DIPLOMA - COMMON ENTRANCE TEST-2017

EN	COURSE	DAY : SUNDAY DATE : 02-07-2017
	ENVIRONMENTAL	TIME : 10.00 a.m. to 1.00 p.m.

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 - 1	212030

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 09.50 a.m.**
3. The Serial Number of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
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 10.00 a.m., till then;**
   - Do not remove the paper seal / polythene bag of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

CONFIDENTIAL

IMPORTANT INSTRUCTIONS TO CANDIDATES

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 10.00 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 BALL POINT 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 :

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 1.00 p.m.,** stop marking on the OMR answer sheet and affix your **left hand thumb impression** on the OMR answer sheet as per the instructions.
6. Handover 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.**

PART – A

APPLIED SCIENCE

1. The S.I. unit of Coefficient of Viscosity is

   (A) Poise (B) NSm^{-2}

   (C) $NS^{-1}m^2$ (D) $NS^{-1}m^{-2}$

2. The prefix used for 10^{+9} is

   (A) Mega (B) Tera

   (C) Giga (D) Hecta

3. The physical quantity which has the dimensional formula $[ML^0T^{-2}]$ is

   (A) Force (B) Surface tension

   (C) Viscosity (D) Work

4. The least count of slide callipers is given by

   (A) 1 MSD + 1 VSD (B) 1 MSD × 1 VSD

   (C) 1 MSD – 1 VSD (D) $\frac{1\,MSD}{1\,VSD}$

5. The product of force and time is

   (A) Momentum (B) Moment

   (C) Impulse (D) Acceleration

6. The change in position of a particle in a particular direction is referred to as

   (A) Speed (B) Displacement

   (C) Velocity (D) Acceleration

Space For Rough Work

7. The equation of motion of a body for distance travelled 'S_n' in the 'n^{th}' second is given by

(A) $S_n = u + \frac{a}{2}(2n-1)$ (B) $S_n = u - \frac{a}{2}(2n-1)$

(C) $S_n = u + \frac{a}{2}(2n+1)$ (D) $S_n = u - \frac{a}{2}(2n+1)$

8. A bullet of mass 0.01 kg is fired with a velocity of 960 ms^{-1} from a rifle of mass 3 kg, the velocity of recoil of rifle is

(A) $-320\,ms^{-1}$ (B) $-0.32\,ms^{-1}$

(C) $-3.2\,ms^{-1}$ (D) $-32\,ms^{-1}$

9. One of the following is not a scalar quantity :

(A) Mass (B) Density

(C) Force (D) Speed

10. If a body fixed about a point rotates in clockwise direction, the moment of force is measured as

(A) Positive (B) Negative

(C) Zero (D) Equal

11. The resultant magnitude of two forces P and Q acting in same line and in same direction is

(A) P – Q (B) P + Q

(C) Q – P (D) $\frac{P}{Q}$

Space For Rough Work

12. The resultant magnitude of two forces 6 N and 8 N acting at right angles to each other is

(A) 100 N (B) 10 N

(C) 48 N (D) 14 N

13. The value of resultant magnitude of two forces acting at a point is maximum, when the angle between the two forces is

(A) 0° (B) 90°

(C) 180° (D) 45°

14. Rise of liquid in a capillary tube is due to

(A) Energy (B) Viscosity

(C) Surface tension (D) Pressure

15. The ratio of volume stress to volume strain is called

(A) Bulk modulus (B) Young's modulus

(C) Rigidity modulus (D) Poisson's ratio

16. The reciprocal of bulk modulus of elasticity is called

(A) Compressibility (B) Rigidity

(C) Plasticity (D) Modulus of elasticity

17. The force of cohesion is maximum in

(A) Solids (B) Gases

(C) Liquids (D) Plasma

Space For Rough Work

18. The value of surface tension is 80 dyne/cm. What will be its value in Nm^{-1} ?

(A) $8\times10^{2}\ Nm^{-1}$ (B) $80\ Nm^{-1}$

(C) $8\times10^{-2}\ Nm^{-1}$ (D) $8\times10^{3}\ Nm^{-1}$

19. Pressure at the bottom of a container having base area of $10\ m^2$ filled with water to a height of 10 m is

(A) 9.8×10^{4} Pa (B) 980×10^{4} Pa

(C) 9.8×10^{-4} Pa (D) 980×10^{-4} Pa

20. 100 °C when expressed in absolute scale is

(A) 100 K (B) 0 K

(C) 273 K (D) 373 K

21. Gas law which gives the relation between pressure and volume changes is

(A) Boyle's law (B) Charles' law

(C) Gay-Lussac's law (D) Hooke's law

22. Amount of heat required to raise the temperature of one gram of water through 1 °C is

(A) Heat capacity (B) Conductivity

(C) Calorie (D) Joule

23. An example of longitudinal wave is

(A) Sound waves (B) Waves on the surface of water

(C) Light waves (D) Electromagnetic waves

Space For Rough Work

24. The relation between velocity of sound v, and absolute temperature T is

(A) $v \propto T$ (B) $v \propto \frac{1}{T}$

(C) $v \propto \sqrt{T}$ (D) $v \propto T^2$

25. The distance between a node and the next antinode in a stationary wave is equal to

(A) one wavelength (B) half wavelength

(C) twice wavelength (D) one fourth wavelength

26. Damage caused by marching military columns to the suspension bridge is due to

(A) Echo (B) Resonance

(C) Beats (D) Interference

27. During forced vibrations, if the forced frequency is F_1 and natural frequency is F_2, the body resonates if

(A) $F_1 > F_2$ (B) $F_2 > F_1$

(C) $F_1 = 2.5\, F_2$ (D) $F_1 = F_2$

28. The fundamental frequency of transverse vibrations of the stretched string is inversely proportional to

(A) tension (B) length of string

(C) square root of tension (D) square root of length of string

29. Minimum length of a hall to produce an echo is

(A) 50 m (B) 34 m

(C) 25 m (D) 17 m

Space For Rough Work

30. The property of light that Huygen's wave theory could explain is

(A) Polarisation (B) Photoelectric effect

(C) Interference (D) Compton effect

31. The spectrum of black body radiation is successfully explained by

(A) Newton's corpuscular theory of light

(B) Huygen's wave theory of light

(C) Maxwell's electromagnetic theory of light

(D) Planck's quantum theory of light

32. For constructive interference of light, the path difference should be

(A) $\frac{2n\lambda}{2}$ (B) $(2n+1)\frac{\lambda}{2}$

(C) $(2n+1)\frac{\lambda}{3}$ (D) $(2n+1)\frac{\lambda}{4}$

33. Two very close objects are just resolved if the central maximum of one object is on

(A) central maximum of another

(B) first minimum of another

(C) beyond second minimum of another

(D) between central maximum and first minimum of another

34. The light is incident at polarising angle θ_p and the angle of refraction is r, then

(A) $\theta_p + r = 0°$ (B) $\theta_p + r = 90°$

(C) $\theta_p + r = 180°$ (D) $\theta_p + r = 360°$

Space For Rough Work

35. Minimum energy required to remove an electron from the metal surface is called

(A) Kinetic energy (B) Potential energy

(C) Work function (D) Energy function

36. When the size of the scattering particle is small, the intensity of scattered light is inversely proportional to

(A) fourth power of wavelength (B) square of wavelength

(C) square root of wavelength (D) cube of wavelength

37. Time for which an atom stays in metastable state is of the order of

(A) Seconds (B) Milli-seconds

(C) Micro-seconds (D) Nano-seconds

38. If an element emits β-ray then its atomic number

(A) increases by one (B) decreases by one

(C) remains same (D) decreases by two

39. If the concentration of H^+ ions is more than 10^{-7} gm ion per litre, the solution is

(A) Base (B) Acid

(C) Neutral (D) Both Acid and Base

40. A galvanic cell is one in which

(A) chemical energy produce electric energy

(B) electric energy produce chemical energy

(C) chemical energy will not produce electric energy

(D) electric energy will not produce chemical energy

Space For Rough Work

PART – B

APPLIED MATHEMATICS

41. The value of x if $\begin{vmatrix} 1 & 2 & 3 \\ 2 & x & 3 \\ 3 & 4 & 3 \end{vmatrix} = 0$ is

(A) 0 (B) -3

(C) 3 (D) 18

42. The value of x, if $4x + y = 7$, $3y + 4z = 5$ and $3z + 5x = 2$ is

(A) 0 (B) 1

(C) 3 (D) -1

43. If $A = \begin{bmatrix} 2 & -1 \\ 3 & -4 \end{bmatrix}$, then A^{-1} is

(A) $-\frac{1}{5}\begin{bmatrix} -4 & -3 \\ 1 & 2 \end{bmatrix}$ (B) $-\frac{1}{5}\begin{bmatrix} -4 & 1 \\ -3 & 2 \end{bmatrix}$

(C) $-\frac{1}{11}\begin{bmatrix} -4 & -3 \\ 1 & 2 \end{bmatrix}$ (D) $-\frac{1}{11}\begin{bmatrix} -4 & 1 \\ -3 & 2 \end{bmatrix}$

44. The characteristic equation of the matrix $A = \begin{bmatrix} 2 & -1 \\ 5 & -6 \end{bmatrix}$ is

(A) $A^2 + 8A - 7I = 0$ (B) $A^2 + 4A - 17I = 0$

(C) $A^2 + 4A + 7I = 0$ (D) $A^2 + 4A - 7I = 0$

Space For Rough Work

45. If $\begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix} + A = \begin{bmatrix} 5 & 1 \\ 3 & 2 \end{bmatrix}$, then A is

(A) $\begin{bmatrix} 3 & 2 \\ -2 & 0 \end{bmatrix}$ (B) $\begin{bmatrix} 3 & -2 \\ 2 & 0 \end{bmatrix}$

(C) $\begin{bmatrix} -2 & 3 \\ 2 & 0 \end{bmatrix}$ (D) $\begin{bmatrix} 0 & 3 \\ -2 & 2 \end{bmatrix}$

46. The middle term of the expansion of $\left(x^2 - \frac{2}{x}\right)^{24}$ is

(A) ${}^{24}C_{10}2^{10}x^{12}$ (B) ${}^{24}C_{11}2^{12}x^{12}$

(C) ${}^{24}C_{13}2^{10}x^{10}$ (D) ${}^{24}C_{12}2^{12}x^{12}$

47. The term independent of x in $\left(x^2 - \frac{4}{3x}\right)^9$ is

(A) ${}^{9}C_{6}(4)^{6}$ (B) ${}^{9}C_{6}(3)^{-6}$

(C) ${}^{9}C_{6}\left(\frac{4}{3}\right)^{6}$ (D) ${}^{9}C_{6}\left(\frac{3}{4}\right)^{6}$

48. If $3i - 2j + k$, $i - 3j + 5k$, $2i + j - 4k$ are the sides of a triangle, then the triangle is

(A) Right angled triangle (B) Equilateral triangle

(C) Isosceles triangle (D) Isosceles right angled triangle

49. If $\vec{a} = (2, -1, 4)$ and $\vec{b} = (2, -3, 4)$, then projection of $\vec{a}$ on $\vec{b}$ is

(A) $\frac{23}{\sqrt{21}}$ (B) $\frac{23}{\sqrt{29}}$

(C) $\frac{-23}{\sqrt{29}}$ (D) $\frac{-23}{\sqrt{21}}$

Space For Rough Work

50. The sine of the angle between the vectors $(2i - 2j + k)$ and $2i + j + 2k$ is

(A) $\frac{\sqrt{65}}{3}$ (B) $\frac{\sqrt{65}}{\sqrt{3}}$

(C) $\frac{\sqrt{65}}{9}$ (D) $\sqrt{65}$

51. If $x \sin^2 45 = \frac{\tan^2 45 + \cot^2 30}{\sin^2 45 + \cos^2 45}$ then the value of x is

(A) 4 (B) 2

(C) 6 (D) 8

52. The value of $\frac{4}{3}\sec^2 \frac{\pi}{3} - \text{cosec}^2 \frac{\pi}{6} + \frac{3}{4}\tan^2 \frac{\pi}{4} - 2\sin^2 \frac{\pi}{3}$ is

(A) $-\frac{11}{12}$ (B) $\frac{53}{12}$

(C) $\frac{7}{12}$ (D) $-\frac{7}{12}$

53. The value of

$$\frac{\sin(90-\theta)}{\cos(360-\theta)} + \frac{\sec\left(\frac{3\pi}{2}+\theta\right)}{\text{cosec}(\pi+\theta)} + \frac{\tan(180-\theta)}{\tan(-\theta)} \text{ is}$$

(A) 1 (B) –1

(C) 3 (D) 2

54. The value of cosec 43 cot 43 cot 47 cos 47

(A) 1 (B) 0

(C) –1 (D) 2

Space For Rough Work

55. The value of $\frac{\tan 69^\circ + \tan 66^\circ}{1 - \tan 69^\circ \tan 66^\circ}$

(A) 1 (B) -1

(C) 0 (D) ∞

56. If $\tan \frac{A}{2} = x$ then $\sin A + \tan A$ is

(A) $\frac{4x}{1-x^2}$ (B) $\frac{4x}{1+x^2}$

(C) $\frac{4x}{1+x^4}$ (D) $\frac{4x}{1-x^4}$

57. The value of $\sin 70^\circ - \sin 50^\circ - \sin 10^\circ$ is

(A) 1 (B) 0

(C) -1 (D) $\frac{1}{2}$

58. $\sin^{-1} x$ is also equal to

(A) $\text{cosec}^{-1}\left(\frac{1}{x}\right)$ (B) $\text{cosec}\, x$

(C) $\text{cosec}^{-1} x$ (D) $\frac{1}{\sin x}$

59. Centroid divides the median in the ratio

(A) 2 : 1 (B) 1 : 2

(C) 1 : 1 (D) 1 : 4

60. The co-ordinates of a point which divides the line join of the points (a + b, a – b) and (a – b, a + b) in the ratio 2 : 3 is

(A) $\frac{5a+5b}{5}, \frac{5a-5b}{5}$ (B) $\frac{a+b}{5}, \frac{a-b}{5}$

(C) $\frac{5a+b}{5}, \frac{5a-b}{5}$ (D) $\frac{5a-b}{5}, \frac{a+5b}{5}$

Space For Rough Work

61. The equation of straight line whose intercepts are 3 and 5 on the axes is

(A) $5x - 3y = 15$ (B) $5x + 3y = 15$

(C) $5x + 3y = 1$ (D) $15x + 15y = 1$

62. The angle between the lines whose slopes are $\sqrt{3}$ and $\frac{1}{\sqrt{3}}$ respectively is

(A) $\frac{\pi}{6}$ (B) $\frac{\pi}{3}$

(C) $\frac{\pi}{4}$ (D) $\frac{\pi}{2}$

63. The equation of the straight line passing through (2, 3) and x intercept is twice its y intercept is

(A) $x + 2y = 8$ (B) $x - 2y = 8$

(C) $x + y = 4$ (D) $2x + 2y = 8$

64. The equation to the line passing through the point (–6, 7) and parallel to the line joining (3, 4) and (6, –8) is

(A) $4x + y + 31 = 0$ (B) $x + 4y - 1 = 0$

(C) $x - 4y + 1 = 0$ (D) $4x + y + 17 = 0$

65. $\lim_{0 \to \pi/2} (\sec 0 - \tan 0)$ is equal to

(A) 0 (B) 1

(C) $\frac{\pi}{2}$ (D) π

66. $\lim_{x \to 4} \frac{x - 4}{3 - \sqrt{13 - x}}$ is equal to

(A) 3 (B) 9

(C) 6 (D) 0

Space For Rough Work

67. If $y = (1+\log x)^5$, then $\frac{dy}{dx}$ is

(A) $5(\log x)^4$ (B) $\frac{5}{x}(1+\log x)^4$

(C) $5(1+\log x)^4$ (D) $5x^4 \log x$

68. If $x = \cos^{-1} t$ and $y = \sin^{-1} t$, then $\frac{dy}{dx}$ is

(A) -1 (B) 1

(C) $\frac{1}{2\sqrt{1-t^2}}$ (D) $\frac{2}{\sqrt{1-t^2}}$

69. If $y = x \log y$, then $\frac{dy}{dx}$ is

(A) $\frac{\log x^x}{x-y}$ (B) $\frac{\log y^x}{x-y}$

(C) $\frac{\log y^y}{x-y}$ (D) $\frac{\log y^y}{y-x}$

70. If $y = \frac{x+1}{x+2}$, then $\frac{dy}{dx}$ is

(A) $\frac{1}{(x+2)^2}$ (B) $\frac{2x+3}{(x+2)^2}$

(C) $-\frac{1}{(x+2)^2}$ (D) $\frac{2x-3}{(x+2)^2}$

71. The equation of tangent to the curve $y^2 = 4x$ at (1, 2) is

(A) $x + y - 3 = 0$ (B) $x - y + 1 = 0$

(C) $2x - y = 0$ (D) $2x + y - 4 = 0$

Space For Rough Work

72. The maximum value of $7 - 8x - 2x^2$ is

(A) 15 (B) -4

(C) -2 (D) 31

73. The value of $\int \log 2x \, dx$ is

(A) $x \log 2x + x + C$ (B) $x \log 2x - x + C$

(C) $\frac{1}{2x} + C$ (D) $\frac{1}{x} + C$

74. The value of $\int \sec^4 x \cdot \tan x \, dx$

(A) $\frac{\sec^4 x}{4} + C$ (B) $4 \sec^4 x + C$

(C) $3 \sec^2 x + C$ (D) $\frac{\tan^4 x}{4} + C$

75. The value of $\int x \log x \, dx$ is

(A) $\frac{x^2}{2} \log x - \frac{x^2}{2} + C$ (B) $\frac{x^2}{2} \log x + \frac{x^2}{2} + C$

(C) $\frac{x^2}{2} \log x - \frac{x^2}{4} + C$ (D) $\frac{x^2}{2} \log x + \frac{x^2}{4} + C$

76. $\int_0^{\pi/4} \tan^2 x \, dx$ is equal to

(A) $\frac{\pi}{4} - 1$ (B) $1 - \frac{\pi}{4}$

(C) $\frac{\pi^2}{16}$ (D) $\frac{\pi^2}{16} - 1$

Space For Rough Work

77. The value of $\int_0^1 x\sqrt{1-x^2}\,dx$ is

(A) $-\frac{1}{3}$ (B) 0

(C) ∞ (D) $\frac{1}{3}$

78. The volume generated by revolving the line $y = x + 1$ about the x-axis between the ordinates $x = 0$ and $x = 2$

(A) $\frac{26\pi}{3}$ units (B) $\frac{10\pi}{3}$ units

(C) $\frac{26}{3}$ units (D) 4 units

79. The degree and order of the differential equation $\frac{d^2y}{dx^2} = \left[1+\left(\frac{dy}{dx}\right)^2\right]^{1/3}$ are

(A) 2 and 1 (B) 1 and 2

(C) 3 and 2 (D) 2 and 3

80. The solution of differential equation $\frac{dy}{dx} + y \tan x = \sec x$ is

(A) $y \sec x = \tan x + C$

(B) $y \sin x = \sec x + C$

(C) $\log(\sec x) = \tan x + C$

(D) $y \sec x = -\cot x + C$

Space For Rough Work

PART – C

ENVIRONMENTAL ENGINEERING

It consists of **81** to **180** questions :

81. The compressive strength of granite is

(A) 50 to 70 MN/m^2 (B) 70 to 130 MN/m^2

(C) 130 to 170 MN/m^2 (D) 170 to 200 MN/m^2

82. The percentage of silica in a good brick clay should vary from

(A) 20 to 30 % (B) 30 to 40 %

(C) 40 to 50 % (D) 50 to 60 %

83. Efflorescence is caused if

(A) the alkaline salt is present in the brick.

(B) the clay used for making bricks contain pyrite.

(C) the water used for pugging the clay contain gypsum.

(D) All of the above

84. The amount of gypsum usually added in the manufacture of cement is

(A) 0.1 to 0.5 % (B) 0.5 to 1 %

(C) 1 to 3 % (D) 3 to 5 %

85. The soundness of cement is tested by

(A) Air permeability method (B) Le-Chatelier method

(C) Vicat's apparatus (D) All of the above

86. In cement concrete the reinforcement is introduced to improve the

(A) Compressive strength of concrete

(B) Yield strength of concrete

(C) Tensile strength of concrete

(D) None of the above

Space For Rough Work

87. The bricks should be burnt at a temperature from

(A) 300 °C to 500 °C (B) 500 °C to 700 °C

(C) 700 °C to 1000 °C (D) 1000 °C to 1200 °C

88. Which of the following is unstratified ?

(A) Sand stone (B) Lime stone

(C) Shale (D) Granite

89. The length of an engineer's chain should be

(A) 100 ft (B) 66 ft

(C) 30 m (D) 20 m

90. An obstacle which obstructs both chaining and ranging

(A) River (B) Lake

(C) Hillock (D) Building

91. The tie line is run through the Survey to

(A) Take offsets for detailed Surveying

(B) Take details of nearby objects

(C) Check accuracy of work

(D) None of the above

92. If the bearing of a line is 185° 30′ in WCB, its value in QB system is

(A) 5° 30′ (B) S 5° 30′ W

(C) S 5° 30′ E (D) 185°

93. True meridian passes through

(A) Actual line of control (B) A fixed point

(C) True north and true south (D) Equational line

Space For Rough Work

94. What is the whole circle bearing of a quadrant bearing N 15° 28′ W ?

(A) 195° 28′ (B) 164° 32′

(C) 344° 32′ (D) 344° 28′

95. An imaginary line connecting the points of equal elevation on the ground surface is known as

(A) Contour line (B) Contour interval

(C) Horizontal equivalent (D) Contour gradient

96. A relatively fixed point of known elevation above datum is called

(A) Datum (B) Bench mark

(C) Reduced level (D) Reference point

97. The weight per unit volume of a liquid at a standard temperature and pressure is called

(A) Specific weight (B) Mass density

(C) Specific gravity (D) None of these

98. Surface tension of water

(A) Increases with decrease in temperature

(B) Decreases with decrease in temperature

(C) Independent of temperature

(D) None of these

99. The unit of dynamic viscosity of fluid is

(A) m^2/sec (B) N. sec/m^2

(C) Pa. sec/m^2 (D) Kg. sec^2/m^2

Space For Rough Work

100. When ship moving on sea water enters a river and moves inland, it is expected to

(A) Rise a little

(B) Sink a little

(C) Maintain the same level of draft

(D) Rise or fall depending on whether it is made of wood or steel

101. Water flows at a depth of 0.1 m with a velocity of 6 m/s in a rectangular channel, the alternate depth is

(A) 0.30 m (B) 0.40 m

(C) 0.86 m (D) 0.81 m

102. The width of a weir with end contraction is

(A) equal to the width of the channel (B) less than width of the channel

(C) half the width of the channel (D) one fourth the width of the channel

103. The liquid used in manometers should have

(A) low density (B) high density

(C) low surface tension (D) high surface tension

104. The most efficient section of a channel is

(A) Triangular (B) Rectangular

(C) Square (D) Trapezoidal

105. The value of coefficient of velocity for a sharp edge orifice _____ with the head of water.

(A) decreases (B) increases

(C) same (D) None of the above

106. A nozzle is generally made of

(A) Cylindrical shape (B) Convergent shape

(C) Divergent shape (D) Convergent – Divergent shape

Space For Rough Work

107. The total solids concentration of water is determined by _____ analysis.

(A) Gravimetric (B) Volumetric

(C) Colorimetric (D) Potentiometric

108. The dispersion of solid in liquid medium is commonly known as _____.

(A) Fog (B) Smoke

(C) Foam (D) Sol

109. Reverse Osmosis can remove _____ ions from solution.

(A) suspended (B) dissolved

(C) both (A) and (B) (D) None of the above

110. The advanced form of Liquid Chromatography is known as _____.

(A) IPC (B) HPLC

(C) PLC (D) HLC

111. Alkalinity of a water is a measure of its capacity to neutralize _____.

(A) Acids (B) Bases

(C) both (A) and (B) (D) Hardness

112. Chlorine is the most common _____ agent.

(A) Coagulant (B) Disinfectant

(C) Flocculent (D) Coagulant aid

113. The solubility of atmospheric oxygen in fresh water is _____ @ 35 °C.

(A) 7 mg/l (B) 4 mg/l

(C) 10 mg/l (D) 14 mg/l

Space For Rough Work

114. The fluoride concentration in drinking water less than 1.0 mg/l causes _____.

(A) Dental Caries
(B) Dental Fluorosis
(C) Breakage in Bone
(D) Fluorosis

115. The strong oxidizing agent used in COD test is _____.

(A) Potassium Dichromate
(B) Potassium Chromate
(C) Potassium Iodide
(D) Potassium Chloride

116. Direct Nesslerization is used in the determination of _____.

(A) Organic Nitrogen
(B) Ammonia Nitrogen
(C) Nitrite Nitrogen
(D) Nitrate Nitrogen

117. The subsurface water obtained under pressure is generally known as

(A) open well
(B) tube well
(C) infiltration well
(D) artesian well

118. The total domestic consumption in a city as compared to total demand of a city is

(A) 20%
(B) 30%
(C) 60%
(D) 75%

119. The colour of water is measured on

(A) Turbidity scale
(B) Silical scale
(C) Platinum cobalt scale
(D) Threshold scale

120. The permissible pH value for public supply water is between

(A) 4.5 to 5.5
(B) 5.5 to 6.5
(C) 6.5 to 8.5
(D) 8.5 to 10.5

Space For Rough Work

121. _____ precipitation occurs due to conflict between two air masses.

(A) Frontal (B) Convective

(C) Orographic (D) Cyclonic

122. The required depth of sand bed in slow sand filter should be

(A) 0.6 to 0.9 m (B) 0.6 to 0.75 m

(C) 0.3 to 0.45 m (D) 1 to 2 m

123. Aeration is done for the removal of

(A) Colour (B) Turbidity

(C) Hardness (D) Bad odour

124. When the level of the source is higher than the level of the consumer place, water is genrally supplied by

(A) Gravitational system

(B) Pumping system

(C) Combined gravity & pumping system

(D) Any of the above

125. Pre-chlorination

(A) Improves coagulation (B) Reduces odour & taste

(C) Reduce organisms (D) All the above

126. The type of valve which allows water to flow in one direction but prevents its flow in the reverse direction is

(A) Reflux valve (B) Sluice valve

(C) Air relief valve (D) Pressure relief valve

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127. Disinfection of water results in

(A) Removal of turbidity (B) Removal of hardness

(C) Killing disease bacteria (D) Complete sterilization

128. The process in which the chlorination is done beyond the break-point is known as

(A) Pre-chlorination (B) Post chlorination

(C) Super chlorination (D) Break-point chlorination

129. First stage in water treatment is

(A) Sedimentation (B) Filtration

(C) Evaporation (D) Precipitation

130. Pan measurement method is commonly used to determine

(A) Run-off (B) Infiltration

(C) Evaporation (D) Precipitation

131. For removal of temporary hardness of water

(A) Water is filtered (B) Water is boiled

(C) Lime is added (D) Chlorination is done

132. The underground conduit constructed for removal of liquid waste of a community is known as

(A) Canals (B) Tunnels

(C) Sewer (D) Sewage

133. The sewer obtaining its discharge directly from buildings is known as

(A) Lateral sewer (B) Main sewer

(C) Intercepting river (D) None of these

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134. The sewer pipes have to be designed and checked for

(A) Only maximum flow

(B) Only minimum flow

(C) Both maximum and minimum flow

(D) None of the above

135. The lower most level or surface of a sewer is known as

(A) Bottom point (B) Street sewer

(C) Head sewer (D) Invert Sewer

136. The inlet with a basin which makes grit, sand or debris to settle and thus prevents it from entering into the sewer is called

(A) Man hole (B) Catch basin

(C) Street Inlet (D) Inspection hole

137. Traps are provided to

(A) stop flow of sewage

(B) separate the flow of liquid & solids

(C) avoid back flow of sewage

(D) prevent the escape of foul gases inside & outside the house

138. Trickling filters are used to remove

(A) suspended solids (B) colloidal solids

(C) organic matter (D) pathogenic bacteria

139. Structures constructed to divert part of sewage in case of combined sewers are

(A) Leaping weir (B) Overflow weir

(C) Siphon spillway (D) All the above

Space For Rough Work

140. Fresh sewage is usually

(A) Alkaline (B) Neutral

(C) Acidic (D) has pH value of 7

141. From Septic tank the effluents are discharged into

(A) Soak pit (B) Drainage

(C) Oxidation pond (D) Sewer

142. Pipe which carries discharges from fittings such as urinals, water-closets etc. known as

(A) Waste pipe (B) Soil pipe

(C) Anti siphonage pipe (D) None of the above

143. In Oxidation ponds, sewage is mainly treated by

(A) Dilution (B) Reduction

(C) Purification (D) Aerobic bacteria action

144. A manhole of such depth that an access shaft is required in addition to the working chamber is called

(A) Tube manhole (B) Deep manhole

(C) Well manhole (D) Earth manhole

145. The bacteria which live on free oxygen of air in water are called

(A) Aerobic bacteria (B) Anaerobic bacteria

(C) Facultative bacteria (D) All of the above

146. If organic matter increases in sewage the demand of oxygen will

(A) Increases (B) Decreases

(C) Remain constant (D) Vary from organic to organic

Space For Rough Work

147. Vacuum filters are used for

(A) Slowing down bacterial activity (B) Dewatering of sludge

(C) Filteration of sludge (D) Filteration of released waste

148. Which method is very effective in strength reduction ?

(A) Equipment modification (B) Reuse of waste

(C) Changing the production process (D) Conservation of waste water

149. The average period of aeration for industrial waste water ranges from

(A) 4 – 6 hours (B) 6 – 8 hours

(C) 6 – 12 hours (D) 6 – 24 hours

150. The 'Kraft Process' of pulp making in pulp and paper mill uses

(A) Sodium sulphate (B) Sodium hydroxide

(C) Sodium sulphide (D) All the above

151. The by-products recovered from distillery waste are _____.

(A) Nutrient rich animal feeds (B) Potassium rich fertilizers

(C) Both (A) and (B) (D) Bagasses

152. The industrial waste water are biologically treatable when its BOD : COD ratio is

(A) > 0.6 (B) < 0.6

(C) > 0.3 (D) < 0.3

153. In sugar mill, the partially crystallized syrup from the vacuum pan is known as

(A) Mollasses (B) Massecuite

(C) Bagasses (D) Black liquor

Space For Rough Work

154. The value of deoxygenation constant (K_1) of treated waste is _____.

(A) 0.11 (B) 0.12

(C) 0.13 (D) 0.14

155. _____ stage uses least volume of fresh water in industries.

(A) Cooling (B) Processing

(C) Cleaning (D) Packing

156. Bating the hides in Tannery helps in removing the _____ products from it.

(A) Protein degradation (B) Fat degradation

(C) Dirt and soil (D) pH

157. The efficiency of the Rotating Disc Biological Contactor depends on

(A) Number of discs (B) Submergence

(C) RPM of the discs (D) All the above

158. Organisms that survive at an temperature of 10 °C to 40 °C are called _____.

(A) Psychrophilic (B) Mesophilic

(C) Thermophilic (D) Hyper thermophilic

159. The source of energy for all work done by cells in the human body is _____.

(A) Glucose (B) Fructose

(C) Sucrose (D) Galactose

160. Proteins are primarily made up of _____.

(A) Amino Acids (B) Nucleic Acids

(C) Sulphuric Acids (D) Citric Acids

Space For Rough Work

161. The deficiency of _____ causes night-blindness.

(A) Vitamin – A (B) Vitamin – B

(C) Vitamin – C (D) Vitamin – D

162. _____ are incapable of synthesizing their own food.

(A) Autotrophs (B) Heterotrophs

(C) Chemotrophs (D) Phototrophs

163. Extracts from Blue Green Algae have _____ properties.

(A) Insecticidal (B) Pesticidal

(C) Larvicidal (D) Colloidal

164. _____ are called "Traffic Director" of cells.

(A) Ribosomes (B) Lysosomes

(C) Mitochondria (D) Golgi Apparatus

165. The reserve food material in fungi is _____.

(A) Starch (B) Cellulose

(C) Glucose (D) Glycogen

166. The main aim of sterilization is to kill _____.

(A) Pathogenic micro-organisms (B) Non-pathogenic micro-organisms

(C) Spores of micro-organisms (D) All the above

167. Critical control points in identifying food safety can be determined after knowing the _____.

(A) Concentration (B) Content

(C) Sensitivity (D) All the above

Space For Rough Work

168. The clean natural atmospheric air, the amount of oxygen present is _____ by volume.

(A) 21%
(B) 78%
(C) Less than 1%
(D) 2%

169. A state in which the warmer air lies over the colder air is

(A) Transverse
(B) Inversion
(C) Lapse rate
(D) None of these

170. The device in which gas is allowed to mix with water and then impinges on a plate is called

(A) Cyclone scrubber
(B) Fabric filter
(C) Water filter
(D) Separator

171. Killing of tissue from air pollutants is called

(A) Necrosis
(B) Chlorosis
(C) Abscission
(D) Epinasty

172. Which is the major pollutant present in photochemical smog ?

(A) PAN
(B) SO_2
(C) HC
(D) NO_2

173. CPM network is

(A) Event Oriented
(B) Activity Oriented
(C) Slack Oriented
(D) Work Oriented

174. EMD means

(A) Earnest Money Demand
(B) Early Money Demand
(C) Earnest Money Deposit
(D) Early Money Deposit

Space For Rough Work

175. Pre-tender stage of construction requires

(A) Site Selection (B) Land Acquisition

(C) Project Finalization (D) All the above

176. The full responsibility of construction planning lies on _____.

(A) Owner (B) Contractor

(C) Architect (D) Engineer

177. A formal approval of the proposal of project by competent authority of department is called _____.

(A) Technical sanction (B) Administrative approval

(C) Both (A) and (B) (D) Executive approval

178. The job layout should be such that the time consumed in carrying materials to project site is _____.

(A) constant (B) maximum

(C) minimum (D) null

179. Checklist contains _____ during evaluation.

(A) Local Economy & Natural Environment

(B) Aesthetics & Cultural Value

(C) Public & Private Services

(D) All the above

180. Methodology of EIA adopted when no baseline data is available _____.

(A) Checklist (B) Overlays

(C) Adhoc procedure (D) BEES

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