die is
 (a) $\frac{1}{2}$ (b) $\frac{1}{3}$
 (c) $\frac{4}{3}$ (d) $\frac{1}{6}$
58. If μ is the mean of a distribution, then $\sum f_i(y_i - \mu)$ is equal to
 (a) M.D. (b) S.D.
 (c) 0 (d) None of these
59. A and B are two sets such that $n(A) = 12, n(B) = 17, n(A \cup B) = 21$, then $n(A \cap B)$ is
 (a) 6 (b) 4
 (c) 8 (d) 2
60. If $A = \begin{pmatrix} 1 & 3 \\ 2 & -2 \end{pmatrix}$, then A^{-1} equals to
 (a) $-\frac{1}{8} \begin{pmatrix} -2 & -3 \\ -2 & 1 \end{pmatrix}$ (b) $-\frac{1}{8} \begin{pmatrix} 3 & 1 \\ -2 & 2 \end{pmatrix}$
 (c) $\frac{1}{8} \begin{pmatrix} -1 & -3 \\ -2 & 2 \end{pmatrix}$ (d) $\frac{1}{8} \begin{pmatrix} 3 & 2 \\ 2 & 1 \end{pmatrix}$

61. The phenomenon that is dependent on low temperature treatment to activate the process of flowering is known as :
- (a) Abscission (b) Photoperiodism
(c) Vernalisation (d) Devernalisation
62. 'One gene one enzyme' concept was proposed by
- (a) Zinder and Laderberg (1975) (b) Beadle and Tatum (1958)
(c) Kornberg and Tatum (1992) (d) Laderberg and Tatum (1925)
63. Edible morels belong to which group of fungi ?
- (a) Zygomycetes (b) Phycomycetes
(c) Basidiomycetes (d) Ascomycetes
64. A sex linked disorder is :
- (a) Albinism (b) Phenylketonuria
(c) Haemophilia (d) Sickle cell anaemia
65. Which one of the following hemoproteins serves as electron carrier in both respiration and photosynthesis ?
- (a) cytochrome (b) ferredoxin
(c) cryptochrome (d) phytochrome
66. Which of the following is a four carbon compound of the Krebs cycle ?
- (a) succinate (b) citrate
(c) α -ketoglutarate (d) isocitrate
67. Which one of the following features is exclusive to the phylum Echinodermata ?
- (a) radial symmetry (b) eye spots
(c) water vascular system (d) neurosensory cells
68. Natural cell death is known as
- (a) necrosis (b) apoptosis
(c) pyknosis (d) autolysis
69. The primary role of HCG is to
- (a) maintain corpus luteum (b) initiate implantation
(c) imitate gastrulation (d) prevent polyspermy
70. Natural selection favours the leaf butterfly because it shows
- (a) counter shading (b) mimicry
(c) protective resemblance (d) warning colouration
71. Red colour of tomatoes, carrots and chillies is due to the presence of a type of carotene pigment called as
- (a) Lutein (b) Fucoxanthin
(c) Lycopene (d) Phycoerythrin

72. Which of the following ions is essential for photolysis of water ?
 (a) Manganese (b) Copper
 (c) Zinc (d) Magnesium
73. International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) is located at / in
 (a) Patancheru (b) Lucknow
 (c) Samastipur (d) New Delhi
74. Which of the following has double ringed structure ?
 (a) Adenine (b) Cytosine
 (c) Uracil (d) Thymine
75. "Golden rice" developed through transgene approach is enriched with-
 (a) High lysine content (b) High methionine content
 (c) High glutenin content (d) High vitamin A content
76. The transgenic plant "FlvrSavr" tomato carries an artificial gene for-
 (a) Delayed ripening process (b) Longer shelf life
 (c) Enhanced flavour (d) All of these
77. RNA interference involves-
 (a) Synthesis of cDNA and RNA using reverse transcriptase (b) Silencing of specific mRNA due to complementary RNA
 (c) Interference of RNA in the synthesis of DNA (d) Synthesis of mRNA from DNA
78. Which of the following is an improved variety of chicken ?
 (a) Jersey (b) Leghorn
 (c) Himgiri (d) Murra
79. The term 'inbreeding depression' is related to -
 (a) increased fertility and productivity (b) increased milk production
 (c) reduced fertility and productivity (d) reduced milk production
80. How many carbon atoms are generally used in composition of monosaccharides ?
 (a) 3 to 7 (b) 1 to 5
 (c) 5 to 10 (d) 5 to 15
81. Choose the correct passive voice of the following :
 Somebody cleaned this room yesterday.
 (a) This room had been cleaned yesterday. (b) This room was cleaned a long ago.
 (c) This room was cleaned yesterday. (d) This room has been cleaned yesterday.
82. The building was _____ in the fire.
 (a) total destroyed (b) destroyed in total
 (c) complete destroyed (d) totally destroyed

83. This book has been translated _____ many languages.
(a) into (b) to
(c) in (d) at
84. I don't remember _____ about the accident.
(a) anything (b) something
(c) everything (d) nothing
85. I fell asleep _____ I was watching the television.
(a) before (b) after
(c) until (d) while
86. It is _____ that the strike will end soon.
(a) supposing (b) expected
(c) belief (d) alleged
87. Which of the following sentences is in passive voice?
(a) Let him read a book. (b) Always reach the school in time.
(c) Please bring me a glass of water. (d) Let the salary be given to these clerks.
88. Sometimes, I dream _____ running away to a hill station.
(a) about (b) to
(c) of (d) from
89. The maintenance _____ law and order is the responsibility _____ the state.
(a) in, of (b) of, of
(c) in, for (d) of, in
90. He often _____ for a walk.
(a) go (b) had gone
(c) goes (d) is going
91. No _____ than five persons were drowned.
(a) fewer (b) lesser
(c) less (d) few
92. We have a test on Monday _____ we have to study.
(a) and (b) or
(c) but (d) so
93. The antonym of 'dejected' is
(a) jubilant (b) rejected
(c) irritable (d) romantic

94. I don't listen to English on the radio because it's too fast and I can't make head or tail of it. underlined idiom means :
- (a) can't understand (b) can't forget
(c) can't remember (d) can't imagine
95. "Why undertake such a perilous journey alone ?" The synonym of the underlined word is :
- (a) circumference (b) prerequisite
(c) dangerous (d) inhabitant
96. "The idea of war was totally abhorrent to her." The underlined word means :
- (a) hateful (b) obvious
(c) tempting (d) calculative
97. 'In black and white' means
- (a) in colourful (b) in writing
(c) in ink (d) in black
98. "Ignominy" means
- (a) state of disorder (b) loss of public property
(c) public shame (d) disappointment
99. The synonym of 'Magniloquent' is
- (a) amusing (b) humorous
(c) intelligent (d) boastful
100. The antonym of 'Hirsute' is
- (a) shaggy (b) bald
(c) garrulous (d) funny
-

ALIGARH MUSLIM UNIVERSITY, ALIGARH
Answer Key B.Sc.(Hons.) Agriculture Admission Test 2019-20
SERIES: A

Q.No.	Answer
1	C
2	D
3	C
4	C
5	B
6	B
7	B
8	A
9	B
10	C
11	C
12	B
13	B
14	B
15	B
16	C
17	D
18	D
19	D
20	A
21	C
22	C
23	B
24	B
25	B
26	A
27	A
28	A
29	D
30	A
31	A
32	C
33	B
34	A
35	C
36	B
37	D
38	A
39	A
40	B

Q.No.	Answer
41	D
42	C
43	B
44	D
45	B
46	C
47	A
48	C
49	B
50	C
51	C
52	C
53	C
54	B
55	B
56	A
57	A
58	C
59	C
60	A
61	C
62	B
63	D
64	C
65	A
66	A
67	C
68	B
69	A
70	C
71	C
72	A
73	A
74	A
75	D
76	D
77	B
78	B
79	C
80	A

Q.No.	Answer
81	C
82	D
83	A
84	A
85	D
86	B
87	D
88	C
89	B
90	C
91	A
92	D
93	A
94	A
95	C
96	A
97	B
98	C
99	D
100	B



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