

MODEL TEST PAPER

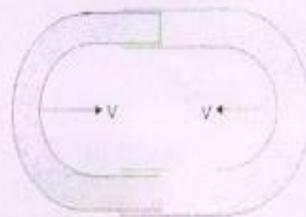
ENTRANCE EXAMINATION FOR ADMISSION TO B.Sc. (AGRICULTURE)

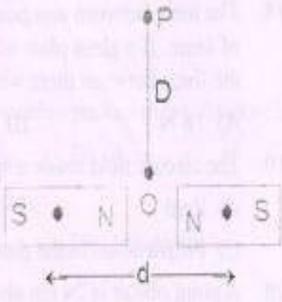
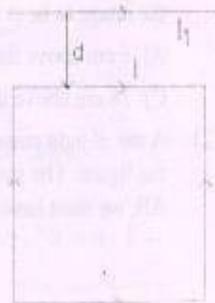
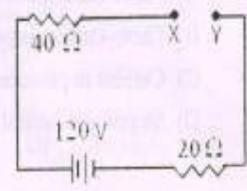
General Instructions for Students

1. Every candidate should carry his/her valid Roll No. cum Admit Card to the Entrance Test. No candidate without the valid Roll No. cum Admit Card will be allowed to enter the examination centre.
2. The question paper will be of Two Hours duration and will comprise of **Hundred** Multiple Choice Questions of **One** mark each.
3. There will be four sections, viz: *Physics, Chemistry, Biology OR Mathematics and General Awareness of the Subject.*
4. The candidates with 10 + 2 (Medical) will opt the section of Biology while the candidates with 10+2 (Non-Medical) will opt the Mathematics Section.
5. The candidate has to mark the right option against the question number in the OMR sheet **with black pen**. The circles marked with pencil or blue pen will not be marked.
6. **There will be no negative marking.**
7. The OMR must be handed over to the Room Supervisor even if candidate has not filled any option.
8. No candidate will be allowed to leave the examination hall before two hours.
9. Don't write/make any identification marks(s)/religious symbols/slogan(s) on the answer books.
10. The candidate must ensure that his OMR has been duly **stamped**.
11. Please ensure that you have signed the **attendance** sheet.
12. Mobile Phones and other electronic gadgets such as Bluetooth etc. are strictly prohibited in the Examination Centre.

PHYSICS

- If a small amount of antimony is added to germanium crystal :
 - It becomes a p-type semiconductor
 - The antimony becomes an acceptor atom
 - There will be more free electrons than holes in the semiconductor
 - Its resistance is increased
- In forward biasing of the p-n junction.,
 - The positive terminal of the battery is connected to p-side and the depletion region becomes thick
 - The positive terminal of the battery is connected to n-side and the depletion region becomes thin
 - The positive terminal of the battery is connected to n-side and the depletion region becomes thick
 - The positive terminal of the battery is connected to p-side and the depletion region becomes thin
- The electromagnetic radiation is caused by :
 - Stationary charge
 - Uniformly moving charges
 - Accelerated charges
 - All of these
- The oscillating electric and magnetic field vectors of electromagnetic wave are oriented along :
 - The same direction and in phase
 - The same direction but have a phase difference of 90°
 - Mutually perpendicular directions and are in phase
 - Mutually perpendicular directions but has a phase difference of 90°
- The half life of radium is about 1600 years. If 100 g of radium exists now, 25g will remain unchanged after :
 - 3200 years
 - 4800 years
 - 6400 years
 - 2400 years
- The nuclii ${}^7_7\text{N}^{14}$ and ${}^6_6\text{C}^{13}$ can be described as :
 - Isotones
 - Isobars
 - Isotopes
 - Isomers
- A 220 volts input is supplied to a transformer. The output circuit draws a current of 2.0 A at 440 Volts. If the efficiency of the transformer is 80, the current drawn by the primary windings of the transformer is :
 - 3.6 A
 - 2.8 A
 - 2.5 A
 - 5.0 A
- One conducting U tube can slide inside another as shown in figure, maintaining electrical contacts between the tubes. The magnetic field B is perpendicular to the plane of the figure. If each tube moves towards the other at a constant speed v , then the emf induced in the circuit in terms of B , l and v where l is the width of each tube will be :
 - $-Blv$
 - Blv
 - $2Blv$
 - Zero



9. The flux linked with a given coil at any instant 't' is given by $\phi = 10t^2 - 50t + 250$. The induced emf at $t = 3s$ is :
 A) -190 V B) -10 V C) 10 V D) 190 V
10. A bar magnet, of magnetic moment \vec{M} , is placed in magnetic field of induction \vec{B} . The torque exerted on it is ...
 A) $\vec{M} \cdot \vec{B}$ B) $-\vec{M} \cdot \vec{B}$ C) $\vec{M} \times \vec{B}$ D) $\vec{B} \times \vec{M}$
11. Two identical bar magnets are fixed with their centre at a distance 'd' apart. A stationary charge Q is placed at P in between the gap of the magnets at centre O as shown in figure. The force on the charge Q is ...
 A) directed perpendicular to the plane of paper
 B) zero
 C) directed along OP
 D) directed along PO
- 
12. A square loop, carrying a steady current I, is placed in a horizontal plane near a long straight conductor carrying a steady current I_1 at a distance 'd' from the conductor as shown in figure. The loop will experience
 A) A net repulsive force away from the conductor
 B) A net torque acting upward perpendicular to the horizontal plane
 C) A net torque acting downward normal to the horizontal plane
 D) A net attractive force towards the conductor
- 
13. A circular loop of radius R, carrying current I, lies in X-Y plane with its centre at origin. The total magnetic flux through X-Y plane is :
 A) directly proportional to I B) directly proportional to R
 C) inversely proportional to R D) zero
14. A current of 2A passing through a conductor produces 80J of heat in 10 s. The resistance of conductor in Ohm is ..
 A) 0.5 B) 2 C) 4 D) 20
15. In electrolysis, the amount of mass deposited or liberated at an electrode is directly proportional to :
 A) Square of electric charge B) Amount of charge
 C) Square of current D) Concentration of electrolyte
16. In the circuit shown in the figure the potential difference between X and Y will be :
 A) Zero Volts
 B) 20V
 C) 60V
 D) 120V
- 

BIOLOGY

51. Most likely reason for development of resistance in insects against pesticides is :
- A) Genetic recombination B) Acquired heritable change
C) Random mutations D) Directed mutations
52. Test cross is crossing between
- A) Genotype with dominant trait B) Genotype with recessive trait
C) F₁ hybrid with double recessive D) Two F₁ hybrids
53. Gametic maps of chromosomes are based on :
- A) Non disjunction B) Translocation
C) Dominance D) Genetic recombination
54. Grain colour of wheat is determined by three pairs of polygenes. In cross AABBCC x aabbcc, progeny resembling either parent in F₂ generation is :
- A) Half B) One third
C) Less than 5% D) 75%
55. Which mendelian idea is depicted by a cross in which F₁ generation resembles both the parents :
- A) Codominance B) Incomplete dominance
C) Law of dominance D) Inheritance of one gene
56. Which one of the following statements is not true for cancer cells in relation to mutations?
- A) Mutations destroy telomerase inhibitor
B) Mutations inactive the cell control
C) Mutations inhibit production of telomerase
D) Mutations in proto-oncogenes accelerate the cell cycle
57. The mechanism that causes a gene to move from one linkage group to another is called :
- A) Duplication B) Translocation C) Crossing-over D) Inversion
58. Number of triplet codons having all the three bases same in 64 triplet codons is :
- A) 12 B) 8 C) 6 D) 4
59. Which one of the following does not follow the central dogma of molecular biology :
- A) Mucor B) Chlamydomonas
C) HIV D) Pea
60. The unequivocal proof of DNA as the genetic material came from studies on a :
- A) Viroid B) Bacterial virus C) Bacterium D) Fungus
61. Basis of DNA fingerprinting is :
- A) Relative proportion of purines and pyrimidines
B) Relative difference in DNA occurrence in blood, skin and saliva
C) Relative amounts of DNA in ridges and grooves of fingerprints
D) Satellite DNA occurring as highly repeated short DNA segments

62. Which one is not applicable of RNA?
- A) Complementary base pairing B) 5' phosphoryl and 3' hydroxyl ends
 C) Heterocyclic nitrogenous bases D) Chargaff's rule
63. Just as a person moving from Delhi to Shimla to escape the heat for the duration of hot summer, thousands of migratory birds from Siberia and other extremely cold northern regions move to :
- A) Western Ghat B) Meghalaya
 C) Corbett National Park D) Keoladeo Ghana National Park
64. Tubectomy :
- A) Prevents implantation B) Prevents foetal development
 C) Prevents fertilization D) None of these
65. Capacitation of sperms occur in :
- A) Female genital tract B) Vas efferens
 C) Vas Deferens D) Vagina
66. The deme is a group of :
- A) Genes in different environment B) Chromosomes in same organism
 C) Individuals in same environment D) Populations with same gene pool
67. Which one of the following is the secondary egg membrane in mammals :
- A) Corona radiata B) Chorion
 C) Vitelline membrane D) Zona pellucida
68. Anaemia in alcoholism may be due to the deficiency of :
- A) Vitamin H B) Vitamin B₂
 C) Folic acid & Vitamin B₁₂ D) Vitamin C
69. Mendel's experimental organism was :
- A) Homo sapiens B) Antirrhinum majus
 C) Pisumsativum D) Drosophila melanogaster
70. Athlete foot disease is caused by :
- A) Tinea pedis B) Tinea capitis C) Rickettsia D) Candida albicans
71. In F₂ generation of quantitative inheritance, a ratio of 1:4:6:4:1 is obtained instead of :
- A) 7:4:1:4 B) 3:1 C) 9:3:3:1 D) 8:6:4:1
72. The infective stage of malaria is :
- A) Sporozoite B) Merozoite C) Schizont D) Gametes
73. Who wrote the famous book "Origin of Species" :
- A) Lamarck B) Darwin C) de Vries D) Mendel
74. In any food chain the largest population is that of :
- A) Primary consumers B) Tertiary consumers
 C) Producers D) Decomposers
75. Smallest part of DNA that undergoes recombination is :
- A) Muton B) Cistron C) Replicon D) Recon

OR
MATHEMATICS

51. If $a * b = a^{b-1}$, $*$ be a binary operation then $4 * 3$ is equal to :
 A) 16 B) 12 C) 64 D) 81
52. Let A be the non-void set of the children in a family. The relation x is a brothers of y on A is :
 A) Reflexive B) Symmetric C) Transitive D) None of these
53. Range of the function $f(x) = \frac{|x-1|}{x-1}$ is :
 A) $\{-1, 1\}$ B) $\{-1, 2\}$
 C) $\{-2, 2\}$ D) None of these
54. The domain of the derivative of the function $f(x) = \begin{cases} \tan^{-1} x & \text{if } |x| \leq 1 \\ \frac{1}{2}(|x|-1) & \text{if } |x| > 1 \end{cases}$ is :
 A) $\mathbb{R} - \{0\}$ B) $\mathbb{R} - \{1\}$ C) $\mathbb{R} - \{-1\}$ D) $\mathbb{R} - \{-1, 1\}$
55. If $A = \begin{bmatrix} \alpha & \beta \\ \gamma & -\alpha \end{bmatrix}$ is such that $A^2 = I$, then :
 A) $1 + \alpha^2 + \beta\gamma = 0$ B) $1 - \alpha^2 + \beta\gamma = 0$
 C) $1 - \alpha^2 - \beta\gamma = 0$ D) $1 + \alpha^2 - \beta\gamma = 0$
56. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, Then $1 + A + A^2 + \dots \dots \dots \infty$ is :
 A) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ B) $\begin{bmatrix} -1 & -2 \\ -3 & -4 \end{bmatrix}$ C) $\begin{bmatrix} \frac{1}{2} & \frac{1}{3} \\ -\frac{1}{2} & 0 \end{bmatrix}$ D) $\begin{bmatrix} \frac{1}{4} & \frac{1}{3} \\ \frac{1}{2} & 0 \end{bmatrix}$
57. If $D_r = \begin{bmatrix} 2^r - 1 & 2 \cdot 3^r - 1 & 4 \cdot 5^r - 1 \\ \alpha & \beta & \gamma \\ 2^n - 1 & 3^n - 1 & 5^n - 1 \end{bmatrix}$ then the value of $\sum_{r=1}^n D_r$ is :
 A) 0 B) $\alpha\beta\gamma$ C) $\alpha + \beta + \gamma$ D) $\alpha \cdot 2^n + \beta \cdot 3^n + \gamma \cdot 4^n$
58. The matrix $A = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$ is a
 A) Unit matrix B) Diagonal matrix
 C) Symmetric matrix D) Skew-symmetric matrix
59. If the function f is defined by $f(x) = \begin{cases} 3 & , x \neq 0 \\ a+1 & , x = 0 \end{cases}$ and f is continuous at $x = 0$, then value of ' a ' is :
 A) 1 B) 2 C) 3 D) 4

60. If $f(x) = |x-2|$ and $g(x) = f(f(x))$ then for $x > 2$, $g'(x)$ equals :
- A) -1 B) 1 C) 0 D) None of these
61. The normal to a given curve is parallel to x-axis if :
- A) $\frac{dy}{dx} = 0$ B) $\frac{dy}{dx} = 1$ C) $\frac{dx}{dy} = 0$ D) $\frac{dx}{dy} = 1$
62. The function $f(x) = \max \{ (1-x), (1+x), 2 \}$, $x \in (-\infty, \infty)$ is :
- A) Continuous at all points
 B) Differentiable at all points
 C) Differentiable at all points except at $x = 1$
 D) Continuous at all points except at $x = \pm 1$, where it is discontinuous
63. $\int \frac{dx}{e^x + e^{-x}}$ is equal to :
- A) $\tan^{-1}(e^x) + c$ B) $\tan^{-1}(e^{-x}) + c$
 C) $\log(e^x - e^{-x}) + c$ D) $\log(e^x + e^{-x}) + c$
64. $\int \frac{x dx}{(x-1)(x-2)}$ equals :
- A) $\log \left| \frac{(x-1)^2}{x-2} \right| + c$ B) $\log \left| \frac{(x-2)^2}{x-1} \right| + c$
 C) $\log \left| \frac{(x-1)^2}{x-2} \right| + c$ D) $\log |(x-1)(x-2)| + c$
65. The area of the figure bounded by the curves $y = |x-1|$ and $y = 3 - |x|$ is :
- A) 2 B) 3 C) 4 D) 1
66. Value of $\int \frac{e^x}{\sqrt{4 - e^{2x}}} dx$ is :
- A) $\sin^{-1} \left(\frac{e^x}{4} \right) + c$ B) $\sin^{-1}(e^x) + c$
 C) $\sin^{-1}(2e^x) + c$ D) $\sin^{-1} \left(\frac{e^x}{2} \right) + c$
67. Which of the following differential equations has $y = c_1 e^x + c_2 e^{-x}$ as the general solution :
- A) $\frac{d^2 y}{dx^2} + y = 0$ B) $\frac{d^2 y}{dx^2} - y = 0$
 C) $\frac{d^2 y}{dx^2} + 1 = 0$ D) $\frac{d^2 y}{dx^2} - 1 = 0$
68. The general solution of the differential equation $\frac{y dx - x dy}{y} = 0$ is :
- A) $xy = c$ B) $x = cy^2$ C) $y = cx$ D) $y = cx^2$

69. The number of vectors of unit length perpendicular to the vectors $\vec{a} = \hat{i} + \hat{j}$ and $\vec{b} = \hat{j} + \hat{k}$ is :
 A) 1 B) 2 C) 4 D) infinite
70. If \vec{a} is a non-zero vector of magnitude 'a' and λ is non-zero scalar, then $(\lambda \vec{a})$ is unit vector of :
 A) $\lambda = 1$ B) $\lambda = -1$ C) $a = |\lambda|$ D) $a = \frac{1}{|\lambda|}$
71. If α, β, γ are the angles which a directed line makes with the +ve directions of the co-ordinate axis than $\sin^2 \alpha + \sin^2 \beta + \sin^2 \gamma$ is equal to :
 A) 1 B) 2 C) 3 D) None of these
72. The planes $2x - y + 4z = 5$ and $5x - 2.5y + 10z = 6$ are :
 A) Perpendicular B) Parallel
 C) Intersect y -axis D) Passes through $(0, 0, \frac{5}{4})$
73. The equation $|\vec{r}|^2 - 2(\vec{r} \cdot \vec{a}) + \lambda = 0$ represents a
 A) Plane B) Straight Line C) Sphere D) None of these
74. If $P(A) = \frac{1}{2}, P(B) = 0$, then $P(A/B)$ is :
 A) 0 B) $\frac{1}{2}$ C) Not defined D) 1
75. If A and B are two events, such that :
 A) $A \subset B$ b) $B \subset A$ C) $B = \phi$ d) $A = \phi$

GENERAL AWARENESS OF THE SUBJECT

76. It is the weed of crop
 A) Grain B) Wheat C) Maize D) Sarson
77. Leaf Fold is the pest of Crop
 A) Wheat B) Rice C) Maize D) Grain
78. Urea is a chemical substance which provides to plant
 A) Nitrogen B) Energy C) Protection D) Potassium
79. Flowering time of peas is
 A) October- November B) February- March
 C) June- July D) August- September
80. is native fruit plant of Amritsar
 A) Peach B) Peas C) Plum D) Palm
81. Best area for apple production is :
 A) Maharashtra B) Karnatka C) Kashmir D) Punjab

82. Seed rate of wheat per acre in kg is
- A) 10 kg B) 20 kg C) 30 kg D) 40 kg
83. Reason of low market price of potato is :
- A) More production B) Export Problem
C) Bad quality produce D) All of these
84. Sowing/planting time of Sugar cane is :
- A) June-July B) February- March C) April-May D) August-September
85. Low temperature during early stage of wheat is :
- A) Beneficial B) Harmful
C) Neither harmful neither beneficial D) None of these
86. Water required to produce one kg of paddy is :
- A) 30 litres B) 300 litres C) 3000 litres D) 30,000 litres
87. East- West length of one acre is Karm
- A) 36 B) 40 C) 44 D) 50
88. Cotton sowing time in Punjab is
- A) January-February B) March- April
C) June-July D) November-December
89. From the following which crop takes more time to mature :
- A) Toria B) Season C) Pea D) Barseem
90. Planting of potato is done on
- A) Dry soil B) Wet soil C) Puddled soil D) All of these
91. Which crop require less no. of irrigation :
- A) Wheat B) Rice C) Sugarcane D) Potato
92. Which one is Rabi Crop?
- A) Soybean B) Lentil C) Arhar D) Cowpea
93. From the following which crop is used as fodder :
- A) Barley B) Oat C) Wheat D) Rice
94. Underground water table on an average is
- A) 80 feet B) 180 feet C) 280 feet D) 380 feet
95. Whose milk contain more fat :
- A) Cow B) Buffalo C) Goat D) Sheep
96. Maida is the product of
- A) Rice B) Maize C) Wheat D) Grain
97. In the present period, one bag of wheat in mkt. contain Grains.
- A) 100 kg B) 65 kg C) 50 d) 35
98. Machine used to harvest and thrash wheat is called :
- A) Haramba B) Thresher C) Combine harvester D) Reaper
99. Loose smut (Kangiari) is a disease of
- A) Rice B) Wheat C) Sunflower D) Sugarcane
100. Geographical area of Punjab is :
- A) 50 lac hector B) 50 lac km² C) 50 lac acres D) 50 lac m²