PROVISIONAL ANSWER KEY

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Question1:-If the length of a bar is doubled while keeping the cross-sectional area and the force constant, the strain energy stored will

A:-Double

B:-Halve

C:-Remain the same

D:-Quadruple

Correct Answer:- Option-D

Question2:-The stiffness of an open-coil helical spring is inversely proportional to

A:-The mean coil diameter

B:-The wire diameter

C:-The shear modulus of wire

D:-The elastic modulus of wire

Correct Answer:- Option-A

Question3:-An influence line for bending moment at a section of a simply supported beam is

A:-A triangle

B:-A parabola

C:-A rectangle

D:-A straight line

Correct Answer:- Option-A

Question4:-A three-hinged arch is

A:-Statically indeterminate to the first degree

B:-Statically indeterminate to the second degree

C:-Statically determinate

D:-Unstable

Correct Answer:- Option-C

Question5:-The pressure head, in meters of mercury, equivalent to the pressure head of 136m of water is

A:-10

B:-100

C:-13.6

D:-1

Correct Answer:- Option-A

Question6:-In a hydraulic jump occurring in a horizontal rectangular channel, the sequent depths are 1.5 m and 0.5 m. The energy loss in this jump is about

A:-3 m

B:-0.33 m

C:-1 m

D:-1.5 m

Correct Answer:- Option-B

Question7:-A rainfall of 1.4 cm occurred in a 5-hour storm. If the Φ index was 0.2 cm/hour, the rainfall excess is

A:-0

B:-1.2 cm

C:-0.4 cm

D:-1 cm

Correct Answer:- Option-C

Question8:-If a crop requires a total depth of 1 m of water for a base period of 100 days, then the duty in hectares/cumecs is about

A:-864

B:-1596

C:-100

D:-1296

Correct Answer:- Option-A

Question9:-From the depreciation methods given below, Select the correct method in which the property is studied in detail and loss in value due to life, wear and tear, decay, obsolescence are worked out. Each and every step of this method is based on some logical ground without any fixed percentage of the cost of the property.

A:-Constant Percentage method

B:-Declining balance method

C:-Straight line method

D:-Quantity survey method

Correct Answer:- Option-D

Question10:-As per the detailed specification for the Reinforced Cement Concrete (R.C.C.) work, choose the correct angle to be given at the end of the concrete laying, if the laying is suspended for rest or the following day.

A:-45°

B:-60°

C:-30°

D:-90°

Correct Answer:- Option-C

Question11:-In remote sensing, compared with the Multi Spectral Scanner (MSS) the spectral resolution of Hyper Spectral Scanner (HSS) is

A:-always higher

B:-always lower

C:-at the same level

D:-can be higher or lower based on the orbital height of the satellite

Correct Answer:- Option-A

Question12:-If h is the level difference between two points A and B, then the error due to slope for the length measured on slope is

A:-Directly proportional to h

B:-Directly proportional to h^2

C:-Indirectly proportional to h^2

D:-Indirectly proportional to h

Correct Answer:- Option-B

Question13:-A material trading company receives an order for 200 tonnes of cement. The annual carrying cost is Rs. 2000 per ton and the cost for placing the order is Rs. 24500. What is the economic order quantity ?

A:-100 t per order

B:-70 t per order

C:-20 t per order

D:-24.5 t per order

Correct Answer:- Option-B

Question14:-What is the target strength for mix proportioning a concrete of strength M 80 ?

A:-88 MPa

B:-88.9 MPa

C:-90 MPa

D:-89.9 MPa

Correct Answer:- Option-D

Question15:-Covermeter and profometers are used to measure :

A:-Thickness of cover concrete

B:-Diameter and spacing of reinforcement

C:-Both (1) and (2)

D:-Surface permeability

Correct Answer:- Option-C

Question16:-The diameter of reinforcing bars shall not exceed _____ of the total thickness of the slab as per IS 456-2000

A:-One sixth

B:-One fourth

C:-One third

D:-One eighth

Correct Answer:- Option-D

Question17:-The total area of side face reinforcement provided in a beam shall be not less than 0.1% of the web area and shall be distributed equally on two faces at a spacing not exceeding 300mm or _____ whichever is less as per IS 456-2000

A:-Web thickness

B:-Overall depth

C:-Effective depth

D:-None of the above

Correct Answer:- Option-A

Question18:-The nominal cover to meet durability requirements for extreme exposure conditions as per IS 456-2000

A:-Not less than 75mm

B:-Not less than 60mm

C:-Not less than 45mm

D:-None of the above

Correct Answer:- Option-A

Question19:-The partial safety factor adopted for bolts friction type (field fabrications) as per IS 800-2007.

A:-1.5

B:-1.25

C:-1.10

D:-0.9

Correct Answer:- Option-B

Question20:-For the determination of earth pressure, Coulomb's wedge theory assumes that

A:-The slip surface is circular

B:-The back of wall is smooth and vertical

C:-The wall surface is rough

D:-The soil is non-homogeneous and anisotropic

Correct Answer:- Option-C

Question21:-Which one of the following statements is NOT correct ?
A. Boussinesq's theory is used for the analysis of stratified soil.
B. The inclination of stable slope in cohesive soil can be greater than its angle of internal friction.
C. When the water content of soil lies between its liquid limit and plastic limit the soil is said to be in plastic state.
D. For saturated dense fine sand, after applying overburden correction, if the Standard Penetration test value exceeds 15, dilatancy correction is to be applied.

A:-A

B:-B

C:-C

D:-D

Correct Answer:- Option-A

Question22:-A direct shear test was conducted on a cohesionless soil (c=0) specimen under a normal stress of $100kN/m^2$. The specimen failed at a shear stress of $100kN/m^2$. The angle of internal friction of the soil is

A:-15

B:-45

C:-30

D:-60

Correct Answer:- Option-B

Question23:-A test plate 30 cm × 30 cm resting on a sand deposit settles by 10 mm under a certain loading intensity. A footing 150 cm × 200 cm resting on the same sand deposit and loaded to the same load intensity settles by

A:-50 mm

B:-30.2 mm

C:-27.8 mm

D:-2 mm

Correct Answer:- Option-C

Question24:-The maximum permissible impact value of aggregates for water bound macadam base course as per IRC is

A:-40%

B:-35%

C:-30%

D:-45%

Correct Answer:- Option-A

Question25:-Atal Mission for Rejuvenation and Urban Transformation (AMRUT) was launched in

A:-June 2018

B:-June 2015

C:-October 2019

D:-October 2015

Correct Answer:- Option-B

Question26:-Which of the following statements is correct regarding two-force and three-force systems ?
i. Both two-force and three-force members can exert moments on a body.
ii. Only two-force members exert moments on a body.
iii. In a three-force system, the forces do not always maintain equilibrium.
iv. A three-force system can achieve equilibrium if all forces are parallel and act in the same direction.

A:-Only i

B:-Only ii and iii

C:-Only i and iii

D:-Only ii, iii and iv

Correct Answer:- Option-C

Question27:-Which of the following statements is true regarding the moment of forces acting on a body ?
i. The total moment of all forces acting on a body is the algebraic sum of their moments
ii. The total moment of all forces acting on a body is the vector sum of their moments.
iii. The moment axis is perpendicular to the plane formed by the force and the perpendicular distance.
iv. In moment calculation, the moment axis, force and perpendicular distance lie along a single line in the direction of the force.

A:-Only i and ii

B:-Only ii and iii

C:-Only i and iv

D:-Only ii

Correct Answer:- Option-B

Question28:-Which of the following statements is correct regarding the equilibrium of a body ?
i. The conditions for equilibrium are applicable universally.
ii. The conditions for equilibrium are valid only when the forces are collinear.
iii. Free body diagrams have no role in equilibrium calculations.
iv. There are various types of beam supports and their number is unlimited.

A:-Only i and iv

B:-Only i and iii

C:-Only iii and iv

D:-Only ii and iv

Correct Answer:- Option-A

Question29:-What is the coordination number of atoms in a face-centered cubic (FCC) structure ?

A:-6

B:-8

C:-12

D:-14

Correct Answer:- Option-C

Question30:-In an iron-carbon phase diagram, which phase exists at a composition of 0.8% carbon at eutectoid temperature ?

A:-Pearlite

B:-Austenite

C:-Ferrite

D:-Cementite

Correct Answer:- Option-A

Question31:-The nose of a TTT curve corresponds to which phenomenon ?

A:-Maximum rate of transformation

B:-Start of austenite formation

C:-End of martensite formation

D:-Peak hardness

Correct Answer:- Option-A

Question32:-If the Poisson's ratio of a material is 0.3, which of the following is correct ?

A:-The material is brittle

B:-Lateral strain is 30% of axial strain

C:-Lateral strain is 70% of axial strain

D:-The material has no shear deformation

Correct Answer:- Option-B

Question33:-The Involute profile is preferred to cycloidal shape for the profile of commercial gears, because

A:-They are silent in operation

B:-Only one curve is required to cut

C:-The tooth has straight line profile and hence can be cut accurately

D:-High speed ratios can be made

Correct Answer:- Option-B

Question34:-The type of gears used to transmit power between two non parallel non intersecting axes shafts is

A:-Helical gears

B:-Straight bevel gears

C:-Hypoid gears

D:-Herringbone gears

Correct Answer:- Option-C

Question35:-The rate of decay in an oscillating system is called as

A:-Critical damping

B:-Over damping

C:-Under damping

D:-Logarithmic decrement

Correct Answer:- Option-D

Question36:-Damping force in viscous damping is proportional to ___ of the vibrating body.

A:-Velocity

B:-Frequency

C:-Stiffness

D:-Displacement

Correct Answer:- Option-A

Question37:-What is the particular solution of an oscillation equation of a single degree of freedom system excited by a force F_0 cos(ωt) ?

A:-$x_p = X^2$ sin(ωt)

B:-x_p = X cos(ωt)

C:-x_p = 2X cos(ωt)

D:-x_p = 2X sin(ωt)

Correct Answer:- Option-B

Question38:-If the damper is not provided and the system is in resonance, which of the following is the correct transmissibility ?

A:-0

B:-0.5

C:-1

D:-Infinite

Correct Answer:- Option-D

Question39:-Which of the following is true in the case of velocity and shear variation across the cross-section of a circular pipe for a laminar viscous flow ?

A:-Velocity varies linearly and shear stress varies parabolically

B:-Velocity varies linearly and shear stress varies hyperbolically

C:-Velocity remains constant and shear stress varies linearly

D:-Velocity varies parabolically and shear stress varies linearly

Correct Answer:- Option-D

Question40:-A pipe of outside diameter 30mm is to be given an insulation sheathing. If the convective heat transfer coefficient to the surroundings is 10 w/m°C , the maximum value of thermal conductivity of the insulting material should be

A:-0.15 w/m°C

B:-0.20 w/m°C

C:-0.35 w/m°C

D:-0.05 w/m°C

Correct Answer:- Option-A

Question41:-Pick out the false statement from the following.

A:-The thermal conductivity of a material is based on lattice vibrational waves and does not depend on migration of free electrons.

B:-The thermal conductivity of diamond is more than four times that of copper.

C:-Thermal diffusivity measures the ability of a material to conduct thermal energy relative to its ability to store thermal energy.

D:-The heat flux will not vary in the direction of heat transfer for a steady state, 1-dimensional heat conduction without heat generation.

Correct Answer:- Option-A

Question42:-A hydraulic turbine runs at 250 rpm with an available head of 40m. If the overall efficiency is 80% and discharge 10 m^3/s, what would be the power if the available head drops to 20m ? (Assume g as 10 m/s^2)

A:-500 kW

B:-500 $\sqrt{2}$kW

C:-800 $\sqrt{2}$kW

D:-320 $\sqrt{2}$kW

Correct Answer:- Option-C

Question43:-Two identical pipes of diameter 'd' connected in parallel are to be replaced by another single pipe of same length and with same frictional coefficient, but with diameter 'D'. Which of the following holds true ?

A:-$(D/d)^5 = 4$

B:-$D/d = \sqrt{5}$

C:-$(D/d)^4 = \sqrt{5}$

D:-$(D/d)^4 = 8$

Correct Answer:- Option-A

Question44:-How much heat will be conducted in five hours through a composite wall of surface area 2$m^2$and having three layers with thicknesses 60cm, 30cm, 25cm

having thermal conductivities 0.3kcal/hrm°c, 0.1 kcal/hrm°c and 0.25kcal/hrm°c respectively if the inner and outer temperatures of the composite wall are 950°c and 110°c ?

A:-3000 kcal

B:-1550 kcal

C:-1400 kcal

D:-2200 kcal

Correct Answer:- Option-C

Question45:-A grinding ratio of 100 implies that

A:-Grinding wheel wears 100 times the volume of the material removed

B:-Grinding wheel wears 0.01 times the volume of the material removed

C:-Aspect ratio of abrasive particles used in the grinding wheel is 100

D:-Ratio of volume of abrasive particle to that of grinding wheel is 0.0005

Correct Answer:- Option-B

Question46:-Interpolater in a CNC machine

A:-Controls spindle speed

B:-Coordinates axes movements

C:-Operates tool changer

D:-None of the above

Correct Answer:- Option-B

Question47:-In a casting process, a vertical channel through which molten metal flows downwards from pouring basin to runner for reaching the mold cavity is called

A:-Pin hole

B:-Riser

C:-Spure

D:-All the above

Correct Answer:- Option-C

Question48:-An organizational behaviour would be least likely to be used to focus on which of the following problem ?

A:-An increase in absenteeism at a certain company

B:-A fall in productivity in one shift of a manufacturing plant

C:-A decrease in sales due to growing foreign competition

D:-An increase in theft by employees at a retail store

Correct Answer:- Option-C

Question49:-What is the primary meaning of organisation structure ?

A:-The way different resources are distributed

B:-The policies created and implemented by the firm

C:-The exact designated position of spaces and departments in an organisation

D:-The way in which activities are controlled and performed in a simplified manner

Correct Answer:- Option-D

Question50:-Which of the following methods provides the highest heat flux (W/mm^2)

A:-Laser beam welding

B:-Plasma Arc welding

C:-Sub merged arc welding

D:-Tungsten inert gas welding

Correct Answer:- Option-A

Question51:-The terminal settling velocity of a spherical particle (density = 1180 kg/m^3, diameter = 100 micron), in gravitational settling under Stroke's regime in water (density = 1000 kg/m^3, viscosity = 10^{-3} Pa s) is

A:-9.8 mm/s

B:-98 mm/s

C:-0.98 mm/s

D:-0.098 mm/s

Correct Answer:- Option-C

Question52:-In a mixing tank operating at a Reynolds number greater than 4000, if the diameter of impeller is doubled with all other conditions remaining the same, the power requirement increases by a factor of

A:-1/32

B:-32

C:-1/8

D:-8

Correct Answer:- Option-B

Question53:-For a cyclone separator of diameter 0.3 m with a tangential velocity of 15 m/s at the wall, the separation factor is (acceleration due to gravity may be taken as 10 m/s^2)

A:-150

B:-75

C:-125

D:-1250

Correct Answer:- Option-A

Question54:-A continuous grinder obeying Bond's law grinds a solid of 9mm diameter to 1 mm size at a rate of 1000kg/h. If the product requirement is changed to a smaller size of 0.25 mm diameter, for the same power input the product output rate will be _____ kg/h

A:-1000

B:-800

C:-600

D:-400

Correct Answer:- Option-D

Question55:-Which of the following correctly describes the difference between a filter aid and a filter media?

A:-Filter aids form a structural framework for supporting filter media during a filtration process

B:-Filter aids are used to create a porous layer for filtration, while filter media retain the solid particles

C:-Filter aids are used to reduce the porosity of the filter cake, and filter media to prevent the passage of fine particles

D:-Filter aids actively trap impurities from a liquid, while filter media primarily prevent the passage of fine particles

Correct Answer:- Option-B

Question56:-The proximate analysis of coal gives

A:-Carbon, hydrogen, sulphur, nitrogen

B:-Carbon, hydrogen, ash

C:-Volatile matter, moisture, ash, fixed carbon

D:-Volatile matter, moisture, nitrogen, carbon

Correct Answer:- Option-C

Question57:-Identify the law stating that the total volume occupied by a gaseous mixture is equal to the sum of the pure-component volumes.

A:-Amagat's Law

B:-Dalton's Law

C:-Hess's Law

D:-Henry's Law

Correct Answer:- Option-A

Question58:-In a once-through material balance, the total feed is equated against

A:-Gross products

B:-Net products

C:-Recycled products

D:-Limiting products

Correct Answer:- Option-A

Question59:-Which type of spectroscopy is used for molecular vibration analysis ?

A:-UV-Vis Spectroscopy

B:-IR Spectroscopy

C:-NMR Spectroscopy

D:-X-ray Spectroscopy

Correct Answer:- Option-B

Question60:-Which of the following thermocouples has the highest temperature range ?

A:-Type J (Iron-Constantan)

B:-Type K (Chromel-Alumel)

C:-Type R (Platinum-Rhodium)

D:-Type T (Copper-Constantan)

Correct Answer:- Option-C

Question61:-Name the flow meter that operates based on the differential pressure principle.

A:-Venturi Meter

B:-Magnetic Flow Meter

C:-Ultrasonic Flow Meter

D:-Rotameter

Correct Answer:- Option-A

Question62:-Amplitude ratio for sinusoidal response of a first order system shall be

A:-Equal to unity

B:-Less than unity

C:-Greater than unity

D:-Equal to zero

Correct Answer:- Option-B

Question63:-Which of the following approximates the percentage band width of an on-off control?

A:-50

B:-200

C:-Zero

D:-100

Correct Answer:- Option-C

Question64:-Two first-order interacting systems connected in series constitute a ____ system.

A:-Second order critically damped

B:-Second order overdamped

C:-Second order underdamped

D:-Second order undamped

Correct Answer:- Option-B

Question65:-It takes 12 hours for drying 50 kg of a wet solid from 30% to 12%

moisture content. The critical moisture content is 10%, and the equilibrium moisture content is 4%. The falling rate period can be taken as linear, and all moisture contents are on a dry basis. The time taken for drying in the constant rate period in hours is

A:-12

B:-10

C:-4

D:-6

Correct Answer:- Option-A

Question66:-The liquid stream entering a tray in a distillation column has an average composition of 52%. The leaving liquid stream composition is 49% on an average. If the average composition of liquid stream in equilibrium with the leaving vapour stream in equilibrium with the leaving vapour stream is found to be 48%, the percentage Murphree efficiency based on liquid stream for the given tray would be approximately equal to

A:-33

B:-75

C:-100

D:-300

Correct Answer:- Option-B

Question67:-Humid air sample at atmospheric pressure has a dry bulb temperature of 33°C and a wet bulb temperature of 22°C. If the sample is heated at constant pressure to a dry bulb temperature of 55°C, its adiabatic saturation temperature will be equal to

A:-22°C

B:-Less than 22°C

C:-Greater than 22°C

D:-55°C

Correct Answer:- Option-C

Question68:-Penetration theory suggests that the mass transfer coefficient k_c varies with the binary diffusivity D_{AB} as

A:-$k_c \propto D_{AB}^2$

B:-$k_c \propto \sqrt[3]{D_{AB}}$

C:-$k_c \propto D_{AB}$

D:-$k_c \propto \sqrt{D_{AB}}$

Correct Answer:- Option-D

Question69:-Ammonia air mixture containing 0.12 mole fraction of ammonia is passed over ammonia water solution containing 0.04 mole fraction of ammonia. Interphase mass transfer of ammonia takes place between the gas and liquid phases. Assume that the film mass transfer coefficient in the liquid phase is twice that in the gas phase. The equilibrium distribution of ammonia is given by y*=0.5x

where y* and x are mole-fractions of ammonia in air and water respectively. The steady-state flux of ammonia is estimated to be 5 mol/m^2h. The film mass transfer coefficient on the gas phase round to the nearest integer is

A:-78

B:-5

C:-63

D:-50

Correct Answer:- Option-C

Question70:-Which of the following causes non-vertical tie lines connecting the underflow and overflow in a leaching equilibrium ?

A:-Adsorption of solute on the solid surface

B:-Complete dissolution of solute in solvent

C:-Insoluble settles completely in the underflow

D:-None of the above

Correct Answer:- Option-A

Question71:-Nylon-66 is manufactured from

A:-Adipic acid and hexamethylene diamine

B:-Caprolactum

C:-Maleic anhydride and hexamethylene diamine

D:-Sebacic acid and terephthalic acid

Correct Answer:- Option-A

Question72:-Which of the following oxide works as a catalyst for the formation of high density polyethylene by Philips process ?

A:-Molybdenum oxide

B:-Zinc oxide

C:-Chromium oxide

D:-Calcium oxide

Correct Answer:- Option-C

Question73:-Match the following.

List 1	List 2
A) Phenol Formaldehyde	I) Suspension polymerisation
B) Stereo regular polypropylene	II) Emulsion polymerisation
C) Poly vinyl chloride	III) Solution polymerisation
D) Styrene butadiene rubber	IV) Bulk polymerisation

A:-A-II, B-IV, C-I, D-III

B:-A-IV, B-III, C-I, D-II

C:-A-IV, B-I, C-III, D-II

D:-A-IV, B-III, C-II, D-I

Correct Answer:- Option-B

Question74:-How is the rate of polymerisation dependent on the concentration of monomer in the cationic polymerisation ?

A:-Proportional to first power

B:-Proportional to half power

C:-Proportional to second power

D:-No dependence

Correct Answer:- Option-C

Question75:-Polymer used in bullet proof glass is

A:-Kevlar

B:-Nomex

C:-PMMA

D:-Lexan

Correct Answer:- Option-D

Question76:-As per IS 10500:2012, for drinking water in the absence of alternate sources of water, the permissible limits for chloride and sulphate, in mg/l, respectively are :

A:-250 and 200

B:-1000 and 400

C:-200 and 250

D:-500 and 1000

Correct Answer:- Option-B

Question77:-The distribution system in water supplies is designed on the basis of :

A:-Average daily demand

B:-Peak hourly demand

C:-Coincident draft

D:-Greater of (2) and (3)

Correct Answer:- Option-D

Question78:-Match List-I (parameters) and List-II (diseases) and select the correct answer using the codes given below the list :

List I	List II
(a) Absence of fluorides	(i) Methemoglobinemia
(b) Excess of lead	(ii) Goitre
(c) Presence of excess nitrate	(iii) Dental caries
(d) Absence of iodide	(iv) Anaemia

A:-(a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

B:-(a)-(ii), (b)-(iii), (c)-(i), (d)-(iv)

C:-(a)-(iii), (b)-(ii), (c)-(i), (d)-(iv)

D:-(a)-(iii), (b)-(iv), (c)-(ii), (d)-(i)

Correct Answer:- Option-A

Question79:-The maximum daily demand of a city is $24\times_{10^5}$litres and the rate of filtration is 100 L/h/$_{m^2}$. What is the area of the filter($_{m^2}$) ?

A:-10

B:-100

C:-1000

D:-1500

Correct Answer:- Option-C

Question80:-Order for disinfectants in increasing order of their disinfection power is :

A:-Ozone < HOCI < monochloramine < Trichloramine

B:-Ozone < Trichloramine < Monochloramine < HOCI

C:-Trichloramine < HOCI < Monochloramine < Ozone

D:-Trichloramine < Monochloramine < HOCI < Ozone

Correct Answer:- Option-D

Question81:-At lower pH, the contact period required for chlorination is :

A:-Lower

B:-Higher

C:-Same

D:-None of the above

Correct Answer:- Option-A

Question82:-Lower Food to Micro-organism (F/M) ratio in a conventional activated treatment plant means :

A:-Lower BOD removal

B:-Higher BOD removal

C:-No effect on BOD removal

D:-Medium BOD removal

Correct Answer:- Option-B

Question83:-Recirculation in "Activated sludge process" is done to :

A:-Dilute the incoming sewage

B:-Supply seed to the aeration tank

C:-Operate the plant continuously

D:-Dampen the effect of the flow variation

Correct Answer:- Option-B

Question84:-The presence of algae in water indicates that water is :

A:-Hard

B:-Soft

C:-Acidic

D:-Turbid

Correct Answer:- Option-C

Question85:-The following observations were made on 2% dilution of wastewater :
Dissolved oxygen of aerated water used for diluted = 0 mg/l
Dissolved oxygen of diluted sample after 5 days = 0.6 mg/l
Dissolved oxygen of original sample = 2.0 mg/l
The BOD of 5 days of the sample is :

A:-80 mg/l

B:-60mg/l

C:-100 mg/l

D:-70mg/l

Correct Answer:- Option-D

Question86:-Activated sludge process is an example of :

A:-Anaerobic suspended growth process

B:-Anaerobic attached growth process

C:-Aerobic attached growth process

D:-Aerobic suspended growth process

Correct Answer:- Option-D

Question87:-Which of the following is not a secondary treatment unit in wastewater treatment ?

A:-Aeration tank

B:-Aerated lagoon

C:-Imhoff tank

D:-Trickling filter

Correct Answer:- Option-C

Question88:-A water treatment plant has a flow rate of 0.6 m^3/s. The settling basin at the plant has effective settling volume dimensions of length 20m, depth 3 m, and width 6m. What percentage of the particles having a settling velocity of 0.004 m/sec is removed ?

A:-80%

B:-92%

C:-75%

D:-100%

Correct Answer:- Option-A

Question89:-The total hardness value obtained from the complete analysis of water sample was found to be 120 mg/l. If the value of carbonate hardness is 50 mg/l, the non-carbonate hardness and alkalinity are, respectively :

A:-170 mg/l and 70 mg/l

B:-170 mg/l and 50 mg/l

C:-70 mg/l and 50 mg/l

D:-50 mg/l and 70 mg/l

Correct Answer:- Option-C

Question90:-A 25 ml sample was diluted to 250 ml with odourless distilled water so that the odour of the sample no longer perceivable. What was the Threshold odour number ?

A:-11

B:-10

C:-25

D:-15

Correct Answer:- Option-B

Question91:-The type of sedimentation process of water treatment in which the particles settle as individual entities, and there is no significant interaction with neighbouring particles is referred to as :

A:-Hindered settling

B:-Compression settling

C:-Flocculent settling

D:-Discrete settling

Correct Answer:- Option-D

Question92:-The question consists of two statements, one labelled as 'Assertion (A)' and the other as 'Reason (R)' :
Assertion (A) : Tapered flocculation is more efficient when compared to the conventional process of flocculation.
Reason (R) : In tapered flocculation, velocity gradient at the inlet is less than that at the outlet of the flocculation unit.
Examine the above two statements carefully and select the correct answer from the options given below :

A:-Both (A) and (R) are true and (R) is the correct explanation of (A)

B:-Both (A) and (R) are true and (R) is the not correct explanation of (A)

C:-(A) is true but (R) is false

D:-(A) is false but (R) is true

Correct Answer:- Option-C

Question93:-Which coagulant is widely used for sewage treatment ?

A:-Lime

B:-Alum

C:-Ferric chloride

D:-Ferric sulphate

Correct Answer:- Option-C

Question94:-If 12 ppm of alum dose is required for treatment of water, then quantity of alum for treatment of 10 million litre water will be :

A:-22kg

B:-12kg

C:-1.2kg

D:-120kg

Correct Answer:- Option-D

Question95:-Which of the following is a group, including only aerobic treatment units for sewage treatment ?

A:-Trickling filter, Oxidation pond, Activated sludge plant

B:-Septic tank, Imhoff tank, Sludge digestion tank

C:-Trickling filter, Septic tank, Oxidation pond

D:-Trickling filter, Oxidation pond, Imhoff tank

Correct Answer:- Option-A

Question96:-What will be the Sludge Volume Index (SVI) (ml/gram) if 100ml of sludge collected in 30 minutes and on drying weighs 800 mg ?

A:-125

B:-8

C:-0.008

D:-0.125

Correct Answer:- Option-A

Question97:-The correct sequence of the sludge deigestion steps is :

A:-Hydrolisis, Methanogenesis, Acidogenesis

B:-Hydrolisis, Acidogenesis, Methanogenesis

C:-Methanogenesis, Acidogenesis, Hydrolisis

D:-Acidogenesis, Methanogenesis, Pyrolysis

Correct Answer:- Option-B

Question98:-Anti-siphonage pipe is connected to :

A:-Main soil pipe

B:-Bottom of P-Trap of W.C

C:-Top of P-Trap of W.C

D:-Side of Water Closet

Correct Answer:- Option-C

Question99:-The valve used for the prevention of reversal of flow in a pipeline is :

A:-Air valve

B:-Butterfly valve

C:-Check valve

D:-Scour valve

Correct Answer:- Option-C

Question100:-In removing bacteria and turbidities, as compared to rapid gravity filters, pressure filters are :

A:-Less efficient

B:-Equally efficient

C:-Dependent on the depth of sand

D:-More efficient

Correct Answer:- Option-A