RSPCB
JEE
Previous Year Paper
2016

Q001: Which one of the following are the correct percentages of the two greenhouse gases that contribute to the total global warming?
(A) CO_2-40% and CFCs-30%
(B) Methane 20% and N_2O-18%
(C) N_2O-6% and CO_2 86%
(D) CFC-14% and Methane 20%

Q002: Radioactive waste from hospitals should be stored in container shielded with:
(A) Lead
(B) Plastic
(C) Steel
(D) Mercury

Q003: The detention period for oxidation pond is generally kept as:
(A) 30 hours
(B) 10 to 15 days
(C) 2 to 6 days
(D) 24 hours

Q004: The size of clear opening in case of bar-rack (coarse-screen) is usually
(A) 10 mm to 20 mm
(B) 20 mm to 50 mm
(C) Less than 10 mm
(D) 50 mm or more

Q005: The F/M ratio in aeration tank of an ASP treating 0.96 MLD of wastewater having a BOD of 250 mg/l with MLSS concentration of 3000 mg/l and HRT of 6 hrs is:
(A) 0.303
(B) 0.33
(C) 3.3
(D) 3.03

Q006: Which is **not** considered a greenhouse gas?
(A) Sulphur dioxide (SO_2)
(B) Water vapor (H_2O)
(C) Carbon dioxide (CO_2)
(D) Nitrous oxide (N_2O)

Q007: Type of settling in plain sedimentation tank is:
(A) Flocculent
(B) Discrete
(C) Zone
(D) Hindered

Q008: Unit operation used to separate light materials i.e. paper and plastic from heavy materials i.e. metals based on weight deference in the air stream:
(A) Density separation
(B) Screening
(C) Size reduction
(D) Densification

Q009: Minimum thickness of the plastic carry bags, according to the Plastic waste management rules 2016 is
(A) 60 microns
(B) 50 microns
(C) 30 microns
(D) 40 microns

Q010: Public hearing is required for
(A) All projects
(B) All new projects
(C) All expansion projects
(D) None of these

Q011: The Great Smog of 1952 was formed over the city
(A) New York
(B) London
(C) Mumbai
(D) Paris

Q012: The desirable effective size of sand in rapid sand filters is:
(A) < 0.1 mm
(B) 0.45 - 0.6 mm
(C) 0.15 - 0.35 mm
(D) > 1.0 mm

Q013: Which of the following city produces highest amount of e-waste?
(A) Jaipur
(B) Kolkata
(C) Pune
(D) Ahmedabad

Q014: Majority of the Indian e-waste is generated from
(A) Industrial sector
(B) IT companies
(C) Domestic sector
(D) Imported waste

Q015: Direct exposure to which two chemicals in hazardous waste can cause death?
(A) Mercury and Cyanide
(B) Cyanide and Sulphur
(C) Sulphur and Arsenic
(D) Mercury and Fluoride

Q016: The dispersion parameters sigma-y and sigma-z in Gaussian model are function of
(A) Downwind distance and atmospheric stability
(B) Downwind and cross wind distance from the source
(C) Crosswind distance and frictional velocity
(D) Upwind distance and downwind distance from the source

Q017: PCDD/F's (Polychlorinated dibenodioxins and polychlorinated dibenzofurans) are volatiles organic chemicals that arise when e-waste is
(A) Shredded
(B) Burnt
(C) Biodegraded
(D) Boiled

Q018: Rajasthan is the top producer of which mineral?
(A) Iron
(B) Gold
(C) Feldspar
(D) Copper

Q019: The ratio of 'flowing through period' to 'detention period' in a sedimentation tank is called

(A) Surface loading
(B) Displacement efficiency
(C) Settling velocity
(D) Weir loading

Q020: Trickling filter is:

(A) Suspended growth process
(B) Stationary media attached film
(C) Moving media fixed film
(D) Stationary media suspended growth

Q021: Find the correct ratio b:a if ratio (b+a):(b-a) is equal to 5:1.

(A) 3:5
(B) 2:3
(C) 5:3
(D) 3:2

Q022: If the waste water contains Total Kjeldahl Nitrogen (TKN) of 30 mg/l, then its ultimate nitrogeneous B.O.D. (NBOD) shall be approx. equal to _____ mgO_2/l

(A) 180
(B) 138
(C) 166
(D) 158

Q023: A power plant releases SO_2 in ambient air. If the concentration of SO_2 is 50 ppb (part per billion), What is concentration of SO_2 in terms of $\mu g/m^3$, at 25°C and 1 atm pressure? MW wt of SO_2 is 64.

(A) 225
(B) 200
(C) 170
(D) 130

Q024: Asbestos-laden wastes are classified as hazardous wastes due to emissions of:

(A) Microscopic fibres
(B) Ammonia
(C) Sulphide gas
(D) Methane

Q025: Some of the oxygen demand parameters for an organic compound / wastewater are Theoretical (ThOD), Chemical (COD), Ultimate BOD (UBOD). If an organic compound is assumed to be completely biodegradable, which of the following is true?

(A) COD > ThOD = UBOD
(B) ThOD > UBOD > COD
(C) COD = UBOD <ThOD
(D) COD = ThOD = UBOD

Q026: Which amongst the following is the best process for energy recovery from municipal solid waste?

(A) Hydrolysis
(B) Pyrolysis
(C) Incineration
(D) Anaerobic digestion

Q027: Which one of these districts does **not** share a border with Pakistan?
(A) Jodhpur
(B) Sri Ganganagar
(C) Jaisalmer
(D) Barmer

Q028: Role of transfer station is to
(A) Reduce the volume
(B) Burn the paper waste
(C) Increase the disposal cost
(D) Transfer the waste

Q029: The main constituents of gas generated during the anaerobic digestion of sewage sludge are:
(A) Carbon monoxide and nitrogen
(B) Methane and ethane
(C) Carbon dioxide and methane
(D) Carbon dioxide and carbon monoxide

Q030: The tropic of Cancer passes through which state
(A) Andhra Pradesh
(B) Kerala
(C) Jammu and Kashmir
(D) Rajasthan

Q031: Plastic waste constitutes two major categories i.e., Thermoplastics and Thermoset plastics. What is the contribution of thermoplastics out of these?
(A) 50%
(B) 30%
(C) 80%
(D) 60%

Q032: The unit in which both, sedimentation and digestion processes of sludge take place simultaneously is:
(A) Detritus tank
(B) Digestion tank
(C) Skimming tank
(D) Imhoff tank

Q033: Which of the following statements is **false**?
(A) The dew point increases as precipitation evaporates into the air.
(B) Frost is likely if the air is cooled to its (below freezing) dew point.
(C) A high value of relative humidity implies a low temperature-dew point spread.
(D) Water evaporates when air is cooled to its dew point.

Q034: Environmental clearance is required to be taken for
(A) Large commercial complexes
(B) Hazardous waste TSDF site
(C) Environmental consultancy services
(D) Residential buildings

Q035: Annual Average for air pollution means total of _____ measurements in a year.

(A) 365 (daily)
(B) 12 (monthly)
(C) 104 (twice-weekly)
(D) 24 (bi-monthly)

Q036: What does the Basel convention control?

(A) Export of hazardous waste
(B) Trade in recycled materials
(C) Production of excess packing
(D) Operation of landfills

Q037: In a batch culture growth pattern of bacteria, the phase which represents the time required for organisms to acclimatize to the new environment is:

(A) Stationary phase
(B) Death phase
(C) Lag phase
(D) Log phase

Q038: Where in Rajasthan is situated the longest wall in the world after Great Wall of China?

(A) Mehrangarh Fort
(B) Kumbhalgarh Fort
(C) Ranthambor Fort
(D) Chittorgarh Fort

Q039: National Green Tribunal has ___ Zonal benches

(A) 10
(B) 20
(C) 4
(D) 30

Q040: Most preferable hierarchy for integrated waste management is:

(A) Source reduction- landfilling-recycling-transformation
(B) Recycling-transformation-source reduction-landfilling
(C) Landfilling-recycling-transformation-source reduction
(D) Source reduction-recycling-transformation-landfilling

Q041: Ultimate analysis of solid waste includes the analysis of which elements?

(A) C, H, O, N, S
(B) C, H, O, P, N
(C) C, H, O, N, K
(D) C, H, P, K, O

Q042: Amount of e-waste generated annually, currently in India is approximately _____ lacs tonnes:

(A) 2
(B) 4
(C) 8
(D) 6

Q043: Which of the following is **not** a basic unit of 'SI System of Units'

(A) Gram
(B) Second
(C) Mole
(D) Meter

Q044: The Membrane Bio-reactor (MBR) is a combination of
(A) Oxidation ditch & Membrane Separation Process
(B) Sequencing Batch Reactor and Membrane Separation Process
(C) Activated Sludge Process and Membrane Separation Process
(D) Activated Sludge Process and Sequencing Batch Reactor

Q045: Keoladeo National Park is known for which bird?
(A) Godavan
(B) Eagle
(C) Emu
(D) Siberian Crane

Q046: One of the main tourist destinations with renowned architecture "Ranakpur Temple" is situated in which district?
(A) Chittorgarh
(B) Udaipur
(C) Rajsamand
(D) Pali

Q047: A city has the following characteristics: Width=5 km, Length (along the wind direction)= 10 km, u (wind speed) = 2.5 m/s, H (mixing height) = 1000 m, the upwind, or background, concentration of nitrous oxide is b = 10 $\mu g/m^3$. The emission rate per unit area is q = 4×10^{-6} $g/s.m^2$. What is the concentration of nitrous oxide, in $\mu g/m^3$, over the city (assume there is no chemical reaction)?
(A) 20
(B) 16
(C) 26
(D) 30

Q048: Which gas emits from paper manufacturing, metal smelter industry?
(A) Sulphur dioxide
(B) Oxygen
(C) Ozone
(D) Nitrogen

Q049: The different major phases of an infrastructural project, in logical sequence, are
(A) Tender, Design, Execution, Quality Control
(B) Design, Construction, Tendering, Handing over
(C) Planning, Construction, Operation, Closure
(D) Planning, Design, Closure, Environmental Impact Assessment

Q050: Corrosive hazardous wastes have the following characteristics: A liquid that corrodes steel at a rate greater than _____ mm per year at _____.
(A) 2.35, 45°C
(B) 6.35, 55°C
(C) 4.35, 50°C
(D) 5.35, 60°C

Q051: If a city has a population of 5 lacs and another city has a population of 50 lacs, then in the city with higher population; solid waste generation per person is usually

(A) Significantly lower
(B) Same
(C) Higher
(D) Lower

Q052: In an experiment, a 1% solution of the sewage sample was incubated for 5 days at 20°C. After 5 days, reduction in dissolved oxygen was noted as 3 mg/L. The BOD of the above sewage is

(A) 300 mg/L
(B) 200 mg/L
(C) 500 mg/L
(D) 150 mg/L

Q053: Secure landfill site is designed for

(A) Hazardous waste
(B) Paper waste
(C) Kitchen waste
(D) Agriculture waste

Q054: Where in India was the first aerobic composting plant set up in 1992?

(A) Chennai
(B) Calcutta
(C) Mumbai
(D) Delhi

Q055: Which component is **not** included in EIA?

(A) Air quality
(B) Safety
(C) Human behavior
(D) Wastewater quality

Q056: The 24-hr National Ambient Air Quality Standard of $PM_{2.5}$ is 60 $\mu g/m^3$ and the city is exactly compliant with the standard. What is the dose of $PM_{2.5}$ (in gm/kg-d) to the population if average weight of person is 60 kg and one breathes in 20 m^3 of air per day?

(A) 20×10^{-3}
(B) 60×10^{-3}
(C) 60×10^{-6}
(D) 20×10^{-6}

Q057: Which of the following air pollution control devices is suitable for removing the very fine dust from an air stream without affecting gaseous components?

(A) Wet scrubber
(B) Cyclone separator
(C) Gravity settlers
(D) Electrostatic precipitator

Q058: What is the approximate per capita solid waste generation in large cities, in India?

(A) 800-900 g/capita/day
(B) 250-350 g/capita/day
(C) 400-600 g/capita/day
(D) 200-300 g/capita/day

Q059: What is the full form of GST?
(A) Gross Service Tax
(B) General Sales Tax
(C) Goods Sold Tax
(D) Goods and Services Tax

Q060: Which material is **not** useful in waste to energy process?
(A) Paper
(B) Wood
(C) Glass
(D) Food

Q061: The cyclone and electrostatic precipitators primarily use the following forces to remove the particles:
(A) Inertia and electrostatic
(B) Inertia and magnetic
(C) Impaction and electrostatic
(D) Gravitational and electrostatic

Q062: Which statement is **not** true for Incineration of solid waste?
(A) Cost of installation is very low
(B) Used for reduction of volume
(C) Used for disposal of toxic waste and other toxic substances
(D) Ash can contain heavy metals

Q063: The boiler flue gas is source of:
(A) HCl
(B) Volatile organic compounds
(C) HF
(D) NO

Q064: The units of velocity gradient (G) is:
(A) Second^{-2}
(B) Meter/Second
(C) Second^{-1}
(D) Second

Q065: The first elected chief minister of Rajasthan was:
(A) Mohanlal Sukhadia
(B) Gurmukh Nihalsingh
(C) Hiralal Shastri
(D) Tikaram Paliwal

Q066: A wastewater treatment plant comprises several unit operations and processes. One of them is 'Flow Equalization' which is (i) not a treatment process; (ii) provided to avoid shock loading in downstream units. Which of the following is correct about statements (i) & (ii)?
(A) Both (i) & (ii) are true
(B) Only (i) is true
(C) Only (ii) is true
(D) Both (i) & (ii) are false

Q067: Two important design operational parameters associated with Activated sludge process (ASP) are represented by F/M Ratio and MCRT. The term MCRT indicates:
(A) Average time microorganisms stay in system
(B) Mean cell concentration in aeration tank
(C) Wastewater retention through system
(D) Sludge produced in the system

Q068: Since water is electrically neutral, the cations and anions must balance. Usually concentration of common ions is estimated in terms of mg/L in water sample for this purpose. Common ions with their approximate equivalent weights are Ca^{2+} [20], Mg^{2+} [24], Na^{+} [23], K^{+} [39] and HCO_3^{-} [61], SO_4^{2-} [48], Cl^{-} [35], NO_3^{-} [62]. The percentage difference between cation sum and anion sum in terms of milli-equivalents is used to check the correctness of analysis. Criterion for acceptance of correctness is that %difference in ion sums should not exceed 5% for low ion sum and 10% for high ion sum. A student obtained the following analysis results for analysis of final treated water sample drawn from a water treatment plant: calcium = 70.0 mg/L, magnesium = 18.0 mg/L, sodium = 23.0 mg/L, potassium = 3.9 mg/L, bicarbonate = 183.0 mg/L, sulfate = 72.0 mg/L, chloride = 35.0 mg/L, nitrate = 6.2 mg/L. What can be said about the correctness of analysis?
(A) Accept anions and reanalyse cations
(B) Accept as correct analysis
(C) Reject and reanalyse both cations and anions
(D) Accept cations and reanalyse anions

Q069: The time taken for paper to degrade after disposal is:
(A) 30-60 days
(B) 5-10 days
(C) 50-100 days
(D) 10-30 days

Q070: The single stage digestion tank loading is 0.5 kg/m^3 and if the total VSS to be anaerobically digested is 266 kg/day then the diameter of digester shall be about
(A) 12.2 m
(B) 9.8 m
(C) 10.6 m
(D) 12.8 m

Q071: Recycling of used oil is suitable when polychlorinated biphenyls (PCBs) concentration is less than:
(A) 5 ppm
(B) 3.5 ppm
(C) 2 ppm
(D) 10 ppm

Q072: The full form of MoEFCC is
(A) Ministry of Environment Forest and Climate Condition
(B) Ministry of Environment Farming and Climate Condition
(C) Ministry of Environment Farming and Climate Change
(D) Ministry of Environment Forest and Climate Change

Q073: In a right angle triangular notch if θ is the discharge, H is the head over the crest, then
(A) $\theta \propto H$
(B) $\theta \propto H^{3/2}$
(C) $\theta \propto H^{5/2}$
(D) $\theta \propto H^{1/2}$

Q074: The sun emits a maximum amount of radiation at wavelengths near ____ μm, while the earth emits maximum radiation near wavelengths of ____ μm.
(A) 0.5, 10
(B) 0.5, 30
(C) 1, 10
(D) 10, 30

Q075: If two sounds of 60 dB are added, then what would be the resultant sound?
(A) 65 dB
(B) 120 dB
(C) 90 dB
(D) 63 dB

Q076: Size of solids particles in dissolved, colloidal or suspended forms in water may vary from 10^{-5} μm to 10^{2} μm. Which of the following solid particle size will **not** fall under the category of colloidal solids?
(A) 5×10^{-2} μm
(B) 1×10^{-1} μm
(C) 1×10^{-2} μm
(D) 1×10^{-4} μm

Q077: Maximum time required under hauled collection system (HCS) is for:
(A) Pick-up (PHCS)
(B) Haul (h)
(C) At-site (s)
(D) Off-route (w)

Q078: The temperature to be maintained (within ± 50°C) at secondary chamber of incinerators while treating biomedical waste is?
(A) 1050°C
(B) 1200°C
(C) 800°C
(D) 950°C

Q079: The Detention Time of tube settlers is
(A) Between 30 minutes to 60 minutes
(B) Equal to or less than 10 minutes
(C) Between 2.0 hr to 5.0 hr
(D) Greater than 5.0 hr

Q080: If the absolute temperature of an object doubles, the maximum energy emitted goes up by a factor of ____.

(A) 16 (B) 4

(C) 2 (D) 32

Q081: The tolerance limits for inland surface waters Class-C as per ' River Standards' for total coliform organism (MPN/100 ml) should be

(A) 100 (min) (B) 1500 (max)

(C) 500 (min) (D) 5000 (max)

Q082: The exertion of BOD is considered to follow the following order reaction:

(A) First order (B) Third order

(C) Zero order (D) Second order

Q083: The Victory Tower in Chittorgarh was built to celebrate which of the following victories of Maharana Kumbha

(A) Battle of Badi (B) Battle of Khatauli

(C) Battle of Gagroan (D) Battle of Sarangpur

Q084: Which one is more appropriate while defining impacts?

(A) Wastewater discharge (B) Consequence of changes

(C) Air emissions (D) Solid waste generation

Q085: What is the recycling symbol of plastic?

(A) Three bent arrows in a triangle with a number inside

(B) A number in a circle

(C) Four bent arrows in a square with a number inside

(D) One arrow curved in a circle with a number inside

Q086: The 'Velocity Gradient (G)' required for coagulation is computed by relationship

(A) G = P/ V.μ (B) G = $\sqrt{(2P/V.\mu)}$

(C) G = $\sqrt{(P/V.\mu)}$ (D) G = $\sqrt{(V.\mu/)\,P}$

Q087: Which is the only perennial river of Rajasthan?

(A) Arvari (B) Banas

(C) Mahi (D) Chambal

Q088: A PM_{10} sampler runs for 23.5 hours at an average flow rate of 1.1 m^3/min. The tare weight of the filter was 48.02 g, and the gross weight of the filter, dried to same humidity as the fresh filter, was 48.09 g. What was the average PM_{10} concentration, in $\mu g/m^3$, in the air?

(A) 70
(B) 90
(C) 45
(D) 40

Q089: Which colour of container is used to collect organic wastes?

(A) White
(B) Green
(C) Red
(D) Black

Q090: In order to form a treatment scheme, a student arranged the following units of a biological wastewater treatment plant in sequence: (A) secondary settling tank, (B) grit chamber, (C) aeration tank, and (D) equalization tank. The correct logical sequence should be:

(A) BDAC
(B) DBCA
(C) BDCA
(D) DACB

Q091: Pressure changes:

(A) More rapidly in the vertical direction than in the horizontal
(B) More rapidly in the horizontal direction than in the vertical
(C) At the same rate in the horizontal and vertical directions
(D) More rapidly in the vertical direction over land than over the ocean

Q092: UASB process is classified as:

(A) Attached film process
(B) Suspended growth process
(C) Fixed film process
(D) Stationary growth process

Q093: The maximum acceptable limit of total arsenic (as As) in drinking water as per IS 10500: 2012 is:

(A) 0.1 mg/l
(B) 1.0 mg/l
(C) 0.05 mg/l
(D) 0.01 mg/l

Q094: A student made 10 observations of dissolved oxygen in a river, transferred data from field book to a table for doing calculation. He calculated mean as 7.3 mg/L and standard deviation as 1.3. On rechecking, he found that one reading 8.6 mg/L was transferred wrongly as 6.8 mg/L by mistake. On correcting the data point, the correct mean will be

(A) 6.8
(B) 9.14
(C) 7.48
(D) 8.6

Q095: A student multiplied a, nonzero positive integer number by 3/5 instead of 5/3, what is the percentage of error in the calculation?

(A) 64%
(B) 84%
(C) 74%
(D) 54%

Q096: What is 'Hard-data' used for EIA?

(A) Perspective driven information with high variability and uncertainties
(B) Reliable but temporary information that can be altered with time
(C) Water quality data, where hard water is reported
(D) Reliable, permanent information not subjected to change with time.

Q097: In Class A city for house to house collection system, capacity of vehicles is

(A) 2000-5000 kg
(B) 500-1500 kg
(C) 50-100 kg
(D) 100-500 kg

Q098: If in a particulate control system $PM_{2.5}$ to PM_{10} ratio jumped from 0.5 to 0.7, it implies:

(A) A larger fraction of coarse particles is removed
(B) Both PM_{10} and $PM_{2.5}$ are removed equally effectively
(C) A larger fraction of fine particles is removed
(D) The ratio is not suggestive of fraction removed

Q099: Sustainable development is related to

(A) Infrastructure
(B) Machinery
(C) Financial capital
(D) Natural capital

Q100: The city of Jaipur was founded in the year

(A) 1727
(B) 1744
(C) 1947
(D) 1699

Q101: Estimate the Coriolis acceleration for a body, in m/s^2, moving with 3 m/s at 30 degree North latitude. Earth's angular velocity is 7.27×10^{-5} s^{-1}.

(A) 1.09×10^{-4}
(B) 1.89×10^{-4}
(C) 2.18×10^{-4}
(D) 3.78×10^{-4}

Q102: According to Gaussian Plume Model, the downwind ground level concentration (C) varies with effective stack height (H) of release as:

(A) $\ln(C) \propto H^{-3/2}$
(B) $\ln(C) \propto H^{-2}$
(C) $\ln(C) \propto H^{-1}$
(D) $\ln(C) \propto H^{-1/2}$

Q103: As per Environmental Clearance notification, projects are categorized on the basis of

(A) Cost
(B) Importance to economy
(C) Size
(D) All of above

Q104: A cyclone has an inner diameter of 1 m and gases with a tangential inlet velocity of 10 m/s enter into the cyclone. What is the acceleration (in m/s^2) of the particles entering in the cyclone?

(A) 205
(B) 105
(C) 100
(D) 200

Q105: Ignitable hazardous wastes has one of the following characteristics: Liquid that has a flash point less than _____°C, except aqueous solution with less than _____ alcohol

(A) 50, 10%
(B) 40, 12%
(C) 40, 24%
(D) 60, 24%

Q106: The COD/BOD ratio of non biodegradable wastewater is generally:

(A) > 10
(B) 0.1 to 0.5
(C) 1.25 to 2.5
(D) <1

Q107: The best option among the following for the treatment of distillery waste would include

(A) Oxidation ditch followed by oxidation pond
(B) Only aerobic lagoon
(C) Aerobic lagoon followed by anaerobic lagoon
(D) Anaerobic lagoon followed by aerobic lagoon

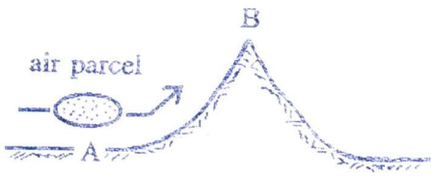
Q108: What is the dry adiabatic lapse rate in °C per km?

(A) 1
(B) 0.1
(C) 10
(D) 4

Q109: A clock strikes once at 1 o'clock, twice at 2 o'clock, thrice at 3 o'clock and so on. How many times does it strike in 12 hours from 1 o'clock onwards?

(A) 74
(B) 78
(C) 70
(D) 84

Q110: As in the figure below, an unsaturated air parcel moves from A to B, its volume will ____, and its temperature will ____.



(A) Decrease, increase
(B) Remain the same, decrease
(C) Increase, decrease
(D) Increase, remain the same

Q111: Which of the following is true of a parcel of air but **not** true of the environment?
(A) Consists of different air molecules at each level
(B) Temperature values differ erratically from one level to the next
(C) Changes temperature with altitude at either the dry or moist adiabatic rates
(D) Humidity values differ erratically from one level to the next

Q112: Graphic and photographic waste liquors carry:
(A) Thiosulphates and silver
(B) Mercury and arsenic
(C) Gold
(D) Lead

Q113: Ozone is formed in the upper atmosphere by a photochemical reaction with
(A) Infra-red radiation
(B) Visible light
(C) Ultra violet solar radiation
(D) All of the above

Q114: The volume of municipal solid waste placed in a day at landfill in addition to the cover material is known as:
(A) Lift
(B) Cell
(C) Liner
(D) Daily cover

Q115: Which of the following is **not** one of the criteria pollutants as per the list of USEPA?
(A) Sulfur dioxide
(B) Chlorine
(C) Lead
(D) Carbon monoxide

Q116: Project category for 'Common municipal solid waste management facility' is
(A) Category A
(B) Category D
(C) Category C
(D) Category B

Q117: The end products of aerobic and anaerobic biological processes contain one common constituent. This common end product in aerobic and anaerobic processes is:
(A) H_2S (B) CO_2
(C) CH_4 (D) H_2O

Q118: Type III settling refers to
(A) Hindered settling (B) Flocculant settling
(C) Compression settling (D) Discrete settling

Q119: 'Gauna', a Rajasthani tradition, is associated with
(A) Schooling (B) Death
(C) Child birth (D) Marriage

Q120: The unit of measurement of odour is:
(A) COD (B) TON
(C) BOD (D) TOC

Q121: One of the following is **not** an organic gas?
(A) Ammonia (B) Aldehydes
(C) Ketones (D) Hydrocarbons

Q122: Which of the following days is observed as World Water Day?
(A) 16th September (B) 15th August
(C) 22nd March (D) 5th June

Q123: After the war of Dewair (1582 AD) Maharana Pratap build the new capital at:
(A) Gogunda (B) Chavand
(C) Udaipur (D) Kumbhalgarh

Q124: Which is the lowest population density district in Rajasthan as per 2011 census?
(A) Jaisalmer (B) Bikaner
(C) Barmer (D) Jodhpur

Q125: The average daily per capita contribution of BOD_5 used for estimating population equivalent is:
(A) 90 g (B) 45 g
(C) 60 g (D) 120 g

Q126: Scoping is done to decide
(A) Whether EIA is required to be done (B) Who will do EIA
(C) What is to be included (D) None of above

Q127: The plume rise mainly has following two components:
(A) Wind drift and momentum bouncy
(B) Chemical reactivity and thermal bouncy
(C) Density difference and thermal bouncy
(D) Thermal and momentum bouncy

Q128: A bag contains 50p, 25p and 10p coins in the ratio of 1:4:5 respectively amounting to Rs. 240. Find the number of coins of each type respectively.
(A) 118, 472, 590
(B) 120, 480, 600
(C) 110, 440, 550
(D) 124, 496, 620

Q129: Which of these tools show plotted graphs of pressure, temperature and dew points in air?
(A) Satellite maps.
(B) Surface maps.
(C) Meteograms.
(D) Thermodynamic diagrams

Q130: Which term refers to the time spent in loading the vehicle, beginning with the stop to load the first container and ending when the last container has been loaded?
(A) Haul time
(B) Pick-up time
(C) At-site time
(D) Off-route time

Q131: For arriving at settling velocity of discrete spherical particles, Stoke's law is applicable for the range of Reynolds's number:
(A) 1000-10000
(B) 1-100
(C) < 1
(D) 100-1000

Q132: Optimum initial C/N ratio of solid waste for better composting process is
(A) 10
(B) 40
(C) 20
(D) 30

Q133: Mud balls are formed due to poor operation of:
(A) Trickling filter
(B) Rapid sand filter
(C) Anaerobic filter
(D) Slow sand filter

Q134: Cryogenic condensers can be used for abatement of:
(A) Dioxins
(B) NO_X
(C) VOC
(D) SO_2

Q135: Which collection service requires household cooperation to carry full and empty container?
(A) Curb service
(B) Setout service
(C) Alley service
(D) Setout-setback service

Q136: Dissolution of the gas in water is governed by Henry's law of partial pressure. With Henry's constant for oxygen being 2.55×10^4 atm, the saturation concentration of dissolved oxygen in water (55.6 g-mol/L) with no dissolved solids at 0°C and 1 atm pressure, will be

(A) 16.5 mg/L
(B) 8.4 mg/L
(C) 14.6 mg/L
(D) 13.8 mg/L

Q137: The growth of population can be represented by a:

(A) Logistic curve
(B) Straight line curve
(C) Logarithmic curve
(D) Semi-log curve

Q138: The maximum and minimum flows of sewage are of great concern in the design of:

(A) SST
(B) PST
(C) ASP
(D) Grit chamber

Q139: A venturi scrubber has a throat area of 0.5 m^2, a throat velocity of 50 m/s, and a pressure drop of 100 cm of water. If we have a 100 percent efficient motor and blower, what is the power required to force the gas through this venturi?

(A) 980 kW
(B) 123 kW
(C) 245 kW
(D) 490 kW

Q140: In addition to temperature difference in stack gases and ambient environment, what are the other two factors which affect the plume rise?

(A) Horizontal wind speed and stack exit velocity
(B) Cross wind velocity and frictional velocity
(C) Cross wind speed and adjacent height of the building
(D) Horizontal wind speed and frictional velocity

Q141: Rajyavardhan Singh Rathore, the Olympic silver medal winner, was born in which city of Rajasthan?

(A) Jaipur
(B) Udaipur
(C) Jaisalmer
(D) Bikaner

Q142: Which scientist discovered the radioactive element radium?

(A) Marie Curie
(B) Bejamin Franklin
(C) Albert Einstein
(D) Issac Newton

Q143: What is the life (in years) of landfill site if size of plot is 100x100x10 metre and the quantity of waste coming daily is 10 Ton with density of 500 kg/m^3?
(A) 16.5 (B) 15.5
(C) 14.5 (D) 13.5

Q144: The wastewater generation standard for tanneries in m^3/ton of raw hide is:
(A) 28 (B) 42
(C) 82 (D) 38

Q145: In a sequencing batch reactor the order of four processes shall be
(A) Filling, Aerate, Decant, Settle (B) Decant, Filling, Settle, Aerate
(C) Decant, Settle, Aerate, Filling (D) Filling, Aerate, Settle, Decant

Q146: The quantity of wastewater received at the inlet of the associated wastewater treatment plant varies with time of the day but the plant has a fixed design value of wastewater flow. Therefore, flow must be equalized before the biological treatment units. The sizing of equalization tank required is computed using hourly flow measurements and then drawing the:
(A) Unit hydrograph
(B) Cumulative frequency distribution curve
(C) Mass-flow diagram
(D) Flow discharge curve

Q147: The surface overflow rate, in m^3/m^2.day, of a clarifier having plan area of 100 m^2 and the flow rate of 3.6 MLD will be:
(A) 1.5 (B) 360
(C) 36 (D) 3.6

Q148: In the formulation of equations for design of activated sludge process, the aeration tank is considered as:
(A) Plug flow reactor (B) CSTR
(C) Batch reactor (D) Packed bed reactor

Q149: Reduction of moisture content of sludge is achieved by:
(A) Conditioning (B) Thickening
(C) Elutriation (D) Digestion

Q.150: A natural stream has a discharge of 60 m^3/h with a Pb concentration of 5 µg/L. The industrial effluent is released in the surface water with a flow of 10 m^3/h and Pb concentration of 250 µg/L. Calculate the resulting Pb concentration, in µg/L, close to the point of discharge at the stream assuming intensive mixing.

(A) 60
(B) 50
(C) 40
(D) 255

ROUGH WORK