Paper Code No- **BM 29/2**

Question Booklet No...**629312**

ENTRANCE EXAMINATION-2017

M.Sc. (BIOSCIENCE)

SET B

ROLL NO. | M | 2 | 9 | 3 | 1 | 3 | 7 | 1 |

Signature of Invigilator

Time: 1 Hour 45 Minutes

Total Marks: 100

Instructions to Candidates

1. Do not write your name or put any other mark of identification anywhere in the OMR Answer Sheet. **IF ANY MARK OF IDENTIFICATIONS IS DISCOVERED ANYWHERE IN OMR ANSWER SHEET, the OMR sheet will be cancelled, and will not be evaluated.**
2. This Question Booklet contains this cover page and a total of **100 Multiple Choice Questions of 1mark.** Space for rough work has been provided at the beginning and end. Available space on each page may also be used for rough work.
3. Each correct answer carries one mark.
4. There is negative marking. For each wrong answer 0.25 marks will be deducted.
5. USE OF CALCULATOR IS PERMITTED.
6. USE/POSSESSION OF ELECTRONIC GADGETS LIKE MOBILE PHONE, iPhone, iPad, pager ETC. is not permitted.
7. Candidate should check the serial order of questions at the beginning of the test. If any question is found missing in the serial order, it should be immediately brought to the notice of the Invigilator. No pages should be torn out from this question booklet.
8. Answers must be marked in the OMR answer sheet which is provided separately. OMR answer sheet must be handed over to the invigilator before you leave the seat.
9. The OMR answer sheet should not be folded or wrinkled. The folded or wrinkled OMR/Answer Sheet will not be evaluated.
10. Write your Roll Number in the appropriate space (above) and on the OMR Answer Sheet. Any other details, if asked for, should be written only in the space provided.
11. There are four alternative answers to each question marked A, B, C and D. Select one of the answers you consider most appropriate and fill up the corresponding oval/circle in the OMR Answer Sheet provided to you. The correct procedure for filling up the OMR Answer Sheet is mentioned below.
12. **Use Black or Blue Ball Pen** only for filling the ovals/circles in OMR Answer Sheet while answering the Questions. For your Choice of answers darken the correct oval/circle completely. If the correct answer is 'B', the corresponding oval/circle should be completely fill and darkened as shown below.

CORRECT METHOD
(A) (●) (C) (D)

WRONG METHOD							
(A) (⊗) (C) (D)	(A) (✓) (C) (D)	(A) (●) (C) (D)	(A) (●) (C) (D)	( ) (●) (C) (D)	(A) (●) (C) (●)		

1. Which property of a wave motion distinguishes a progressive wave from a stationary wave?
   A. Amplitude
   B. Direction of propagation
   C. Propagation of energy
   D. Frequency of vibration

2. The field of view is maximum for
   A. Plane mirror
   B. Concave mirror
   C. Convex mirror
   D. Cylindrical mirror

3. A point source of 3000 lumens is located at a centre of a cube of side 2 m. the flux through one face is
   A. 500 lumens
   B. 600 lumens
   C. 750 lumens
   D. 1500 lumens

4. If ΔV be the change in potential between two neighboring points Δr apart, then the electric field E is given by
   A. $E = \Delta V \times \Delta r$
   B. $E = -\frac{\Delta r}{\Delta V}$
   C. $E = \frac{\Delta r}{\Delta V}$
   D. $E = \left(\frac{\Delta V}{\Delta r}\right)^2$

5. The domain of the function $f(x) = \frac{\cos^{-1} x}{[x]}$ is
   A. $[-1,1]$
   B. $[-1,+1] - \{0\}$
   C. $[-1,0) - \{1\}$
   D. $(0,+\infty)$

6. $\lim_{x\to 0}\left(\frac{a^x - 1}{b^x - 1}\right)$
   A. 0
   B. $\frac{\log a}{\log b}$
   C. 1
   D. ∞

7. If $f(x) = x\tan^{-1} x$, then $f'(1)$ is equal to
   A. $\frac{1}{2} + \frac{\pi}{4}$
   B. $-\frac{1}{2} + \frac{\pi}{4}$
   C. $\frac{1}{2} - \frac{\pi}{4}$
   D. $-\frac{1}{2} - \frac{\pi}{4}$

8. The equation of the normal to the parabola $x^2 = 8y$ at $x = 4$ is
   A. $x + 2y = 6$
   B. $x + 5y = 7$
   C. $x + y = 6$
   D. $x + y = 24$

9. The trace of the matrix $A = \begin{bmatrix} 1 & -2 & 3 \\ 1 & 2 & 1 \\ 5 & 2 & 3 \end{bmatrix}$ is

A. -1
B. 10
C. 0
D. 6

Trace $= 1+2+3 = 6$.

10. $\int \frac{1+\log x}{\sqrt{x^{2x}-1}}\, dx$

A. $\sec^{-1}(x^x) + C$
B. $\log|x^x + \sqrt{x^{2x}-1}| + C$
C. $\log|x^x - \sqrt{x^{2x}-1}| + C$
D. None of these

11. The value of the determinant $\begin{vmatrix} 41 & 1 & 5 \\ 79 & 7 & 9 \\ 29 & 5 & 3 \end{vmatrix}$ is

A. 1
B. 2
C. 3
D. 0

Δ
$41(21-45) + 1(\frac{1}{7}\times 3 - \frac{2}{29}\times 7) + 5(\frac{9}{7}\times 5) - (\frac{2}{29}\times 3)$
$= 41(-24) + (237 - 261) + 5(395 - 87)$
$= -984 + 24 + 308$
$= 332$.

12. Solution of the differential equation $xdy - ydx = 0$, represents
A. A rectangular hyperbola
B. A straight line passing through the origin
C. Parabola whose vertex is at the origin
D. Circle whose centre is at the origin

13. By substituting $y = vx$, the solution of differential equation $\frac{dy}{dx} = \frac{x^2+y^2}{xy}$ is

A. $x^2y^2 = \log x + C$
B. $\frac{y^2}{x^2} = \log x + C$
C. $\frac{y^2}{2x^2} = \log x + C$
D. $\frac{2y^2}{x^2} = \log x + C$

14. A certain batch of seeds is found to have a probability 0.85 that a seed will germinate. The probability that a plant resulting from a germinated seed will flower is 0.9. then the probability of obtaining a flower from a seed chosen at random:
A. 0.765
B. 0.050
C. 0.944
D. 0.588

15. 10 is the mean of a set of 7 observation and 5 is the mean of a set of 3 observation, the mean of the combined set is
A. 15
B. 10
C. 8.5
D. None of these

16. if ${}^{10}C_x = {}^{10}C_{x+4}$, find the value of x
A. 3
B. 2
C. 10
D. None of above

17. Highest auxin concentration occurs
A. In growing tips
B. In leaves
C. At the base of plant organ
D. In xylem and phloem

18. In pineapple the edible part is
A. Pericarp and thalamus
B. Rachis, bracts , perianth and pericarp
C. Mesocarp and endocarp
D. Pericarp and placenta

19. Sensation of phototropism is perceived by
A. Root tip
B. Shoot tip
C. Auxillary bud
D. Node

20. Transitional epithelium is found in
A. Larynx
B. Vein
C. Kidney
D. Ureter and renal pelvis

21. Tendon is made up of
A. Yellow fibrous connective tissue
B. Adipose tissue
C. Modified white fibrous tissue
D. Areolar tissue

22. Which cell secretes antibody?
A. Lymphocyte
B. Monocyte
C. Eosinophils
D. Neutrophils

23. Which of the following gland is both endocrine and exocrine?
    A. Liver
    B Pancreas
    C. Adrenal
    D. Spleen

24. A DNA vaccine is
    A. A DNA molecule that is recognized by an antibody
    B. That stimulates immune system to recognize pathogenic DNA sequences
    C. Administered as DNA to produce protein, which stimulate an immune response
    D. All of the above

25. During transport of CO_2 blood does not become acidic due to
    A. Neutralization of H2CO3 by Na2 CO3
    B. Absorption by leucocytes
    C. Blood buffers
    D. Non accumulation

26. Elimination of insoluble calcium phosphate takes place by
    A. Large intestine
    B. Liver
    C. kidney
    D. Skin

27. Which ion is essential for muscle contraction?
    A. Sodium
    B. Calcium
    C. Potassium
    D. Chloride

28. In cerebrum, auditory area occurs in
    A. Frontal lobe
    B. Parietal lobe
    C. Temporal lobe
    D. Occipetal lobe

29. The chemical causing transmission of nerve impulse across synapse/ end plate is
    A. Choline esterase
    B. Acetylcholine
    C. Choline
    D. Adrenaline

30. KDEL sequence is important for retrieval of protein from
    A. Golgi apparatus
    B. Endoplasmic reticulum
    C. Nucleus
    D. None of the above

31. On fertilization urine of would be mother contains
A. LH
B. Progesterone
C. FSH
D. hCG

32. Fruit developed from hypanthodium inflorescence is called
A. Hesperidium
B. Sorosis
B. Syconus
D. Caryopsis

33. Mechanical support, enzyme circulation, protein synthesis, and detoxification of drugs are functions of
A. E R
B. Ribosomes
C. Dictyosome
D. Chloroplast

34. Which of the following terms represent a pair of contrasting characters?
A. Homozygous
B. Heterozygous
C. Allelomorphs
D. Co dominant genes

35. Skeletal muscles are controlled by
A. Sympathetic nerves
B. Para-sympathetic nerves
C. Somatic nerves
D. Autonomic nerves

36. The cell organelle participating in photorespiration is
A. Peroxisome
B. Nucleolus
C. Dityosome
D. Glyoxisome

37. A cell active in protein synthesis will be rich in
A. Mitochondra
B. Glgi bodies
C. Lysosomes
D. Ribosomes

38. Polytene chromosomes are formed due to
A. Mitosiss
B. Meiosis
C. Endomitosis
D. Endomixix

39. rRNA is synthesised by
A. Nucleus
B. Nucleolus
C. Cytoplasm
D. Endoplasmic reticulum

40. A substance unrelated to substrate but capable of reversibly changing activity of enzyme by binding to a site other than active site is called
A. Competitive inhibitor
B. Non competitive inhibitor
C. Catalytic inhibitor
D. Allosteric inhibitor

41. Which antibiotic inhibits formation cell wall in bacteria?
A. Penicillin
B. Cephalosporin
C. Methicillin
D. All of the above

42. Crossing over in diploid organism is responsible for
A. Dominance of genes
B. Recombination of linked genes
C. Linkage between genes
D. Segregation of genes

43. A cell when dipped in 0.5M sucrose solution has no effect but when the same cell will be dipped in 0.5M NaCl solution the cell will
A. Increase in size
B. Decrease in size.
C. Remain turgid
D. Plasmolyse

44. Cystic fibrosis can be inherited even if neither parent has disease. This is because the disease
A. require certain environmental conditions to be expressed
B. occurs only in polyploidy individuals
C. is caused by a recessive allele
D. is caused by a dominant allele

45. Molybdenum is the essential constituent of
A. Nitrogenase
B. Respiratory chain
C. Growth regulator
D. Chlorophyll

46. The idea of spontaneous generation was first refuted by
A. F Redi
B. L Spallanzani
C. L Pasteur
D. S L Miller

47. Movement of electron from chlorophyll molecules to NDPH occurs in
A. Photosystem -I
B. Photophosphorylation
C. Photosystem- II
D. Photorespiration

48. Most of the enzymes of TCA cycle are present in
A. Cytoplasm
B. Intermembrane space of mitochondria
C. Mitochondrial matrix
D. Inner membrane of mitochondria

49. Long filamentous threads at the end of a young cob of maize are
A. Anthers
B. Style
C. Ovary
D. Hairs

50. Acetyl CoA is produced from pyruvate by
A. Oxidative decarboxylation
B. Oxidative photophosphorylation
C. Oxidative hydrogenation
D. Oxidative photorespiration

51. Cholodny-Went theory is concerned with which of the following process?
A. Photomorphogenesis
B. Photoperiodism
C. Phototropism
D. Photorespiration

52. Which of the following hormones helps in secretion of HCl from stomach?
A. Renin
B. Gastrin
C. Secretin
D. Progesterone

53. Adaptin is important for
A. Electron transport
B. Vesicle transport
C. Attachment of cytoskeleton
D. All of the above

54. The frequency of crossing over would be higher if
A. Two genes are located closely
B. None of the above
C. Two genes are not located on the same chromosome
D. Two genes are far apart on the chromosome

55. Trisomy of 21st chromosome results in
   A. Down's syndrome
   B. Sickle cell anaemia
   C. Turner's syndrome
   D. Klinefelter's syndrome

56. Which one is involved in DNA repair?
   A. Ligase
   B. Primase
   C. DNA polymerase III
   D. DNA polymerase I

57. *Bacillus thuringiensis* is used to control
   A. Insect pests
   B. Bacterial pathogens
   C. Fungal pathogens
   D. Nematodes

58. Genetic material of retrovirus is
   A. dsDNA
   B. ssDNA
   C. dsRNA
   D. ssRNA

59. Which among the following is fibre yielding?
   A. *Triticum aestivum*
   B. *Crotolaria juncea*
   C. *Cicer arietinum*
   D. *Impatiens balsamina*

60. A diploid male angiospermic plant is crossed with tetraploid female . Endosperm of seed will be
   A. Haploid
   B. Triploid
   C. Tetraploid
   D. Pentaploid

61. Variations appearing in tissue culture are
   A. Culture variations
   B. Auxotrophs
   C. Somaclonal variations
   D. Pan genetic variations

62. Study of ecology of population is called
   A. Auoecology
   B. Ecotype
   C. Synecology
   D. Demecology

63. Which of the following is false?
A. Rate of succession is faster in secondary succession
B. Quantity of biomass in a trophic level at a particular period is called as standing crop.
C. The energy content in a trophic level is determined by considering a few individuals of a species in that trophic level
D. The succession that occurs in newly cooled lava is called primary succession.

64. The assemblage of all populations of different species that function as an integrated unit through co-evolved metabolic transformation in a specific area is called
A. Biome
B. Biotic community
C. Population
D. Ecosystem

65. A research scholar once collected certain alga and found that its cells contained chlorophyll a, chlorophyll b and phycoeryhrin. The alga must belong to
A. Chlorophyceae
B. Cyanophyceae
C. Bacillarophyceae
D. Rhodophyceae

66. Meristematic tissue in vascular bundle is
A. Fascicular cambium
B. Phellem
C. Prcambium
D. Interfascicular cambium

67. The proteinaceous particles that cause infectious diseases are called
A. Viroid
B. Prions
C. Both A &B
D. None of the above

68. Respiratory Quotient (RQ) is less than one for
A. Banana
B. Potato
C. Citrus fruit
D. Castor seeds

69. Pasteurization of milk means that
A. All bacteria are killed
B. Pathogenic bacteria are killed
C. Milk is enriched with vitamins
D. Milk casein is partially digested

70. The alveoli of lungs are lined by
A. Squamous epithelium
B. Simple epithelium
C. Cuboidal epithelium
D. Columnar epithelium

71. The strength of binding between an antigen and antibody is called
A. Hydophilicity
B. Valency
C. Avidity
D. Affinity

72. Cytoplasm of ovum does not contain
A. Golgi complex
B. Centrosome
C. Mitochondria
D. ribosomes

73. Antibodies in our body are complex
A. Lipoproteins
B. Steroids
C. Prosdtoglandins
D. Glycoproteins

74. In which of the following techniques, DNA probes can be hybridized with RNA fragments?
A. Northern blotting
B. Eastern blotting
C. Western blotting
D. Southern blotting

75. Bond present during two nucleosides of a poly nucleotide chain is
A. Covalent bond
B. Hydrogen bond
C. Phosphodiester bond
D. High energy phosphate bond

76. Which of the following in haploid in Gymnosperms?
A. Pollen grain , megaspore and root
B. Pollen grain megaspore and nucellus
C. Megaspore mother ell , root and leaf
D. Endosperm, pollen grain and megaspore

77. Glucose when heated with CH_3OH in presence of dry HCl gas, α-and β-methyl glucosides are formed. This is because it contains
A. An aldehydic group
B. –CH2OH group
C. A ring structure
D. Five hydroxyl groups

78. Which of the following elements has the greatest electronegativity?
A. Si
B. P
C. N
D. O

79. The decreasing order of dipole moment of molecule is
A. NF3 > NH3 > H2O
B. NH3 > NF3 > H2O
C. H2O > NH3 > NF3
D. H2O > NF3 > NH3

80. The aquas solution of which of the following salt will have the lowest pH?
A. Na ClO_3
B. NaClO
C. $NaClO_4$
D. $NaClO_2$

81. Rate constant of a reaction (k) is 175 Litre Mol^{-1} sec^{-1}. What is the order of reaction?
A. First
B. Second
C. Zero
D. None of these

82. Which of the following compounds possesses the C-H bond with the lowest bond association energy?
A. Toluene
B. Benzene
C. n-pentane
D. 2,2-dimethyl propane

83. An iron nail was immersed in a solution of copper sulfate and when it was removed from the solution, it was coated with a layer of copper metal. After a different iron nail was immersed in a solution of zinc nitrate and removed, this nail rusted just as rapidly as a new iron nail. Rank these three metals in order of activity from most active to least active.
A. Zn > Cu > Fe
B. Fe > Cu > Zn
C. Zn > Fe > Cu
D. Cu > Fe > Zn

84. Which of the following belongs to the phylum Arthropda?
A. Star fish
B. Gold fish
C. Cuttle fish
D. Silver fish

85. Pseudocoelom is found in
A. *Ascaris*
B. *Ancylostoma*
C. *Fasciola*
D. None of the above

86. Retrogressive metamorphosis is seen in
A. *Herdmania*
B. *Gambusia*
C. Frog
D. Butterfy

87. Parietal placentation is found in members of family
A. Solanaceae
B. Brassicaceae
C. Cucurbitaceae
D. Fabaceae

88. Verticillaster type of inflorescence is found in
A. Cotton
B. *Datura.*
C. *Lucas*
D. *Ocimum*

89. Melting points are normally higher for
A. Tertiary amides
B. Secondary amides
C. Primary amides
D. Amines

90. Teflon is a polymer of
A. Tetrafluroethylene
B. Terabromoethylene
C. Tetraiodoethylene
D. Terachloroethylene

91. Which of the following compound turns black on addition of ammonium hydroxide?:
A. $CuCl_2$
B. $PbCl_2$
C. AgCl
D. Hg_2Cl_2

92. Which of the following bonds would show the strongest absorption in the IR?
A. Oxygen –Hydrogen
B. Nitrogen-Hydrogen
C. Sulfur-Hydrogen
D. Carbon- Hydrogen

93. Tesla is the unit of
A. Magnetic Flux
B. Magnetic field
C. Magnetic Induction
D. Magnetic moment

94. A body covers 200 cm in the first 2 seconds and 220 cm in next 4 seconds. What is the velocity of the body at the end of 7th second?
A. 40 cm/sec
B. 10 cm/sec
C. 20 cm/sec
D. 5 cm/sec

95. Mass in the linear motion has as its analogue in rotational motion
   A. Moment of Inertia
   B. Torque
   C. Angular Moment
   D. Weight

96. The strength of magnetic field at a point distance *r* near a long straight current carrying wire is B. The field at a distance *r*/2 will be
   A. $\frac{B}{2}$
   B. $\frac{B}{4}$
   C. 4B
   D. 2B

97. The mean translational kinetic energy of a perfect gas molecule at a temperature T ^{0}K is
   A. $\frac{1}{2}KT$
   B. $\frac{3}{2}KT$
   C. KT
   D. $2KT$

98. Water falls from a height of 45 m on the ground. If one third K.E. of water is converted into heat, rise in temperature of water will be
   A. 350 ^{0}C
   B. 35.5 ^{0}C
   C. 0.35 ^{0}C
   D. 0.035 ^{0}C

99. The wavelength of sound in air is 10 cm. Its frequency is
   A. 3.3 kilocycle/sec
   B. 30 megacycle/sec
   C. 330 cycle/sec
   D. $3x10^9$ cycle/sec

100. A compound with molecular formula C7H16 shows optical isomerism, the compound will be
   A. 2, 3- dimethyl pentane
   B. 2, 2- dimethyl pentane
   C. 2- methyl hexane
   D. None of the above