TEST - 2015

EN	COURSE	DAY : SUNDAY
	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 – 3	200007

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 of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

SEAL

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 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 acomplete 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.
   - **Completed 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:
①●③④

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 Bells 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. Hand over the **OMR ANSWER SHEET** to the room invigilator as it is.
7. After separating the top sheet, 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. Absorption co-efficient of sound wave is given by _____. Where E_m is energy absorbed by given medium E_{ow} is the energy absorbed by open window.

   1. $a = \frac{E_m}{E_{ow}}$ 2. $a = \frac{E_{ow}}{E_m}$ 3. $a = E_m \times E_{ow}$ 4. $a = E_m + E_{ow}$

2. The rich quality of a musical note depends on
   1. Fundamental frequency 2. Loudness
   3. Larger number of over tones 4. Pitch

3. Waxing and waning are the characteristics of
   1. Periodic motion 2. Oscillations 3. Beats 4. Frequency

4. Velocity of sound in air varies
   1. Inversely as the square root of the density of the medium
   2. Directly as the square root of the density of the medium
   3. Directly as the density of medium
   4. Inversely as the density of medium

5. The vibrations of a body of decreasing amplitude are called
   1. Undamped free vibrations 2. Damped free vibrations
   3. Resonant vibrations 4. Forced vibrations

6. Another name for field emission is
   1. Cold cathode emission 2. Thermionic emission
   3. Photoelectric emission 4. Secondary emission

7. In case of photoelectric emission, the rate of emission of electron is
   1. Independent of frequency of radiation
   2. Dependent on frequency of radiation
   3. Dependent on wavelength of incident radiation
   4. Independent of intensity of radiation

Space For Rough Work

8. Emission of radiation from radioactive element is

1. Slow 2. Fast 3. Spontaneous 4. Very slow

9. In the spectrum of scattered light the lines corresponding to wavelength greater than that of incident light are called

1. Stokes lines 2. Antistokes lines
3. Fluorescent lines 4. Incident lines

10. Resolving power of telescope is given by

1. $\frac{d}{1.22\lambda}$ 2. $\frac{1.22\lambda}{d}$ 3. $\frac{1.22d}{\lambda}$ 4. $\frac{\lambda}{1.22d}$

11. To observe diffraction pattern the obstacle should be

1. Very big 2. Dark
3. Absent 4. Comparable with the wavelength of light

12. When double refraction occurs, extraordinary ray and ordinary rays will have vibrations in the planes _____ to one another

1. Parallel 2. Independent 3. Perpendicular 4. At 45^{o}

13. Maxwell's electromagnetic theory could explain

1. Photo electric effect 2. Interference of light
3. Compton effect 4. Black body radiation

14. The contrast between bright and dark bands of an interference pattern is

1. Low 2. High 3. No change 4. Gradually decreases

15. A non-electrolyte solution is

1. Sugar solution 2. Salt solution
3. Water 4. Copper sulphate solution

Space For Rough Work

16. In alkalies the concentration of OH^- ions is

1. More than 10^{-7}g ions / litre
2. Less than 10^{-7}g ions / litre
3. Equal to 10^{-7}g ions / litre
4. More than 10^{7}g ions / litre

17. An example of derived unit is

1. Meter
2. Second
3. Netwon
4. Candela

18. The prefix used for 10^{-15} is

1. Femto
2. Pico
3. Peta
4. Nano

19. An example of dimensionless constant is

1. Strain
2. Efficiency
3. Force
4. Pi

20. A main scale is divided into half mm and having a Vernier containing 10 divisions has a least count of _____cm.

1. 0.05
2. 0.005
3. 0.02
4. 0.025

21. According to Newton's second law of motion F = Kma. The value of K is

1. 0.1
2. 0
3. 10
4. 1

22. The velocity of a freely falling body is maximum

1. At the beginning
2. Just before it touches ground
3. Exactly half way
4. After it touches ground

23. Wet clothes are dried in washing machine by the property of

1. Inertia of rest
2. Inertia of direction
3. Inertia of motion
4. Inertia of time

24. A force of 1.2×10^{-2} N acts for 3 seconds on a body of mass 0.04kg at rest. The velocity gained by the body is

1. 0.9 m/s
2. 9 m/s
3. 0.09 m/s
4. 9.2 m/s

25. An example of vector quantity is

1. Volume
2. Energy
3. Density
4. Force

Space For Rough Work

26. Handle of the door is fixed away from the end where it is fixed with hinges to

1. Increase the moment of force
2. Decrease the moment of force
3. Keep the door firm
4. Lock it easily

27. Resultant of two equal forces perpendicular to each other acts at an angle _____ to first force

1. 90°
2. 180°
3. 30°
4. 45°

28. The resultant of two forces acting on a body cannot be

1. Greater than first force
2. Zero
3. Lesser than first force
4. Lesser than the difference between two forces

29. Towing of a boat by two forces is an illustration of

1. Lami's theorem
2. Law of triangle of forces
3. Law of parallelogram of forces
4. Law of polygon of forces

30. Shock absorber is an example for

1. Compressive stress
2. Tensile stress
3. Shear stress
4. Shear strain

31. Factor of safety of a structure is

1. Within 2
2. Equal to zero
3. Vary between 5 and 10
4. More than 10

32. In case of liquids as the temperature increases, the viscosity of liquid decreases due to

1. Increase in the rate of diffusion of gases
2. Decrease in the rate of diffusion of gases
3. Increase in the potential energy of molecules
4. Increase in the kinetic energy of molecules

Space For Rough Work

33. One Pascal is equal to

1. 10 dynes/cm^2
2. 1 dyne / cm^2
3. 100 dynes / cm^2
4. 0.1 dyne / cm^2

34. To calm down turbulent sea, sailors use oil to

1. Decrease surface tension
2. Increase surface tension
3. Decrease viscosity
4. Increase cohesive force

35. The thrust on the bottom of the container having a base area of 20 m^2 filled with water to a heigh of 3 m is _____ (given g =10m/s^2)

1. 6×10^5 N
2. 6×10^4 N
3. 6×10^3 N
4. 6×10^2 N

36. Amount of heat required to raise the temperature of 1 kg of water through 1^{o}C is

1. One calorie
2. One joule
3. One kilo-calorie
4. One kilojoule

37. Absolute scale of temperature has its zero at

1. 0^{o}C
2. –100^{o}C
3. 273^{o}C
4. – 273^{o}C

38. In case of an ideal gas, the value of pressure or volume co-efficient is

1. $\frac{1}{273}$
2. $-\frac{1}{273}$
3. 273
4. –273

39. The distance travelled by the disturbance per unit time in a given direction is

1. Wave amplitude
2. Wave velocity
3. Wave frequency
4. Wavelength

40. The speed of the transverse wave along the stretched string is given by

1. $V=\sqrt{\frac{T}{m}}$
2. $V=\sqrt{\frac{m}{T}}$
3. $V=\sqrt{\frac{1}{T}}$
4. $V=\frac{\sqrt{m}}{T}$

Space For Rough Work

PART - B

APPLIED MATHEMATICS

41. The value of $\lim_{x \to -2} \frac{x+2}{x^5+32}$ is

1. $\frac{1}{80}$ 2. 80 3. $\frac{-1}{80}$ 4. -80

42. The value of $\lim_{x \to 0} \frac{2x - \tan 3x}{\sin 2x + 3x^2}$ is

1. $\frac{-1}{5}$ 2. 0 3. $\frac{1}{2}$ 4. $-\frac{1}{2}$

43. If $y = e^x \log x$, then $\frac{dy}{dx}$ at $x = 1$ is

1. e^x 2. e 3. 1 4. 0

44. If $y = \tan^{-1}\sqrt{\frac{1+\cos x}{1-\cos x}}$, then $\frac{dy}{dx}$ is

1. 2 2. -2 3. $\frac{-1}{2}$ 4. $\frac{1}{2}$

45. If $\sqrt{x^3} + \sqrt{y^3} = \sqrt{a^3}$, then $\frac{dy}{dx}$ is

1. $\sqrt{\frac{x}{y}}$ 2. $-\sqrt{\frac{x}{y}}$ 3. $\sqrt{\frac{y}{x}}$ 4. $-\sqrt{\frac{y}{x}}$

Space For Rough Work

46. The second derivative of $y = log(sec\ x - tan\ x)$ is

1. $-sec\ x\ tan\ x$
2. $sec\ x\ tan\ x$
3. $-sec\ x$
4. $sec\ x$

47. Water flows into the cylindrical tank of radius 7mt at the rate of 294 cubic mt/sec, then the rate o height of water rising in the tank is

1. $\frac{\pi}{6} mt/sec$
2. $\frac{6}{\pi} mt/sec$
3. $14406\ mt/sec$
4. $\frac{21}{\pi} mt/sec$

48. The maximum value of the function $y = x + \frac{1}{x}$ is

1. 0
2. 2
3. 1
4. –2

49. The value of $\int tan^2 x\ dx$ is

1. $tan\ x - x + c$
2. $x - tan\ x + c$
3. $(sec^2 x)^2 + c$
4. $-cot\ x - x + c$

50. The value of $\int \frac{cos\ x}{1 + sin\ x}\ dx$ is

1. $log(sec^2 x + sec\ x\ tan\ x) + c$
2. $log(sin\ x) + c$
3. $log(1 + sin\ x) + c$
4. $\frac{(1 + sin\ x)^2}{2} + c$

51. $\int sin^2 x\ sin\ 2x\ dx$ is

1. $\frac{sin^2 x}{2} + c$
2. $\frac{sin^4 x}{2} + c$
3. $sin^2 x + c$
4. $\frac{-sin^4 x}{2} + c$

Space For Rough Work

52. $\int_{-1}^{1}(2x+1)(5-x)\,dx$ is

1. 10
2. $\frac{26}{3}$
3. $\frac{-26}{3}$
4. $\frac{11}{3}$

53. $\int_{0}^{\pi/4} \tan^2 x \sec^2 x \, dx$ is

1. $\frac{1}{3}$
2. $\frac{4}{3}$
3. $\frac{1}{2}$
4. $\frac{-1}{3}$

54. The RMS value of $y^2 = x^2 - 2x$ over the interval [1, 3] is

1. $\sqrt{\frac{5}{3}}$
2. $\sqrt{\frac{2}{3}}$
3. $\frac{1}{3}$
4. $\frac{1}{\sqrt{3}}$

55. The differential equation of $y^3 = 5ax$ by eliminating arbitrary constant a is

1. $\frac{dy}{dx} - \frac{y}{3x} = 0$
2. $\frac{dy}{dx} + \frac{y}{3x} = 0$
3. $\frac{dy}{dx} - \frac{3y}{x} = 0$
4. $\frac{dy}{dx} - \frac{5y}{3x} = 0$

56. The integrating factor of the differential equation $x\frac{dy}{dx} - (1-x)y = x^3$ is

1. $\frac{e^x}{x}$
2. xe^x
3. $e^{\frac{x^2-2x}{2}}$
4. $e^{\frac{2x-x^2}{2}}$

Space For Rough Work

57. If $\begin{vmatrix} 2x+1 & -5x \\ 1 & 3 \end{vmatrix} = 0$, then x is

1. $\frac{3}{11}$ 2. $\frac{-3}{11}$ 3. $\frac{11}{3}$ 4. $-\frac{11}{3}$

58. For the simultaneous linear equations $2x+y+z=1$, $x+y+2z=0$ and $3x+2y-z=2$, the value of Δx is

1. 3 2. -11 3. -7 4. -3

59. If $A=\begin{bmatrix} 2 & 3 \\ 5 & 4 \end{bmatrix}$, $B=\begin{bmatrix} -1 & 7 \\ -4 & 1 \end{bmatrix}$ then $(A+B)^T$ is

1. $\begin{bmatrix} 1 & 1 \\ 10 & 5 \end{bmatrix}$ 2. $\begin{bmatrix} 1 & 10 \\ 1 & 5 \end{bmatrix}$ 3. $\begin{bmatrix} -1 & 10 \\ -1 & 5 \end{bmatrix}$ 4. $\begin{bmatrix} -1 & -1 \\ 10 & 5 \end{bmatrix}$

60. If $A=\begin{bmatrix} 1 & -3 \\ -5 & 7 \end{bmatrix}$, then adj A is

1. $\begin{bmatrix} 1 & -5 \\ -3 & 7 \end{bmatrix}$ 2. $\begin{bmatrix} 7 & -5 \\ -3 & 1 \end{bmatrix}$ 3. $\begin{bmatrix} -1 & -5 \\ -3 & -7 \end{bmatrix}$ 4. $\begin{bmatrix} 7 & 3 \\ 5 & 1 \end{bmatrix}$

61. The cofactor of O in $A=\begin{bmatrix} 3 & -2 & 5 \\ 1 & 6 & 0 \\ 2 & 7 & -4 \end{bmatrix}$ is

1. -25 2. 25 3. -17 4. 0

Space For Rough Work

62. If $\left(\sqrt{3}+1\right)^3 = 10+6\sqrt{3}$, then the value of $\left(\sqrt{3}+1\right)^3 - \left(\sqrt{3}-1\right)^3$ is

1. $12\sqrt{3}$ 2. 0 3. 20 4. $20+\sqrt{3}$

63. The middle term in the expansion of $\left(x^3+\frac{1}{x^2}\right)^6$

1. $10\,x^3$ 2. $20\,x^3$ 3. $\frac{20}{x^3}$ 4. 20

64. If $\vec{a} = i+3j-2k$ and $\vec{b} = 2i-j+3k$, then $\vec{a}\,.\,\vec{b}$ is

1. –5 2. 11 3. 7 4. –7

65. The work done by the force $2i-j+6k$ when it displaces the particle from (5, 3, –2) to (7, –4, 8) is

1. 72 2. 48 3. –71 4. 71

66. The sine of the angle between the vectors $\vec{a} = i+j+k$ and $\vec{b} = 2i-3j-4k$ is

1. $\sqrt{\frac{62}{87}}$ 2. $\sqrt{\frac{87}{62}}$ 3. $\frac{-5}{\sqrt{87}}$ 4. $\sqrt{\frac{10}{63}}$

67. If $\cos\theta = \frac{5}{13}$ and θ is acute angle, then the value of $3\cos\theta - 2\sin\theta$ is

1. $\frac{9}{13}$ 2. 3 3. $\frac{-9}{13}$ 4. –3

Space For Rough Work

68. If $x \sin 30^\circ - Sec\ 30^\circ tan 30^\circ = tan^2 60^\circ$, then the value of x is

1. $\frac{22}{3}$ 2. $\frac{-22}{3}$ 3. $\frac{11}{6}$ 4. $\frac{3}{22}$

69. The value of $sin\ 225^\circ + cos\left(-135^\circ\right)$ is

1. $\sqrt{2}$ 2. $-\sqrt{2}$ 3. $\frac{1}{\sqrt{2}}$ 4. $\frac{-1}{\sqrt{2}}$

70. The simplified value of $\frac{sin\left(180^\circ - A\right) cot\left(90^\circ - A\right) cos\left(360^\circ - A\right)}{tan\left(180^\circ + A\right) tan\left(90^\circ + A\right) sin\left(-A\right)}$ is

1. $sin\ A$ 2. $-sin\ A$ 3. 1 4. $cosec\ A$

71. The simplified value of $\frac{sin\ 2A}{1 + cos 2A}$ is

1. $2tan A$ 2. $sin\ A$ 3. $cot\ A$ 4. $tan\ A$

72. If $tan\ A = \frac{3}{4}$ and $tan\ B = \frac{1}{7}$, then the value of (A+B) is

1. $\frac{\pi}{6}$ 2. $\frac{25}{23}$ 3. $\frac{\pi}{4}$ 4. $\frac{23}{25}$

73. The value of $cos\ 20^\circ + cos\ 100^\circ + cos\ 140^\circ$ is

1. 0 2. $cos\ 50^\circ$ 3. $\frac{1}{2}$ 4. $sin\ 50^\circ$

Space For Rough Work

74. The value of $cos^{-1}\left[\tan 135^\circ\right]$ is

1. 0° 2. 180° 3. 45° 4. 90°

75. The centroid of the triangle formed by the vertices (−10, 6), (2, −2) and (2, 5) is

1. (−2, 3) 2. (2, 3) 3. $\left(-3, \frac{9}{2}\right)$ 4. (−6, 9)

76. A point (−4, 3) divides the line AB externally in the ratio of 1 : 2. Given A(−1, −3) then the point B is

1. (6, −3) 2. (−10, 15) 3. (2, 9) 4. (2, −9)

77. The area of triangle formed by the point, (3, −1), (2, 0) and (K, 4) is 10 Sq. Units, then the value of K is

1. 12 2. 7 3. −22 4. 22

78. The slope of the line joining the points (−2, 3) and (4, −6) is

1. $\frac{3}{2}$ 2. $\frac{-3}{2}$ 3. $\frac{2}{3}$ 4. $\frac{-2}{3}$

79. The equation of straight line passing through (4, −1) and having equal intercepts is

1. $x+y-1=0$ 2. $x+y-5=0$ 3. $x+y-3=0$ 4. $x+y+3=0$

80. The equation of the line passing through (5, −2) and parallel to the line $3x+2y+7=0$ is

1. $3x+2y-11=0$ 2. $3x-2y+11=0$
3. $3x-2y-19=0$ 4. $2x-3y-16=0$

Space For Rough Work

PART - C

ENVIRONMENTAL ENGINEERING

81. The pH of water is a highly important characteristics as it

1. Affects equilibria between most chemical species
2. Effectiveness of coagulation
3. Potential of water to be corrosive
4. All of the above

82. The dispersion of solid phase in a liquid medium is called _____.

1. Sol
2. Emulsion
3. Foams
4. Fog

83. The term parts per million is a _____ ratio.

1. Weight to volume
2. Weight to mass
3. Weight to weight
4. Weight to density

84. The maximum dissolved oxygen level available in critical conditions should be above

1. 4.0 mg/l
2. 7.0 mg/l
3. 8.0 mg/l
4. 14.6 mg/l

85. _____ test is a Bioassay procedure

1. D.O
2. B.O.D
3. C.O.D
4. T.O.C

86. A quick determination of dissolved solids can be made by _____ measurement

1. Turbidity
2. Conductivity
3. pH
4. None of the above

87. The permissible limit for iron in drinking water is _____.

1. 0.1 mg/l
2. 0.2 mg/l
3. 0.3 mg/l
4. 0.4 mg/l

88. _____ is an example of subsurface source of water.

1. Springs
2. Infilteration galleries
3. Infilteration wells
4. All of the above

Space For Rough Work

89. The process in which precipitation & evaporation is balanced is called as _____.

1. Hydrocycle
2. Hydrologic cycle
3. Hydrosphere
4. Hydrogen cycle

90. Rainfall records are maintained by _____

1. PWD
2. IMD
3. CPWD
4. RDPR

91. If the intakes are to be located on the curves of meandering river, it is better to locate on _____ banks.

1. Left side
2. Right side
3. Concave
4. Convex

92. When the water is at rest, the pressure in the pipe is equal to _____.

1. ps/w
2. w/ps
3. ps x w
4. none of the above

93. _____ pipes are heavy & bulky, hence difficult to transport.

1. Cement concrete
2. Asbestos
3. Reinforced cement concrete
4. Steel

94. Vapour pressure of water at 30°C is _____kN/m^2.

1. 7.600
2. 4.609
3. 2.334
4. 1.703

95. A plain sedimentation tank normally removes _____ of suspended impurities in water.

1. 80 %
2. 85 %
3. 70 %
4. 75 %

96. Settling resulting from coagulation with a result of increase in particle size is called _____ settling.

1. Discrete
2. Hindered
3. Zonal
4. Flocculant

Space For Rough Work

97. In treatment of water using activated carbon, the carbon sources are to be added before _____.

1. Screening
2. Sedimentation
3. Coagulation
4. Filtration

98. Grid iron system of water distribution is also known as _____.

1. Interlaced system
2. Reticulation system
3. Circular system
4. Both (1) and (2)

99. Quick mixing of coagulant with water is achieved by _____.

1. Quick mixer
2. Flash mixer
3. Mixing basin
4. All of the above

100. Pressure filters are not suitable for _____.

1. Public water supply
2. Industrial supply
3. Swimming pools
4. All of the above

101. In disinfection treatment, chlorine may be applied in _____ form.

1. Bleaching powder
2. Chloramines
3. Free chlorine gas
4. All of the above

102. Lime soda process is used to remove _____ hardness from water.

1. Temporary
2. Permanent
3. Carbonate
4. None of the above

103. A combined sewerage system collectively carries

1. Domestic & industrial sewage
2. Storm & domestic sewage
3. Storm & industrial sewage
4. Storm & sanitary sewage

Space For Rough Work

104. The process of carrying polluted sewage in closed conduits is called as _____ system.

1. Conservancy
2. Water carriage
3. Separate
4. Combined

105. For the sewers designed to carry sewage under gravity should flow _____ full.

1. 1/2
2. 3/4
3. 1/4
4. Both (1) and (2)

106. The ratio of minimum hourly flow to the average flow of sewage is _____.

1. 1/3
2. 1/2
3. 2/3
4. 3

107. The peak flow for the design of sewers, has been connected to the average flow and population by relation

1. $Q = \frac{18+\sqrt{P}}{4+\sqrt{P}} Q_{av}$
2. $Q = \frac{4+\sqrt{P}}{18+\sqrt{P}} Q_{av}$
3. $Q = \frac{18+P}{4+\sqrt{P}} \times Q_{av}$
4. $Q = \frac{18+\sqrt{P}}{4+P} Q_{av}$

108. For the population ranging between 20,000 to 30,000 with a per capita water supply of 110 to 150 lpcd, the per capita sewage production is in range of _____ lpcd.

1. 90 to 120
2. 120 to 150
3. 100 to 150
4. 120 to 140

109. For a drain of Q_p value between 10 – 30 cumecs, the value of free board to be left is ____ m.

1. 0.55
2. 0.65
3. 0.75
4. 0.85

110. Manholes are generally located at _____.

1. All change in direction of sewer
2. Change is gradient of sewer
3. All junction of different sewers
4. All of the above

Space For Rough Work

111. A disintegrating pump which breaks the sewage solids while passing the sewage through it is called _____.

1. Centrifugal pump
2. Air pressure pump
3. Reciprocating pump
4. Rotary pump

112. The algebraic sum of de-oxygenation & re-oxygenation curve is called _____.

1. Oxygen - sag curve
2.. Oxygen – deficit curve
3. Oxygen balance curve
4. Both (1) and (2)

113. The phenomenon by virtue of which a soil is clogged with sewage is called _____.

1. Sewage farming
2. Sewage sickness
3. Sewage bulking
4. None of the above

114. The nature process by which the flowing water gets cleaned by itself is known as _____.

1. Oxidation
2. Reduction
3. Photosynthesis
4. Self purification

115. The short circuiting occurring is a sedimentation tank is represented by _____.

1. Surface loading
2. Displacement efficiency
3. Re-circulation rate
4. Detention period

116. The depth of water seal in a trap, vary from _____.

1. 25 - 50 mm
2. 25 – 75 mm
3. 50 – 75 mm
4. 50 – 100 mm

Space For Rough Work

117. A pipe installed in the house drainage to preserve the water seal of traps is known as _____.

1. Siphonage pipe
2. Anti-siphonage pipe
3. Vent pipe
4. Ventilating pipe

118. In sludge digestion _____ gas are produced.

1. Methane
2. Carbon dioxide
3. Nitrogen
4. All of the above

119. The source which discharge their waste water through sewers and can be quantified are _____ sources.

1. Point
2. Non – point
3. Natural
4. Anthropogenic

120. _____ is utmost important in assuming the pollutional strength of industry.

1. Quantification
2. Treatment
3. Characterization
4. All of the above

121. The three important pollutants that must be considered is calculating the pollutional loads are

1. D.O, B.O.D & C.O.D
2. B.O.D, C.O.D & Bacteria
3. D.O, B.O.D & T.O.C
4. B.O.D, C.O.D & T.O.C

122. If the pollutant distribution is being compared with the same population in the Chi-squared test, it is called _____

1. Null hypothesis
2. Unit hypothesis
3. Single hypothesis
4. None of the above

123. Chi-squared test requires the use of _____ and root of percentage.

1. Mean
2. Standard deviation
3. Frequencies
4. All of the above

Space For Rough Work

124. Kraft process of pulp making is also known as _____.

1. Sulphate process
2. Sulphite process
3. Sulphide process
4. Sulphur process

125. In penicillin industry, the odour of waste water will be _____.

1. Fruity
2. Septic
3. Limy
4. Pungant

126. The spent liquor which is dissolved as black liquor after crystallization and centrifuge is called _____.

1. Bagasses
2. Mollases
3. Spent wash
4. Waste liquor

127. The pH of dairy waste ranges between _____.

1. 7.0 – 7.2
2. 6.8 – 7.0
3. 7.2 – 7.4
4. 7.1 – 7.3

128. Elimination of batch or slug discharge of process wastes reduces _____.

1. Volume
2. Strength
3. Concentration
4. Both (1) and (2)

129. _____ deals with chemical processes in a living organism.

1. Biology
2. Biochemistry
3. Organic chemistry
4. Inorganic chemistry

130. The generalized formula for carbohydrates is _____.

1. $(CH_2O)_n$
2. $(C_2H_2O)_n$
3. $(CHO)_n$
4. $(CHO_2)_n$

Space For Rough Work

131. _____ are the hydrocarbons that act as structural component and storage form of energy rich fuels.

1. Lipids 2. Proteins 3. Fats 4. Enzymes

132. _____ is an example for glycoprotein.

1. Globulin
2. Haemoglobin
3. Egg albumin
4. Casein of milk

133. Proteins get precipitated by the addition of _____.

1. Mineral acids
2. Inorganic salts
3. Sodium chloride
4. All of the above

134. Enzymes are thermolabile, it means

1. Sensitive to water
2. Sensitive to chemical
3. Sensitive to heat
4. Sensitive to pH

135. Exploration for life in outer space is called _____.

1. Exomicrobiology
2. Aeromicrobiology
3. Geomicriobiology
4. Spacial microbiology

136. Angstrom (A^{o}) is the unit of measurement of _____.

1. Cell shape 2. Cell size 3. Cell wall 4. All of the above

137. Fungi do not contain chlorophyll hence are _____.

1. Achlorophyllous
2. Non-chlorophyllous
3. Rodophyllous
4. Xanthophyllous

Space For Rough Work

138. Length of bacteria ranges from _____.

1. 0.7 – 2 μm
2. 0.3 – 1.5 μm
3. 1.2 μm
4. 0.7 μm

139. The pollution which is caused due to aerosols & vapours is known as _____.

1. Personal air pollution
2. Occupational air pollution
3. Community air pollution
4. All of the above.

140. Which containment has peculiar property of irritation?

1. Pollen
2. Ozone
3. Hydrogen sulphide
4. Oxides of sulphur

141. Windrose is used to know the _____ of wind.

1. Intensity
2. Direction
3. Duration
4. All of the above

142. Acid rain has an average pH value of

1. 6.5
2. 5.6
3. 7.4
4. 6.3

143. Temporary Threshold Shift (TTS) occurs at

1. 4000 – 6000 Hz
2. 2000 – 3000 Hz
3. 1000 – 2000 Hz
4. 1000 – 5000 Hz

144. _____ is the process of preparing of the final work plan to a time scale.

1. Controlling
2. Co-ordinating
3. Planning
4. Scheduling

Space For Rough Work

145. CPM Network is _____ oriented.

1. Activity 2. Event 3. Progress 4. Analysis

146. In PWD organization the divisional office is headed by _____.

1. C.E 2. S.E 3. E.E 4. A.E

147. Contractor is responsible for

1. Procuring of material
2. Organizing & planning the work
3. Executing the work as per specification
4. All of the above.

148. In the item rate contract

1. Bill is paid as per rates agreed
2. Bill paid as per quantity executed
3. Both (1) and (2)
4. None of the above

149. The post tender stage of construction consists of

1. Assessment of work
2. Finalization of account
3. Assessment of expenditure during execution
4. All of the above

150. Tender is an _____.

1. Agreement
2. Offer in writing
3. Set of estimates & drawings
4. None of the above.

151. E.I.S. stands for

1. Ecology impact service
2. Environment impact statement
3. Environment industrial service
4. None of the above.

Space For Rough Work

152. The term _____ is used to indicate the degree by which the volume of a material is occupied by pores.

1. Permeability 2. Hygroscopicity 3. Density 4. Porosity

153. The rocks which are formed due to cooling of magma at a considerable depth from earth's surface.

1. Sedimentary rocks 2. Plutonic rocks
3. Metamorphic rocks 4. Foliated rocks

154. _____ plays an important role in determining the quantity of explosive required.

1. L.L.L 2. L L R 3. L L S 4. L L M

155. The process of grinding clay with water and making it plastic is known as _____.

1. Digging 2. Blending 3. Weathering 4. Pugging

156. As per BIS for India, a brick of standard size is _____.

1. 200 mm x 10 mm x 10 mm 2. 190 mm x 90 mm x 90 mm
3. 190 mm x 15 mm x 15 mm 4. 210 mm x 10 mm x 10 mm

157. _____ controls the initial setting time of cement.

1. Gypsum 2. Lime 3. Silica 4. Iron oxide

158. If the water cement ratio is 0.4, then the quantity of water required for one bag of cement is _____.

1. 15 litres 2. 20 litres 3. 25 litres 4. 30 litres

159. Use of _____ concrete results is the reduction of cost to the extent of about 30 – 40%.

1. Precast 2. Ready mix 3. Transit mix 4. Light weight

Space For Rough Work

160. Reciprocal ranging is also known as _____.

1. Direct Ranging
2. Inverse Ranging
3. Indirect Ranging
4. Reverse Ranging

161. _____ instrument is used to measure slope of the ground.

1. Clinometer
2. Planimeter
3. Pentagraph
4. Optical square

162. R.B. of 100° is _____.

1. N 10° E
2. S 80° E
3. S 10° E
4. N 80° E

163. The horizontal angle between the True meridian and magnetic meridian is known as _____.

1. True bearing
2. Dip
3. Local attraction
4. Magnetic declination

164. A point of known elevation is known as _____.

1. Change point
2. Instrument station
3. Bench mark
4. All of the above

165. The least count of the levelling staff is _____.

1. 0.005 m
2. 0.05 m
3. 0.5 m
4. 0.505 m

166. The line joining the points having the same elevation above the datum surface is called as _____.

1. Isobar
2. Contour line
3. Contour interval
4. Contour gradient

167. The collimation method for obtaining the reduced levels of points does not provide a check on

1. Foresights
2. Backsights
3. Intermediate sights
4. Change point

Space For Rough Work

168. The variation in the volume of a liquid with the variation of pressure is called as _____.

1. Surface tension
2. Compressibility
3. Capillarity
4. Viscosity

169. A vessel of 4 m^3 contains an oil which weighs 30 kN. The specific weight of the oil is _____.

1. 120 kN/ m^3
2. 6 kN/ m^3
3. 7.5 kN/ m^3
4. 10 kN/ m^3

170. The intensity of pressure on an immersed surface _____ with the increase in depth.

1. Does not change
2. Increases
3. Decreases
4. None of the above

171. The theoretical velocity of Jet at Veena Contracta is _____.

1. $2gH$
2. $H\sqrt{2g}$
3. $2g\sqrt{H}$
4. $\sqrt{2gH}$

172. In an internal mouthpiece, if the jet after contraction does not touch the sides of the mouthpiece, then the mouthpiece is said to be _____.

1. Running full
2. Running free
3. Partially running full
4. Partially running free

173. The sheet of water flowing through a notch or Weir is called _____.

1. Nappe
2. Crest
3. Sill
4. Veena contracta

174. The hydraulic mean depth is the ratio of _____.

1. Area of flow and velocity of flow
2. Wetted perimeter and diameter of pipe
3. Velocity of flow and wetted perimeter
4. Area of flow and wetted perimeter

Space For Rough Work

175. The total energy line lies over the centre line of the pipe by an amount equal to the

1. Pressure head
2. Velocity head
3. Pressure head + velocity head
4. Pressure head – velocity head

176. The ratio of the area of Jet at Veena contracta to the area of the orifice is known as

1. Cd
2. Cy
3. Cc
4. CR

177. A channel is said to be of most economical cross-section if

1. It gives maximum discharge for a given cross-sectional area & bed slope
2. It has minimum wetted perimeter
3. It involves lesser excavation
4. All of the above

178. Chemistry concerned with the compounds derived from plant and animal origin is known as _____.

1. Organic chemistry
2. Inorganic chemistry
3. Botany
4. Compound chemistry

179. Water is a _____ polar covalent molecule.

1. Homonuclear
2. Heteronuclear
3. Homoneutron
4. Heteroneutron

180. The study of energy changes accompanying physical & chemical processes are called _____.

1. Thermistry
2. Thermology
3. Thermodynamics
4. Thermochemistry

Space For Rough Work

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