DIPLOMA – COMMON ENTRANCE TEST-2013

BT	COURSE	DAY : SUNDAY DATE : 30-JUNE-2013
	BIOTECHNOLOGY	TIME : 9.00 a.m. to 12.00 Noon

MAXIMUM MARKS	TOTAL DURATION	MAXIMUM TIME FOR ANSWERING
180	200 Minutes	180 Minutes

MENTION YOUR DIPLOMA CET NUMBER	QUESTION BOOKLET DETAILS	
	VERSION CODE	SERIAL NUMBER
	A-3	100503

3

DOs :

1. Check whether the Diploma CET No. has been entered and shaded in the respective circles on the OMR answer sheet.
2. This question booklet is issued to you by the invigilator after the **2nd bell i.e., after 08.50 a.m.**
3. The serial number of this question booklet should be entered on the OMR answer sheet.
4. The version code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
5. Compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

DON'Ts :

1. **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
2. The **3rd Bell rings at 9.00 a.m., till then;**
   - Do not remove the seal / staple present on the right hand side of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

1. This question booklet contains 180 (items) questions and each question will have one statement and four answers. (Four different options / responses.)
2. After the **3rd Bell is rung at 9.00 a.m.**, remove the paper seal / polythene bag of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet. Read each item and start answering on the OMR answer sheet.
3. During the subsequent 180 minutes:
   - Read each question (item) carefully.
   - Choose one correct answer from out of the four available responses (options / choices) given under each question / item. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **only one response** for each item.
   - Completely **darken / shade** the relevant circle with a **blue or black ink ballpoint pen against the question number on the OMR answer sheet.**

Correct Method of shading the circle on the OMR answer sheet is as shown below :

① ● ③ ④

4. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
5. After the **last bell is rung at 12.00 Noon**, stop marking on the OMR answer sheet and affix your **left hand thumb impression** on the OMR answer sheet as per the instructions.
6. Hand over the **OMR answer sheet** to the room invigilator as it is.
7. After separating the top sheet (KEA copy), the invigilator will return the bottom sheet replica (candidate's copy) to you to carry home for self-evaluation.
8. Preserve the replica of the OMR answer sheet for a minimum period of **ONE year**.

[P.T.O.

DO NOT WRITE HERE

PART – A

It consists of **1 – 40** questions.

1. The constant term in the expansion $(x^2 + 1/x)^{12}$ is

   (1) – 495 (2) 495

   (3) 1/495 (4) 945

2. The projection of vector (3, 1, 3) on vector (1, – 2, 1) is

   (1) $2\sqrt{6}/5$ (2) $-2\sqrt{6}/3$

   (3) $2\sqrt{6}/3$ (4) $-2\sqrt{6}/5$

3. If vector a = (1, 1, 1) and vector b = (2, 2, 1) then magnitude of vector a × b is

   (1) $\sqrt{26}$ (2) $\sqrt{28}$

   (3) $\sqrt{24}$ (4) 1

4. The cosine of the angle between the vectors (3, – 1, 1) and vector (1, 1, – 1) is

   (1) $1/\sqrt{11}$ (2) $-1/\sqrt{33}$

   (3) $1/\sqrt{33}$ (4) $-1/\sqrt{11}$

5. The value of $(\sec^6 x - \tan^6 x)$ is

   (1) $1 - 3\sec^2 \times \tan^2 x$

   (2) $1 + \tan^2 \times \sec^2 x$

   (3) $1 + 3\sec^2 \times \tan^2 x$

   (4) $1 - \tan^2 \times \sec^2 x$

SPACE FOR ROUGH WORK

6. The equation to the straight line passing through (3, 2) and perpendicular to the line $5x + 2y - 3 = 0$ is

   (1) $2x - 5y - 4 = 0$

   (2) $2x - 5y + 4 = 0$

   (3) $2x + 5y + 4 = 0$

   (4) $5x - 2y + 4 = 0$

7. The slope of a line passing through the points $(-4, -5)$ and $(2, 3)$ is

   (1) 3/4 (2) $-3/4$

   (3) 4/3 (4) $-4/3$

8. The acute angle between the lines $2x - y + 3 = 0$ and $x - 3y + 2 = 0$ is

   (1) 30° (2) 60°

   (3) 90° (4) 45°

9. The value of $\lim_{n\to\infty} [(3 - n)(4 - n)(2n - 5)] / (4n^3 - 3)$

   (1) $-1/2$ (2) 1/2

   (3) 3/2 (4) $-3/2$

10. The value of $\lim_{x\to -3} (x^4 - 81) / (x^3 + 27)$ is

    (1) 3 (2) -3

    (3) 4 (4) -4

11. $\int_0^2 (x - 1)(x - 2)\, dx$ is

    (1) 2/3 (2) $-2/3$

    (3) 3/2 (4) $-3/2$

SPACE FOR ROUGH WORK

12. The area bounded by the curve $y = 2x^2$, the x – axis and the ordinates at $x = -1$ and $x = 2$ is

(1) – 6 sq units

(2) 3 sq units

(3) – 3 sq units

(4) 6 sq units

13. The differential equation formed by eliminating a and b from $x + y = ae^x + be^{-x}$ is

(1) $d^2y/dx^2 + y = 0$

(2) $d^2y/dx^2 - y = 0$

(3) $d^2y/dx^2 - x - y = 0$

(4) $d^2y/dx^2 + x - y = 0$

14. The solution of the differential equation $dy/dx = (1 + y^2) / (1 + x^2)$ is

(1) $\tan^{-1} y + \tan^{-1} x + c = 0$

(2) $\log (1 + y^2) + \log (1 + x^2) + c = 0$

(3) $\tan^{-1} y - \tan^{-1} x + c = 0$

(4) $\log (1 + y^2) - \log (1 + x^2) + c = 0$

15. If $\begin{vmatrix} x+2 & 5 \\ 0 & x-2 \end{vmatrix} = 0$, then x =

(1) 1

(2) 2

(3) 3

(4) 0

16. If $x \cot 45° \cos 60° = \sin 60° \tan 30°$ then the value of x is

(1) $\sqrt{3}$

(2) $\sqrt{3}/2$

(3) 1/2

(4) 1

SPACE FOR ROUGH WORK

17. If $\tan x = 15/8$ and x is in the III quadrant then the value of $(2 \sin x - 3 \cos x) / (2 \cos x + 3 \sin x)$ is

(1) 61/6 (2) $-61/6$

(3) $-6/61$ (4) 6/61

18. The value of $\{[\sin(2\pi - \theta) + \cos(-\theta)] / [\tan(-\theta) + \cot(2\pi + \theta)]\} - \{[\sin(\pi/2 + \theta) + \cos(3\pi/2 - \theta)] / [\cot(\pi + \theta) + \tan(2\pi - \theta)]\}$ is

(1) 0 (2) -1

(3) $+1$ (4) -2

19. If $\sin A = 5/13$ and $\sin B = 4/5$ then the value of $\cos(A - B)$ is

(1) 65/56 (2) 56/65

(3) 16/65 (4) $-16/65$

20. On simplification the value of $(\cos^3 A - \cos 3A) / \cos A + (\sin^3 A + \sin 3A) / \sin A$ is

(1) 3 (2) 1

(3) 2 (4) 0

21. $d/dx\left(\sqrt{\sin^2 x}\right)$ is

(1) $\cos x$ (2) $\sin 2x$

(3) $\cos^2 x$ (4) $\sqrt{\cos x / \sin x}$

22. $d/dx \tan^{-1} \sqrt{(1-\cos 2x)/(1+\cos 2x)}$ is

(1) 1 (2) 0

(3) $\tan x$ (4) $\cos x$

23. If $y = \sin x^x$ then dy/dx is

(1) $x \log \sin x$ (2) $\cos x^x$

(3) $\sin x^x (x \cot x + \log \sin x)$ (4) $\cos x^x (x \tan x + \log \sec x)$

SPACE FOR ROUGH WORK

24. $d/dx\left(\sin h^{-1} x\right)$ is

(1) $1/\sqrt{1+x^2}$ (2) $1/\sqrt{1-x^2}$

(3) $1/\sqrt{x^2-1}$ (4) $1/\sqrt{x^2+1}$

25. The equation to the normal to the curve $y = 5x^2 + 4x - 11$ at the point $(-1, 2)$ is

(1) $x - 6y + 11 = 0$

(2) $x + 6y - 11 = 0$

(3) $6x - y + 11 = 0$

(4) $6x + y - 11 = 0$

26. In solving the equations by Cramer's rule for $5x - 3y = 1$ and $2x - 5y = -11$, the value of x and y is

(1) (3, 2) (2) $(-3, -2)$

(3) (2, 3) (4) $(-2, -3)$

27. If $A = \begin{bmatrix} 2 & 0 & 0 \\ 1 & 2 & 0 \\ 1 & 1 & 2 \end{bmatrix}$ then A adj A is

(1) Diagonal (2) Scalar

(3) Identity (4) Zero matrix

28. The minor of the element 6 in a matrix $A = \begin{bmatrix} 2 & -3 & 0 \\ 4 & 1 & 6 \\ 3 & 2 & 0 \end{bmatrix}$ is

(1) 10 (2) 11

(3) 12 (4) 13

SPACE FOR ROUGH WORK

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

(1) $\lambda^2 - 6\lambda + 11 = 0$ (2) $\lambda^2 - 6\lambda - 11 = 0$

(3) $\lambda^2 + 6\lambda + 11 = 0$ (4) $-\lambda^2 + 6\lambda = 0$

30. The fourth term in the expansion of $\left(\sqrt{3}+2\right)^7$ is

(1) 2520 (2) – 2520

(3) 1/2520 (4) – 1/2520

31. The value of (sin 100° + sin 20°) / (cos 100° + cos 20°) is

(1) $\sqrt{3}/2$ (2) 1/2

(3) $\sqrt{3}$ (4) 1

32. The value of ($\tan^{-1}$ 5/6 + $\tan^{-1}$ 1/11) is

(1) 30° (2) 60°

(3) 90° (4) 45°

33. If the points (– 3, K), (5, 7) and (– 11, 1) are collinear, then the value of K is

(1) 4 (2) 3

(3) 2 (4) 1

34. The ratio of the line join of the points (2, 3) and (– 5, 6) divided by y – axis is

(1) 5 : 2 (2) 2 : 5

(3) 3 : 2 (4) 2 : 3

35. Three vertices of a triangle are (– 2, 3, 1), (– 1, 4, 2) and (– 6, 5, 2), then the centroid of the triangle is

(1) (– 3, 4, 1) (2) (0, 5/3, 1/3)

(3) (4, 3, 1) (4) (– 3, – 4, – 2)

SPACE FOR ROUGH WORK

36. The volume of a sphere is increasing at the rate of 4π c.c/sec, then the rate of increase of the radius is when the volume is $288\ \pi$ cc

(1) 6 cm/sec
(2) 1/6 cm/sec
(3) 1/36 cm/sec
(4) 36 cm/sec

37. $\int \sin^2 x\, dx$ is

(1) $\cos x + c$
(2) $x/2 - (\sin 2x)/4 + c$
(3) $x/2 + (\cos 2x)/4 + c$
(4) $x/2 + (\sin 2x)/4 + c$

38. $\int (3x^2 + x - 1)^6 (6x + 1)\, dx$ is

(1) $6(3x^2 + x - 1)^5 + c$
(2) $(3x^2 + x - 1)^6 + c$
(3) $(3x^2 + x - 1)^7 / 7 + c$
(4) $(3x^2 + x - 1)^7 / 21 + c$

39. $\int \tan^{-1} x\, dx$ is

(1) $x \tan^{-1} x - 1/2 \log (1 + x^2) + c$
(2) $x \tan^{-1} x + 1/2 \log (1 + x^2) + c$
(3) $\tan^{-1} x - 1/2 \log (1 + x^2) + c$
(4) $\tan^{-1} x + 1/2 \log (1 + x^2) + c$

40. $\int_0^{\pi/2} \sin 3x \cos 2x\, dx$ is

(1) 3/5
(2) $-3/5$
(3) 5/3
(4) $-5/3$

SPACE FOR ROUGH WORK

PART – B

It consists of **41 – 80** questions.

41. Poisson's ratio is the ratio of

(1) $\frac{\textit{Lateral strain}}{\textit{Linear strain}}$ (2) $\frac{\textit{Linear strain}}{\textit{Lateral strain}}$

(3) $\frac{\textit{Lateral strain}}{\textit{Volume strain}}$ (4) $\frac{\textit{Volume strain}}{\textit{Lateral strain}}$

42. The pressure at a depth of 100 m below the surface of water density 1000 kgm^{-3} is

(1) $98 \times 10^5\ Nm^{-2}$ (2) $9.8 \times 10^4\ Nm^{-2}$

(3) $980 \times 10^4\ Nm^{-2}$ (4) $98 \times 10^4\ Nm^{-2}$

43. When two capillary tube of different diameters are dropped vertically in a liquid, the height of the liquid is

(1) More in the tube of larger diameter

(2) More in the tube of smaller diameter

(3) Lesser in the tube of smaller diameter

(4) Same in both the tubes

44. The property by virtue of which a liquid opposes relative motion between its different layers is

(1) Viscosity (2) Elasticity

(3) Surface tension (4) Inertia

45. The maximum amount of force acting for a short duration is known as

(1) Momentum (2) Inertia

(3) Power (4) Impulse

SPACE FOR ROUGH WORK

46. Absolute zero is the temperature of a gas at which, the _____ of gas is theoretically zero.

(1) Mass (2) Weight

(3) Volume (4) Density

47. When the particle is in SHM having amplitude ' r ' ,then its velocity is

(1) $v = \omega (r^2 - y^2)$ (2) $v = \omega\sqrt{r^2 - y^2}$

(3) $v = r\omega^2$ (4) $v = r\omega^3$

48. Ripples in water are the example for

(1) Transverse wave

(2) Longitudinal wave

(3) Sound wave

(4) Ultrasonic wave

49. The length of one ventral segment in stationary wave is equal to

(1) Full wavelength of the wave

(2) Twice the wavelength of the wave

(3) Half a wavelength of the wave

(4) Quarter a wavelength of the wave

50. A stretched string under a tension T vibrates with a frequency f. When the tension is increased by 4 times, then the frequency becomes _____

(1) same (2) doubled

(3) tripled (4) zero

51. The appearance of additional frequencies in scattered beam of light is known as

(1) Raman effect

(2) Coherent scattering

(3) Incoherent scattering

(4) Bipolar scattering

SPACE FOR ROUGH WORK

52. Two properties of LASER are

(1) Highly monochromatic and extremely intense

(2) Highly chromatic and extremely fast

(3) Very high frequency and extremely high wave length

(4) Very high power and extremely low amplitude

53. To form a galvanic cell

(1) difference in concentration of electrolyte is required

(2) difference in concentration of frequency is required

(3) difference in concentration of amplitude is required

(4) both (2) and (3)

54. pH value is not having its application in

(1) determination of quality of soil

(2) determination of quality of textile dyes

(3) determination of quality of chemicals

(4) determination of quality of electron

55. The prefix "mega" stands for

(1) 10^3 (2) 10^{-3}

(3) 10^{-6} (4) 10^6

56. A bullet of mass 0.01 kg is fired from a rifle of mass 20 kg with a speed of 10 m/s , then the recoil velocity of rifle is _____ m/s.

(1) -1 (2) -0.05

(3) -200.01 (4) -0.005

57. Final velocity of a body thrown downwards is _____

(1) Maximum (2) Minimum

(3) No change (4) Zero

SPACE FOR ROUGH WORK

58. A person throws a sand bag from a boat at rest in a pond then boat moves

(1) In the same direction

(2) In the opposite direction

(3) In a perpendicular direction

(4) In circular direction

59. Two equal forces at a point, the square of their resultant is equal to three times the product of the forces. Then the angle between the forces is equal to

(1) 30° (2) 45°

(3) 60° (4) 90°

60. Equilibrant is a force

(1) Which brings a body in equilibrium

(2) Which moves the body along the resultant force

(3) in zig-zag movement of the body

(4) Which moves the body in opposite direction to equilibrant force

61. The best value of reverberation time for speech listener _____

(1) 0.5 to 1.5 s (2) 0.15 to 0.5 s

(3) 0.05 to 0.15 s (4) 0.5 to 5 s

62. 3 strings of equal lengths but stretched with different tensions are made to vibrate, if their masses per unit length are in the ratio 3:2:1 and frequencies are same then the ratio of the tensions _____

(1) 1:2:3 (2) 2:3:1

(3) 1:3:2 (4) 3:2:1

63. Newton's formula for velocity of sound was corrected by

(1) Boyle (2) Charles

(3) Laplace (4) Hertz

SPACE FOR ROUGH WORK

64. Light waves are composed of both electric and magnetic field is proposed by

(1) Newton's corpuscular theory

(2) Huygen's wave theory

(3) Maxwell's theory of light

(4) Plank's theory

65. If 'a' and 'b' are the amplitudes of two interfering waves then for destructive interference the amplitude ' R' is

(1) $R = ab$ (2) $R = a/b$

(3) $R = a - b$ (4) $R = a + b$

66. Which of the following is dimensional physical quantity ?

(1) pressure (2) strain

(3) mechanical advantage (4) sp.gravity

67. The principle of vernier is

(1) n VSD = (n + 1) MSD (2) (n – 1) VSD = n MSD

(3) n MSD = (n – 1) V SD (4) (n – 1) MSD = n VSD

68. A screw gauge has a pitch of $\frac{1}{2}$ mm and 50 division on sleeve. The reading when the jaws touch is +5 division. While gripping a wire the reading is PSR = 3 PSD and HSR = 17, then the diameter of wire is

(1) 1.62 cm (2) 0.162 cm

(3) 0.162 mm (4) 16.2 mm

69. The extension of the material by itself without increase of load takes place

(1) within elastic limit

(2) beyond elastic limit

(3) beyond yield point

(4) at breaking point

SPACE FOR ROUGH WORK

70. If the strain in a wire is 0.1%, then the change in the length of the wire of length 5 m is

(1) 5×10^{-2} m
(2) 5×10^{-3} m
(3) 5×10^{-4} m
(4) 5×10^{-3} cm

71. A force of 10 N acting on a body fixed at a point the distance from the fixed point to the line of force is 2 m. Then the moment of the force is _____ N-m.

(1) 0.002
(2) 0.02
(3) 2
(4) 20

72. By Lami's theorem, P Q R are three forces acting in equilibrium and angle between PR, PQ, QR, are α, β, γ respectively then which of the following is correct ?

(1) $\frac{P}{\sin\beta} = \frac{Q}{\sin\gamma} = \frac{R}{\sin\alpha}$
(2) $\frac{P}{\sin\gamma} = \frac{Q}{\sin\alpha} = \frac{R}{\sin\beta}$
(3) $\frac{P}{\sin\alpha} = \frac{Q}{\sin\beta} = \frac{R}{\sin\gamma}$
(4) $\frac{P}{\sin\alpha} = \frac{Q}{\sin\gamma} = \frac{R}{\sin\beta}$

73. If the line of action of the force passes through the point of rotation, then the moment of force is

(1) Maximum
(2) Less than one
(3) Greater than one
(4) Zero

74. 1 Kilo calorie of heat is equal to _____ joule.

(1) 4.186
(2) 41.86
(3) 418.6
(4) 4186

75. The correct relation between °F and K scale is

(1) $5K = 9\,(F - 32)$
(2) $9K = -5(F - 32)$
(3) $K = \frac{9}{5}\,(F - 32) - 273$
(4) $K = \frac{5}{9}\,(F - 32) + 273$

SPACE FOR ROUGH WORK

76. Two coherent sources 2×10^{-4} m apart are illuminated by the light of wave length 5000×10^{-10}m. The distance between the source and screen is 0.2m, then fringe width is

(1) 0.05×10^{-3} m

(2) 5×10^{-3}m

(3) 0.5×10^{-3}m

(4) 50×10^{-3}m

77. Resolving power of microscope is

(1) Equal to the resolution of the microscope

(2) Reciprocal to the resolution of the microscope

(3) Reciprocal to the focal length of the microscope

(4) Product of wave length and semi vertical angle

78. Which of the following phenomenon confirm that light is transverse wave ?

(1) Diffraction

(2) Interference

(3) Refraction

(4) Polarization

79. In Field emission

(1) High positive voltage is used

(2) Secondary electrons are used

(3) High energy is used

(4) High radiations are used

80. Which of the following is not true ?

(1) Photoelectric emission is an instantaneous process

(2) Photoelectric emission do not takes place below threshold frequency

(3) The K.E. of the photoelectron depends on the wavelength of incident radiation

(4) Number of photoelectrons emitted is directly proportional to the intensity

SPACE FOR ROUGH WORK

PART – C

It consists of **81-180** Questions :

81. Which of the following does not belong to the group ?

(1) Globulin (2) Albumin

(3) Collagen (4) Histones

82. Hydrolysis of ATP is an example of

(1) Endergonic reaction (2) Exergonic reaction

(3) Reversible reaction (4) All the above

83. Trans-amination involves

(1) Removal of amino group

(2) Transfer of amino group from an amino acid to a keto acid

(3) Transfer of amino group from a keto acid to an amino acid

(4) Transfer of amino acid to lipids

84. Invert sugar is

(1) Sucrose (2) Maltose

(3) Lactose (4) Galactose

85. The following co-enzyme is a nucleotide

(1) FAD (2) NAD

(3) Both 1& 2 (4) None

86. Agrobacterium based gene transfer is efficient

(1) Only with dicots (2) Only with monocots

(3) Both dicots & monocots (4) None

SPACE FOR ROUGH WORK

87. EcoRI is a

(1) Endonuclease (2) Exonuclease

(3) Polymerase (4) Ligase

88. Which type of restriction enzymes are commonly used in r-DNA technology ?

(1) Type I (2) Type II

(3) Type III (4) Type IV

89. The codon is found in

(1) DNA (2) r- RNA

(3) m-RNA (4) Proteins

90. Which is the correct order from smallest to largest number of base pairs ?

(1) Plasmid, transposon, chromosomal DNA

(2) Transposon, plasmid, chromosomal DNA

(3) Transposon, chromosomal DNA, plasmid

(4) Plasmid, chromosomal DNA, transposon

91. Which of the following processes is necessarily sporicidal?

(1) Sanitization (2) Disinfection

(3) Antisepsis (4) Sterilization

92. The first used disinfectant is

(1) Carbolic acid (2) Alcohol

(3) Detergents (4) Dyes

SPACE FOR ROUGH WORK

93. Lipid content is more in

(1) Gram positive bacteria (2) Gram negative bacteria

(3) Bacillus (4) None

94. Which of the following is not the characteristics of bacteriophage ?

(1) Parasitic (2) Lytic

(3) Lysogenic (4) Autotrophic

95. Cell wall is made up of

(1) Phospholipids (2) Peptidoglycon

(3) Amino acids (4) Glycoproteins

96. Among the following which one is a vaccine preventable disease?

(1) Chicken pox (2) Measles

(3) Pneumonia (4) All

97. Which of the following is correct with regarding to antigen epitope ?

(1) An epitope may be shared by two different antigen

(2) A protein molecule usually contains multiple epitopes

(3) B cell bind only to processed antigen epitopes

(4) Epitopes may be linear / assembled

98. Which of the following are two hall marks of the adaptive immune system?

(1) Immediate & Broad (2) Specify & Memory

(3) Innate & Short (4) Immediate & Passive

SPACE FOR ROUGH WORK

99. Market potential of fermentation product deals with

(1) Competition (2) Selling price

(3) Share of market (4) All the above

100. The percent of chromium required for the typical fermentor according ISI chart is

(1) 18% (2) 2.25%

(3) 0.18% (4) 25.2%

101. Source of vitamin E

(1) Fruits (2) Soya bean

(3) Potato (4) Green leaves

102. Which of the following statement is false?

(1) Probiotics contains potentially beneficial bacteria

(2) Probiotics contains genetically stable bacteria

(3) Probiotics contains non digestible food ingredients

(4) Probiotics confer a health benefit on the host

103. The Hot aqueous extraction of drug is

(1) Maceration (2) Decoction

(3) Percolation (4) None

104. The study that deals with biochemical and physiological effect of drugs is

(1) Pharmacology (2) Pharmacokinetics

(3) Pharmacogynics (4) Pharmacodynamics

105. The specialized transport of drug through the cell membrane is

(1) Active transport (2) Facilitated diffusion

(3) Pinocytosis (4) All the above

SPACE FOR ROUGH WORK

106. Most plant tissue cultures are initiated from

(1) Callus (2) Explants

(3) Plantlets (4) Anthers

107. What are the main constituents of culture for animal cell growth ?

(1) Glucose & Glutamine (2) Growth factors

(3) Cytokines (4) All of these

108. Starvation proteins are produced by a culture during which part of growth curve ?

(1) Lag phase (2) Exponential phase

(3) Stationary phase (4) Death phase

109. The ability of component cells of callus to form whole plant is known as

(1) Dedifferentiation (2) Redifferentiation

(3) Both 1 & 2 (4) None

110. For lysis of yeast cell wall, which enzyme is most commonly used?

(1) Glucanase (2) Mannose

(3) Protease (4) All

111. The immobilized enzymes produced by microencapsulation technique provide

(1) An extremely large surface area (2) Smaller surface area

(3) High amount of solvent (4) Relatively smaller quantity

112. Aligned sequence can be represented in FASTA format, but for multiple sequence alignment

(1) PHYLIP (2) BLASTA

(3) Both 1 & 2 (4) None

SPACE FOR ROUGH WORK

113. Local alignment search tool involves

(1) Needleman –Wunsch algorithm

(2) Smith- Waterman algorithm

(3) Both 1 & 2

(4) None

114. The protein sequence data base is

(1) SWISS PORT (2) DDBJ

(3) TrEMBL (4) Both 1 & 3

115. Example for Lewis acid is

(1) NaOH (2) $AlCl_3$

(3) K_2CO_3 (4) KOH

116. Which of the following abnormality resulting from the inheritance of unbalanced complement of chromosomes can be diagnosed through Karyotyping?

(1) Down's syndrome (2) Turner's syndrome

(3) Klinefelter's syndrome (4) All of these

117. Which of the following is not a plastid?

(1) Oleosomes (2) Amyloplast

(3) Leucoplast (4) None

118. Pinocytosis refers to

(1) Cell eating (2) Cell drinking

(3) Cell vomiting (4) None

119. Pairing of homologus chromosome is referred to as

(1) Crossing over (2) Chiasmata formation

(3) Synapsis (4) None

SPACE FOR ROUGH WORK

120. The gene sequence of a chromosome is given as ABCD.EFGH. An aberration has occurred which yields ADCB.EFGH. What type of a mutation is this?

(1) Inversion (2) Duplication

(3) Deletion (4) None

121. A polynucleotide strand whose base sequence can be copied is known as

(1) Template (2) Primer

(3) SSBP (4) None

122. The deoxyribonucleotide responsible for the codon AUG is

(1) CAT (2) ATC

(3) ACT (4) TAC

123. What chemical groups are present at the origin & terminus of m-RNA molecule that has just been synthesized ?

(1) 3^1 OH & 5^1 triphosphate (2) 5^1 triphosphate & 3^1 OH

(3) 5^1 triphosphate (4) 3^1 OH

124. The absorption of light by any absorbing material is governed by

(1) Bouger-Lambert law (2) Lamberts law

(3) Bougers law (4) Bouger- Beer law

125. The term Chemical shift is used with reference to

(1) NMR (2) ESR

(3) EPR (4) All the above

126. Nitrogen fixation is a process of

(1) Assimilation of nitrate

(2) Utilization of nitrogen gas

(3) Conversion of organic nitrogen to protein

(4) Conversion of molecular nitrogen to ammonia

SPACE FOR ROUGH WORK

127. Which of the following does not cause atmospheric pollution ?

(1) CO_2 (2) SO_2

(3) H_2 (4) CO

128. Organisms used in the production of *Azolla* biofertilizer

(1) Spirulina (2) Chlorella

(3) Anabaena (4) All the above

129. The compound used for production of bioplastic

(1) Butyric acid (2) PVC

(3) β-Polyhydroxy Butyric acid (4) All

130. The chemical coagulant used in the primary treatment of sewage

(1) Aluminium sulphate with lime

(2) Ferric chloride

(3) Ferric sulphate

(4) All

131. The major role of silicon in fermentor design is

(1) To improve engineering property

(2) To improve corrosion resistance property

(3) To improve efficiency of power consumption

(4) Both 1 & 2

132. The online monitoring of biomass is successful with

(1) UV spectroscopy (2) Dielectric spectroscopy

(3) Colorimetry (4) Both 1 & 2

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133. $A + B \rightarrow R$. The rate of reaction is

(1) $r_A = KC_AC_B$ (2) $-r_A = KC_AC_B$

(3) $r_A = K(C_A + C_B)$ (4) $-r_A = K(C_A + C_B)$

134. The property of ideal sensor is/ are

(1) Stability (2) Reliability

(3) Robustness (4) All the above

135. The cells derived from immortal tumour of lymphocytes are

(1) Monoclonal cells (2) Myeloma cells

(3) Lympho cell (4) Melanoma cells

136. Biotransformation is also known as

(1) Drug metabolism (2) Detoxification

(3) Both 1 and 2 (4) None

137. The Drug acting on central nerves system is

(1) Nitrous oxide (2) Thyopenton

(3) Ethanol (4) Ether

138. Plant that acts as Laxative is

(1) Digitalis (2) Senna leaves

(3) Purpurae (4) None

139. Alkaloids of vinca rosea is

(1) Vincristine (2) Vinblastine

(3) Both 1 and 2 (4) None

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140. The drug used for Malaria is extracted from

(1) Cinchona (2) Vinca rosea

(3) Senna (4) Colchicum

141. Which of the following is considered as a pretreatment to the biological feeds?

(1) Heating to denature the proteins

(2) Addition of filter aids to increase the porosity

(3) Addition of electrolytes

(4) All

142. Constituents of fermented broths are separated by using thermal energy in

(1) Absorption (2) Adsorption

(3) Distillation (4) Desorption

143. Relationship between Force & Angular velocity is

(1) $F= \omega r^2$ (2) $\omega= F^2 r$

(3) $F= \omega^2 r$ (4) $\omega= F r^2$

144. The class of enzymes that catalyze the following reaction is

$A–B + H_2O \rightarrow A–H + B–OH$

(1) Transferases (2) Hydrolases

(3) Ligases (4) Lyases

145. Enzymes can be purified based on size and mass using

(1) Centrifugation (2) Iso electric focusing

(3) Salting in and out (4) Solvent extraction

SPACE FOR ROUGH WORK

146. Greatest number of compounds are formed by the element

(1) H (2) C

(3) O (4) N

147. The wavelength of the visible light is

(1) 150 nm (2) 200 nm

(3) 700 nm (4) 820 nm

148. Along the period, the atomic radii decreases from left to right of the periodic table because

(1) Decrease in effective nuclear charge

(2) Increase in effective nuclear charge

(3) Stability of effective nuclear charge

(4) Effective nuclear charge does not play any role

149. Which of the statement is not true for sigma bonds ?

(1) Formed by axial overlapping of atomic orbitals

(2) Formed only by p-p overlapping

(3) Efficient overlap takes place and the bond is strong

(4) Can occur alone in the covalent compounds

150. Identify the non reducing sugar

(1) Sucrose (2) Lactose

(3) Maltose (4) Starch

151. In case ball mill, the solid particles are reduced in size by

(1) Compression (2) Impact

(3) Attrition (4) All

152. The property of liquid surface film to exert tension is

(1) Surface tension (2) Pseudoplastic tension

(3) Shear tension (4) Dialent tension

SPACE FOR ROUGH WORK

153. The dimension of Linear velocity is

(1) $L\theta^{-2}$ (2) $L^{-1}\theta^{-1}$

(3) $L\theta^{-3}$ (4) $L\theta^{-1}$

154. Most commonly used unit operation in petroleum industry is

(1) Crystallization (2) Distillation

(3) Extraction (4) Purification

155. State which of the following apparatus has more ability to recover heat

(1) Parallel flow apparatus (2) Counter current flow apparatus

(3) Radial flow apparatus (4) Axial flow apparatus

156. Which of the solvent system is used for separation of Amino acids using TLC ?

(1) Butanol/Acetic acid/ Water (2) Ethanol/water

(3) Both 1 & 2 (4) None

157. The SI unit for electric charge is

(1) Siemens (2) Coulomb

(3) Ampere (4) Farad

158. Voltage is expressed as

(1) Watt / Ampere (2) Coulomb/ Voltage

(3) Coulomb/ Second (4) None

159. In the bacterial cell RNA is present in the form of

(1) m RNA (2) t RNA

(3) r RNA (4) All the above

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160. A bacterial cell with a tuft of flagella at one pole is said to be

(1) Peritrichous (2) Amphitrichous

(3) Lophotrichous (4) Atrichous

161. Excess of Fluorine in water causes

(1) Tooth decay (2) Dental caries

(3) Fluorosis (4) None

162. Mycorrhiza is a symbiotic association between plant roots and

(1) Bacteria (2) Nematodes

(3) Algae (4) Fungi

163. Which cell type produces antibodies ?

(1) Macrophages (2) T-lymphocytes

(3) Plasma cells (4) Natural killer cells

164. Fab region of an immunoglobulin is responsible for

(1) Binding to antigen (2) Binding to Fc receptors

(3) Binding to Macrophage (4) Binding to Complement

165. T-lymphocytes gain immune competence in

(1) Thymus

(2) Thymus for TH cell & Bone marrow for TK cell

(3) Thymus for TK cell & Bone marrow for TH cell

(4) Bone marrow

166. pH of the normal milk

(1) 6.7 (2) 6.2

(3) 7.0 (4) 7.2

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167. Deficiency of Vitamin A causes

(1) Muscular Dystrophy (2) Rickets

(3) Night blindness (4) Pigeon breast

168. Which of the following is not a preservative ?

(1) Benzoic acid (2) Sorbic acid

(3) Acetic acid (4) Indole acetic acid

169. Carbohydrates are fermented into alcohol by

(1) Amylase (2) Zymase

(3) Protease (4) Lipase

170. The most common probiotic organism

(1) Pseudomonas (2) Penicillium

(3) E Coli (4) Lactobacillus

171. Conversion of 5N H_3PO_4 to g/l gives

(1) 186.3 g/l (2) 198.3 g/l

(3) 163.35 g/l (4) 1003.35 g/l

172. The available nitrogen (N) in the urea sample is found to be 45 % by weight. Calculate actual urea contained in the sample

(1) 96.43 (2) 43.96

(3) 46.93 (4) 94.36

173. In absorption process the insoluble component of gas mixture is referred to as

(1) Solvent (2) Lean gas

(3) Absorbent (4) Inert gas

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174. The heat capacity of 1Kg dry gas/air and vapour/ moisture contained in it is

(1) Absolute Heat
(2) Foam Heat
(3) Humid Heat
(4) None

175. The atomic number of Radium is

(1) 79
(2) 88
(3) 96
(4) 100

176. Enzyme luciferase can be activated by

(1) Ca^{2+}
(2) Mg^{2+}
(3) Zn^{2+}
(4) Mn^{2+}

177. Lock and key theory of enzyme activity was proposed by

(1) Fischer
(2) Koshland
(3) Kuhne
(4) Arrhenius

178. Enzymes are

(1) Thermophile
(2) Thermolabile
(3) Thermostable
(4) Thermostatic

179. One of the enzymes involved in glycolysis, aldolase requires Zn^{2+} for catalysis. Zn^{2+} denotes

(1) Cofactor
(2) Apoenzyme
(3) Coenzyme
(4) Holoenzyme

180. Complete the statement with respect to enzyme specificity

Glucokinase: D – Glucose :: Cellulase : ___?____

(1) D-Glucose
(2) α-Glycosidic linkages
(3) β-Glycosidic bonds
(4) Peptide linkages

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A-3