



PURBANCHAL UNIVERSITY
Gothgaun, Morang
FACULTY OF SCIENCE & TECHNOLOGY
ENTRANCE EXAMINATION – 2077 (2021)

**BE (Biomedical) / B.Sc. (Hon.) Ag. / B.Sc. Forestry / B.V.Sc. & A.H. /
B.Sc. Biotechnology / B.Tech. Biotechnology / B.Tech. Food Technology**

Time: 2:00 Hours

Total Marks: 100

Choose the most appropriate answer and **DARKEN** the circle on the attached **ANSWER SHEET**.
Answer all questions. All questions carry equal marks.

- Where will go from here?
(a) you (b) us (c) me (d) them
- In a sentence that begins with dependant clause, we place a in the middle.
(a) semicolon (b) colon (c) full stop (d) comma
- Identify the sentence that doesn't have an adjective.
(a) The small dog barked. (b) We had chocolate milk.
(c) She had a red scarf. (d) Can we play volleyball?
- But he found a friend in his difficult hour.
(a) need (b) for (c) in need (d) ought to
- My parents cook dinner. Make it negative.
(a) My parents didn't cook dinner. (b) My parents don't cook dinner.
(c) My parents doesn't cook dinner. (d) My parents will not cook dinner.
- I arrived class on time.
(a) at (b) on (c) in (d) about
- I'm worried, and
(a) you are also (b) so are you (c) so do you (d) you too
- I have problem. Can you help me?
(a) the (b) an (c) a (d) No article
- I'm not frightened, and
(a) nor are you (b) either you (c) you either (d) not either you
- Children are the delight the house.
(a) for (b) of (c) to (d) with
- Which of the followings is passive voice?
(a) He may help me with the task. (b) He is known to all.
(c) Who has created this nuisance? (d) Someone stole my bag.
- Everyone the building was searched by the police.
(a) enter (b) entered (c) entering (d) enters
- UAE is prosperous country.
(a) A, the (b) The, a (c) A, an (d) The, the
- I should like tomorrow.
(a) swim (b) swimming (c) to swim (d) swum
- Would you please me your pen?
(a) lending (b) lent (c) lend (d) to lend

16. If $f(x) = \frac{3x+2}{5x-3}$, then $f^{-1}(x)$ is
- (a) $\frac{5x-3}{3x+2}$ (b) $\frac{3x-2}{5x+3}$ (c) $\frac{3x+2}{5x-3}$ (d) $\frac{2-3x}{3-5x}$
17. The value of $\frac{1}{2!} - \frac{1}{3!} + \frac{1}{4!} - \frac{1}{5!} + \dots$ is equals to
- (a) e (b) e^{-1} (c) $\log 2$ (d) $\log\left(\frac{2}{3}\right)$
18. The distance between the lines $4x + 3y = 11$ and $8x + 6y = 15$ is
- (a) 8 units (b) $7/2$ units (c) $7/10$ units (d) $7/3$ units
19. The center of circle $3x^2 + 3y^2 + 5x - 6y + 9 = 0$ is
- (a) $\left(\frac{5}{3}, 2\right)$ (b) $\left(-\frac{5}{6}, 1\right)$ (c) (5, 6) (d) $\left(-\frac{5}{2}, 3\right)$
20. A function $y = f(x)$ is increasing if
- (a) $\frac{dy}{dx} > 0$ (b) $\frac{dy}{dx} < 0$ (c) $\frac{dy}{dx} = 0$ (d) $\frac{d^2y}{dx^2} > 0$
21. $\log_5 a, \log_5 x = 2$, then x is equals to
- (a) 25 (b) a^2 (c) 10 (d) 32
22. For the point of inflection of the curve, $y = f(x)$ is
- (a) $\frac{d^2y}{dx^2} = 0$ (b) $\frac{dy}{dx} = 0$ (c) $\frac{d^2y}{dx^2} > 0$ (d) $\frac{d^2y}{dx^2} < 0$
23. If a, b, c form arithmetic sequence, then
- (a) $b = ab$ (b) $b^2 = ac$ (c) $b^2 > ac$ (d) $b^2 < ac$
24. The angle between the lines $2x - 3y + 7 = 0$ and $7x + 4y - 9 = 0$ is
- (a) $\tan^{-1}\left(\frac{2}{29}\right)$ (b) $\tan^{-1}\left(\pm \frac{29}{2}\right)$ (c) $\tan^{-1}\left(\pm \frac{3}{29}\right)$ (d) $\tan^{-1}\left(\pm \frac{29}{3}\right)$
25. If $x = 2at$ and $y = at^2$, then dy/dx is equals to
- (a) $2t$ (b) t (c) $3t$ (d) $4t$
26. The length of a tangent from a point A at a distance 5 cm from the centre of the circle is 4 cm. The radius of the circle is
- (a) 3cm (b) 5cm (c) 7cm (d) 10cm
27. The value of $\log 1/10000$ is equal to
- (a) 2 (b) 3 (c) -4 (d) -2
28. The value of $\sin 2A$ is
- (a) $\sin A \cos A$ (b) $\sin A + \cos A$ (c) $2 \sin A \cos A$ (d) $2 \sec A \tan A$
29. The area of parallelogram whose adjacent sides are $\hat{i} - 2\hat{j} + 3\hat{k}$ and $2\hat{i} + \hat{j} - 4\hat{k}$ is
- (a) $10\sqrt{6}$ (b) $5\sqrt{6}$ (c) $10\sqrt{3}$ (d) $5\sqrt{3}$
30. If $x = 2t$, $y = 2t^2$, then $\frac{dx}{dy}$ is equals to
- (a) $\frac{y}{x}$ (b) $\frac{1}{x}$ (c) $\frac{1}{t}$ (d) $\frac{x}{y}$
31. The relation of emissive power with temperature is
- (a) T (b) T^4 (c) T^2 (d) T^4

32. When a gas undergoes adiabatic expansion, its internal energy
 (a) decreases (b) increases (c) remains the same (d) None of these
33. The mass of a substance liberated during electrolysis in a given time depends upon
 (a) electric current (b) resistance (c) power (d) temperature
34. In stable nuclei, the relation between the number of neutrons (N) and the number of protons (Z) is
 (a) $N < Z$ (b) $N > Z$ (c) $N = Z$ (d) $N \geq Z$
35. The efficiency of Carnot engine depends on
 (a) working substance (b) temperature of source
 (c) temperature of sink (d) temperature of both source and sink
36. The photoelectric effect on metal occurs only when frequency of the incident light is more than its
 (a) stopping potential (b) threshold frequency
 (c) critical field (d) work function
37. When an electron is accelerated through a potential difference of 1.6×10^5 V, it acquires an energy of
 (a) 10^{-24} J (b) 10^{-14} J (c) 2.56×10^{-14} J (d) 1.6×10^5 J
38. The angular momentum of a body of moment of inertia I is L. Its kinetic energy is
 (a) $\frac{L^2}{I^2}$ (b) $\frac{L}{2I}$ (c) $\frac{L^2}{2I}$ (d) $\frac{1}{2} IL^2$
39. Ball pen functions on the principle of
 (a) Viscosity (b) Boyle's law (c) Gravitational force (d) Surface tension
40. The temperature of a body rises by 25°C . The increase on Fahrenheit scale would be
 (a) 25°F (b) 45°F (c) 100°F (d) 180°F
41. Three different capacitors are connected in series. Then
 (a) they will have equal charges (b) they will have same potential
 (c) both a & b (d) None of these
42. An electric field can deflect
 (a) γ -rays (b) α -particles (c) neutrons (d) X-rays
43. In a compound microscope, the intermediate image is
 (a) virtual, erect and magnified (b) real, inverted and magnified
 (c) real, erect and magnified (d) virtual, erect and reduced
44. SI unit of surface integral of electric field is
 (a) V (b) Vm (c) NC^{-1}m (d) Cm^{-3}
45. In radioactive element, β rays emit from
 (a) nucleus (b) outer orbit (c) inner orbit (d) None of these
46. The pressure exerted by a gas in a container is due to
 (a) collisions of the gas molecules with each other
 (b) collisions of the gas molecules with the wall
 (c) reactions of the gas molecules to give product
 (d) force of gravity on the gas molecule
47. What makes the atomic mass fractional?
 (a) Number of unpaired electrons (b) Quantum number
 (c) Wave nature of electrons (d) Presence of isotopes

48. In the reaction, $\text{H}_2\text{S} + \text{Cl}_2 = 2\text{HCl} + \text{S}$, H_2S acts as
 (a) Oxidizing agent (b) Reducing agent (c) Bleaching agent (d) Analysing agent
49. Elements with zero electro negativity are
 (a) Boron and Carbon (b) Beryllium and Helium
 (c) Lithium and Sodium (d) Fluorine and Chlorine
50. Heavy water is a compound of
 (a) Oxygen and heavier isotopes of hydrogen
 (b) Hydrogen and heavier isotopes of oxygen
 (c) Heavier isotopes of hydrogen and oxygen
 (d) None of these
51. Petroleum is a the mixture of mainly
 (a) Alkanes (b) Alkynes (c) Alkenes (d) Alkyl halides
52. The indicator used for titration of NH_4OH and CH_3COOH is
 (a) Methyl orange (b) Phenolphthalein (c) Both a and b (d) None of these
53. Which has maximum first ionization energy?
 (a) C (b) N (c) B (d) O
54. Heavy water is represented as
 (a) H_3O (b) T_2O (c) D_2O (d) H_2O_2
55. Which of the following oxides is amphoteric?
 (a) MgO (b) Fe_2O_3 (c) ZnO (d) Cr_2O_3
56. When 100ml M- H_2SO_4 solution is mixed with 100ml of M NaOH solution, the resulting solution will be
 (a) Acidic (b) Alkaline (c) Neutral (d) Strongly alkaline
57. The weight of sodium carbonate anhydrous required to prepare one liter of N/10 sodium carbonate solution is
 (a) 10.6 grams (b) 5.3 grams (c) 10.3 grams (d) 12 grams
58. 280 ml of dry hydrogen gas is displaced by 5.95 g of unknown metal, the equivalent weight of metal is
 (a) 9.2 (b) 12.23 (c) 23.8 (d) 31.75
59. In defining Charle's law, the quantity which remains constant is
 (a) Force (b) Pressure (c) Temperature (d) Volume
60. Which one will have the highest 2nd ionization energy?
 (a) $1s^2 2s^2 2p^6 3s^1$ (b) $1s^2 2s^2 2p^4$ (c) $1s^2 2s^2 2p^6$ (d) $1s^2 2s^2 2p^6 3s^2$
61. Which one of the following compounds does NOT cause hardness in water?
 (a) Calcium chloride (b) Magnesium chloride
 (c) Sodium chloride (d) Magnesium sulphate
62. Isopropyl alcohol on oxidation gives which of the followings?
 (a) Acetone (b) Acetaldehyde (c) Ether (d) Ethylene
63. Chlorination of alkanes is an example of
 (a) Substitution (b) Elimination (c) Free radical (d) Addition
64. An element of atomic number 29 belongs to
 (a) s-block (b) p-block (c) d-block (d) f-block
65. In the preparation of Vanaspati ghee, the chemical reaction involving hydrogen in the presence of catalyst is called
 (a) Reduction (b) Hydrogenation (c) Dehydrogenation (d) Oxidation

66. Branch of biology which deals with the study of inheritance of characters is called
 (a) Cytology (b) Genetics (c) Evolution (d) Anatomy
67. Symbiotic relationship between algae and fungi occurs in
 (a) Mycorrhiza (b) Azolla (c) Nostoc (d) Lichens
68. When stamens are attached with petals, it is called as
 (a) Epiphyllous (b) Episepalous (c) Epipetalous (d) Gynandrous
69. Pappus is a modification of
 (a) Corolla (b) Androecium (c) Calyx (d) Gynoecium
70. On fertilization, the secondary nucleus forms
 (a) Seed (b) Endosperm (c) Embryo (d) Cotyledons
71. Oxyosomes are found in the
 (a) Chloroplast (b) Mitochondria (c) Nucleus (d) Ribosomes
72. The nucleus was first identified by
 (a) Robert Hooke (b) Nerenberg (c) Robert Brown (d) Hargobind Khorana
73. Cell organelle which has electronic transport system (ETS) is
 (a) Chloroplast (b) Mitochondria (c) Centriole (d) Golgibodies
74. In plants, the food is stored in
 (a) Collenchyma (b) Xylem (c) Sclerenchyma (d) Parenchyma
75. Sclerenchymatous hypodermis is found in
 (a) Monocot roots (b) Dicot stems (c) Monocot stems (d) Gymnosperm stems
76. Penicillin was discovered by
 (a) Robert Koch (b) S. Waksman (c) Alexander Fleming (d) C. J. Alexopoulos
77. Carrier of oxygen in human blood is
 (a) Plasma (b) Haemoglobin (c) Lymphocytes (d) Leucocytes
78. Pyramid of energy is
 (a) Inverted (b) First upright then inverted
 (c) Upright (d) First inverted then upright
79. The smallest national park of Nepal is
 (a) Chitwan National Park (b) Rara National Park
 (c) Bardia National Park (d) Shivapuri National Park
80. Mitosis takes place in
 (a) Haploid Cell (b) Both Haploid and Diploid Cell
 (c) Diploid Cell (d) Reproductive Cell
81. What is the function of DNA?
 (a) Cell's shape (b) Cell's size
 (c) Protein synthesis (d) Transmit hereditary characters
82. What is the name of process by which atmospheric nitrogen converts into nitrates?
 (a) Denitrification (b) Ammonification (c) Ozonization (d) Nitrogen fixation
83. The nitrogen base which is absent in DNA is
 (a) cytosine (b) thymine (c) uracil (d) guanine
84. The male reproductive part of prothallus is
 (a) rhizoid (b) archegonia (c) antheridium (d) sporangia
85. Study of fishes is called
 (a) Ethology (b) Ornithology (c) Phenology (d) Ichthyology

86. What is the virus found in tobacco?
 (a) Arbo virus (b) Tobacco mosaic virus (c) Leaf virus (d) Quantum virus
87. Which plant has no seed coat?
 (a) Fern (b) Pinus (c) Cycas (d) Both b and c
88. Vegetative part of mushroom consists of
 (a) gills (b) pilus (c) stipe (d) All of these
89. Which is the gametophyte of fern plant?
 (a) Archegonium (b) Antheridium (c) Prothallus (d) Zygote
90. Which organ secretes insulin?
 (a) Liver (b) Pancreas (c) Kidney (d) Spleen
91. Which is not found in bacteria?
 (a) Mesosome (b) Capsule (c) Nucleus (d) Flagella
92. In fungi, the food material is stored in the form of
 (a) Starch (b) Fructose (c) Glycogen (d) Sucrose
93. In plants, largest egg is found in
 (a) Cycas (b) Pinus (c) Sequoia (d) Selaginella
94. The rate of photosynthesis is maximum in
 (a) Green light (b) Red light (c) Far-red light (d) Blue light
95. Mitochondria are absent in
 (a) Yeast (b) Bacteria (c) Fungi (d) Green algae
96. How many pairs of walking legs a spider has?
 (a) Four (b) Two (c) Three (d) Eight
97. Four chambered heart is present in
 (a) Lizards (b) Snakes (c) Crocodiles (d) Tortoises
98. The longest cells in human body are
 (a) nerve cells (b) bone cells (c) leg muscle cells (d) heart-muscle cells
99. Typhoid fever is caused by
 (a) Giardia (b) Salmonella (c) Shigella (d) Escherichia
100. Who has coined the phylum name 'Protozoa'?
 (a) Robert Grant (b) Goldfuss (c) Gegenbaur (d) Lamarck

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