

Q001: Which of the following processes is **not** simulated in Air Quality Modelling (AQM)?

- (A) Evapo-transpiration (B) Removal
(C) Advection (D) Diffusion

Q002: Which of the following statement(s) is/are correct?

- I. The name "coronavirus" comes from the crown-like projections on the virus's surfaces. "Corona" in Latin means "halo" or "crown."
II. The new coronavirus, SARS-CoV-1, causes COVID-19.
III. WHO announced COVID-19 outbreak as a pandemic on 11 February 2020
IV. WHO has declared year 2020 as the Year of the Nurse and the Midwife

- (A) Only II, III and IV (B) All I, II, III and IV (C) Only I and IV (D) Only II and III

Q003: Particle diameter of Tobacco smoke ranges between

- (A) 0.0001 - 10.0 μm (B) 10.0 - 100.0 μm (C) 0.01 - 1.0 μm (D) 1.0 - 100.0 μm

Q004: An upflow anaerobic sludge blanket reactor, with 6 hours hydraulic detention time, is designed to treat 5MLD of wastewater with COD of 400 mg/L. What will be the volumetric organic loading rate (kg COD/m³d)?

- (A) 1.6 (B) 3.3 (C) 1.2 (D) 1.25

Q005: Which of the following statement(s) is/are correct about Lagoons and backwaters?

- I. They are coastal lakes which have their connection with the sea through small openings
II. They exhibit a gradient in salinity from freshwater to marine depending upon the extent of influence of the sea water.

- (A) Neither I nor II (B) Only II (C) Only I (D) Both I and II

Q006: According to CPHEEO Manual, recommended design range for velocity gradient (G per second) for mechanical flash mixers is:

- (A) 1 – 10 (B) 2000 – 4000 (C) 300 – 900 (D) 10 – 75

Q007: Which word has become "Word of the Year 2020" in the Cambridge Dictionary?

- (A) Covid (B) Lockdown (C) Corona (D) Quarantine

Q008: In setting up a wastewater treatment plant, based on ASP, which of the following sequences is correct? Here A is Aeration Tank, B is Secondary Clarifier, C is Equalization Tank, and D is Grit Chamber

- (A) D-C-A-B (B) A-B-C-D (C) C-D-A-B (D) B-A-C-D

Q009: Which is the largest source for production of nitrous oxide?

- (A) Fertilizer industry (B) Bacterial action
(C) Chemical industry (D) Fossil fuel combustion

Q010: Field capacity in a waste sample is defined as

- (A) The maximum amount of moisture that can be retained in the sample subject to gravitational pull
(B) The moisture present in the sample expressed as percentage of the wet weight
(C) The maximum amount of water that comes out from the sample subject to gravitational pull
(D) The volume of air voids present in the sample

Q011: The National Green tribunal (NGT) hears matters relating to

- (A) Water, climate change, forests (B) Biodiversity, climate change, water, forests
(C) Biodiversity, climate change, forests (D) Biodiversity, forests, water

Q012: In the habitat based methods for Biological Impact Assessment considering HUVs (Habitat Unit Values) the impact is equal to (Here HUV_{wp} = with project HUV and HUV_{wop} = without project HUV)

- (A) HUV_{wp} / HUV_{wop} (B) $HUV_{wp} + HUV_{wop}$ (C) $HUV_{wp} * HUV_{wop}$ (D) $HUV_{wp} - HUV_{wop}$

Q013: United Nations conference on the Human Environment was held at Stockholm in which of the following years?

- (A) 1972 (B) 1974 (C) 2004 (D) 1981

Q014: Mixing requirement in the aeration tank should be in the range of _____ W/m³ of the tank volume

- (A) 100 – 120 (B) 15 – 26 (C) 5 – 10 (D) 50 – 60

Q015: Thickening of sludge occurs by type _____ settling

- (A) II (B) IV (C) III (D) I

Q016: Which system/body recovers about half of recyclables generated by household in India?

- (A) Kabadi system and waste pickers (B) Municipality/Nagar Nigam
(C) Waste recycling center (D) Urban Local Bodies

Q017: At a municipal solid waste management facility the Trommel Screens are used for

- (A) Separating light materials from heavy (B) Separating non-ferrous metals
(C) Separation as per the size (D) Separating ferrous metals

Q018: Government has issued advisory for import and possession of exotic live species under which agreement?

- (A) UNFCCC (B) CITES (C) CBD (D) CMS

Q019: Which metals can be recovered from mobile phones?

- (A) Copper, silver, gold, palladium (B) Copper, glass, Lead, steel
(C) Copper, tin, indium (D) Copper, lead, iron, tin

Q020: 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 = UBOD < ThOD (B) COD > ThOD = UBOD
(C) ThOD > UBOD > COD (D) COD = ThOD = UBOD

Q021: For an infinite line source Gaussian model, for a constant emission rate, the concentration in cross wind direction for a given x-coordinate can be stated as:

- (A) decreases exponentially with y-direction
(B) increases with +y direction and decreases with -y direction
(C) increases with -y direction and decreases with +y direction
(D) independent of y-coordinate

Q022: What is the order of waste management hierarchy, from **least to most** favored?

- (A) Recycle-Prevention-Disposal-Reuse (B) Prevention-Recycle-Reuse-Disposal
(C) Disposal-Recycle-Reuse-Prevention (D) Reuse-Disposal-Prevention-Recycle

Q023: Ozone is a secondary pollutant because

- (A) The origin of ozone is from stratosphere (B) It is formed in the troposphere
(C) It has three atoms of oxygen (D) It is highly toxic

Q024: Which of the following has the highest albedo?

- (A) Fresh snow (B) Water surface (C) Plateau surfaces (D) Vegetation

Q025: Proximate Analysis of Waste will give information about

- (A) Calorific value, C:N ratio, Field Capacity and Metal Content
(B) Molecular composition (C, H, N, O, P, etc.)
(C) BOD, COD, pH and Temperature
(D) Moisture content, Volatile Combustible Matter, Fixed Carbon and Ash Content

- Q026: Sun and Earth both behave as a black body with black body temperatures given as 6000K for Sun and correspondingly for Earth as 298K. The ratio of the wavelengths corresponding to the maximum amount of radiations emitted by the Sun to that of the Earth comes out to be
(A) 405.387 (B) 20.134 (C) 0.049 (D) 2.4×10^{-3}
- Q027: Under the current EIA notification, which is the 4th stage in the process of granting environmental clearance for new projects?
(A) Screening (B) Appraisal (C) Prediction (D) Scoping
- Q028: The mean and standard deviation of a data-set of an air quality parameter are 10 and 1, respectively. On adding 2 to each data value, the mean and standard deviation will be, respectively:
(A) 10, 1 (B) 12, 1 (C) 12, 6 (D) 10, 6
- Q029: How many AQI categories are defined in the report on National Air Quality Index published by CPCB?
(A) 5 (B) 4 (C) 8 (D) 6
- Q030: According to National Ambient Air Quality Standards, the annual average concentration of Nitrogen Dioxide (NO₂), in $\mu\text{g}/\text{m}^3$, in ecologically sensitive areas, as notified by Government of India is:
(A) 30 (B) 40 (C) 80 (D) 20
- Q031: Underflow sludge from clarifier has solids concentration of 2% and volumetric flow rate of 1000 m^3/day , what will be the dry solids flow rate in kg/day ?
(A) 20000 (B) 50 (C) 10000 (D) 500
- Q032: In which country, a 500-meter-high coral reef has been discovered for the first time in 120 years?
(A) Japan (B) India (C) Brazil (D) Australia
- Q033: If the average temperature of the sun is increased, the wavelength of peak solar radiation would:
(A) Shift to a longer wavelength (B) Impossible to tell from given information
(C) Remain the same (D) Shift to a shorter wavelength
- Q034: Which organization has accepted the Indian Regional Navigation Satellite System (IRNSS) to be used for navigation in the Indian Ocean Region?
(A) United Nations (B) World Tourism Organisation
(C) International Maritime Organization (D) International Telecommunication Union
- Q035: Green crackers have been introduced as a replacement of normal crackers. Which of the following is **not** true about these?
(A) These emit lot of green fumes (B) These have less emissions
(C) They are marked with logo of NEERI (D) They are less harmful than conventional
- Q036: With reference to Membrane bioreactor which one of the following statements is true?
(A) MLSS in the aeration tank is much higher than ASP
(B) No requirement of MLSS
(C) MLSS in the aeration tank is much lower than ASP
(D) MLSS in the aeration tank is equal to ASP
- Q037: Municipal sewage sludge can be used as a fertilizer but is rendered unsuitable by presence of which of the following contaminants?
(A) Phosphates (B) Heavy metals (C) Organic matter (D) Nitrates
- Q038: Many chemicals are used in a conventional water treatment plant such as Alum, PAC, Chlorine, etc. Which of the following describes what is Alum?
(A) Coagulant (B) Disinfectant (C) Catalyst (D) Flocculent

Q039: Particles of what size are filtered by the nasal passage?

- (A) >500 μm (B) >50 μm (C) >1 mm (D) >10 μm

Q040: The Leopold Matrix lists ___ specified actions and ___ Environmental items.

- (A) 90, 100 (B) 100, 90 (C) 100, 99 (D) 99, 100

Q041: A fabric filter is treating 30,000 cubic feet per minute of air (acfm) with an average air to cloth ratio of 2 ft/min. The bags are 8.0 inches in diameter and 12 feet long. Estimate the number of bags in the baghouse closest to the computed value

- (A) 80 bags (B) 1200 bags (C) 200 bags (D) 600 bags

Q042: Under the current EIA notification, which category of projects would **not** require conducting an EIA study?

- (A) B2 (B) B1 (C) A2 (D) A

Q043: The color of a star indicates its

- (A) Distance (B) Mass (C) Luminosity (D) Temperature

Q044: Which out of the following is an exclusively suspended growth system/process?

- (A) Sequential batch reactors
(B) Moving bed biological reactors
(C) Trickling filters
(D) Rotating biological contactors

Q045: To save on transportation time, the fuel transfer stations should be set up in large cities where disposal sites are more than:

- (A) 20 km away (B) 15 km away (C) 5 km away (D) 10 km away

Q046: Type 1 plastic (polyethylene terephthalate) is commonly found in

- (A) Irrigation pipes (B) Shopping bags
(C) Soft drinks and water bottles (D) Laundry detergent bottles

Q047: Expert Appraisal Committee (EAC) and State Expert Appraisal Committee (SEAC) are constituted by MoEF&CC for recommending the issuance of EC for projects. Which category of projects are considered by EAC for recommending issue of EC?

- (A) A (B) B2 (C) A1 (D) B1

Q048: Purpose of air pollution control equipment in an incineration plant is to control:

- (A) NO_x , SO_x , CO (B) CO, SO_x , RSPM (C) CO, SO_x , PM (D) NO_x , SO_x , PM

Q049: Validity of Environmental clearance for mining projects remains for maximum of ___ year(s).

- (A) 1 (B) 10 (C) 5 (D) 30

Q050: Which of the following statements is **not** correct?

- (A) Dioxins and furans are extremely difficult and costly to measure.
(B) The presence of chlorinated hydrocarbons like PVC in our waste results in the release of dioxins and furans when the waste is burnt at more than 950°C.
(C) Dioxins and furans are among the most dangerous chemical agents. They are known to be carcinogenic and can lead to impairment of immune, endocrine, nervous, and reproductive systems.
(D) The presence of chlorinated hydrocarbons like PVC in our waste results in the release of dioxins and furans when the waste is burnt at less than 850°C.

Q051: What does PAH stand for in terms of environmental chemistry?

- (A) Polycyclic Acetic Hydrocarbons (B) Polycyclic Aromatic Hydrocarbons
(C) Polynuclear Aromatic Hydrides (D) Polyethylene Acetic Hydride

Q052: When wastewater is discharged in a stream / river, the organic matter starts decomposing and oxygen present in water is consumed by bacteria, causing a DO-deficit ($D = D_{\text{sat}} - D_t$) in river water. The DO-deficit is known to follow first order reaction kinetics. Which one out of the following correctly represents this reaction kinetics, if t is time, D_0 is DO-deficit at time $t = 0$, D_t is DO-deficit at time t and k is reaeration rate?

- (A) $D_t = D_0 * \exp(k*t)$ (B) $D_t = D_0 * \exp(-k*t)$
(C) $D_t = D_0 * \exp(2*(k*t))$ (D) $D_t = D_0 * 2*\exp(k*t)$

Q053: When Environmental Lapse Rate (ELR) is less than Adiabatic Lapse Rate (ALR), then which of the following occurs?

- (A) Neutral lapse rate (B) Super adiabatic lapse rate
(C) Adiabatic lapse rate (D) Sub adiabatic lapse rate

Q054: Hawa Mahal of Jaipur was designed by

- (A) Lal Chand Ustad (B) Bhagat Jain
(C) Sawai Jai Singh (D) Vidyadhar Bhattacharya

Q055: Which of the following bacterial genera causes problem of foaming in activated sludge process?

- (A) *Nitrospira* (B) *Nocardia* (C) *Nitrobactor* (D) *Nitrosomonas*

Q056: As per the biomedical waste handling rules 2016, installation of in-house incinerator is allowed with permission from the State Pollution Control Board only when:

- (A) The available biomedical facility is not working
(B) There is no common biomedical facility nearby
(C) The users of the biomedical facility are in large number
(D) The biomedical waste generation is high

Q057: Which country launched 'Vulture Action Plan 2020-25', to actively increase the number of vultures?

- (A) India (B) Brazil (C) China (D) Australia

Q058: BrahMos Aerospace is a joint venture company set up by Russia's Mashinostroyeniya and which other company of India?

- (A) ISRO (B) DRDO (C) BHEL (D) HAL

Q059: When is earth day observed?

- (A) 24 September (B) 5 June (C) 22 April (D) 20 March

Q060: Central Pollution Control Board has specified use-based classification of surface waters in India. There are five categories A, B, C, D, and E defined in the classification. Use of river as drinking water source without conventional treatment but after disinfection will be which class / category according to above classification?

- (A) E (B) C (C) A (D) D

Q061: The size of a wooden block is 5 cm x 10 cm x 20 cm. How many whole such blocks you will take to construct a solid wooden cube of minimum size?

- (A) 16 (B) 12 (C) 6 (D) 8

Q062: If the absolute temperature of a black body becomes half, the maximum energy emitted by the black body changes by a factor of ____.

- (A) 4 (B) 1/16 (C) 1/4 (D) 16

Q063: Sundarban Biosphere is located in

- (A) West Bengal (B) Jammu and Kashmir
(C) Rajasthan (D) Maharashtra

Q064: Poor operation in _____ unit leads to mud ball formation.
(A) Trickling filter (B) Pressure filter (C) Rapid sand filter (D) Anaerobic filter

Q065: Indian Navy Day is celebrated on
(A) 4 December (B) 31 January (C) 4 July (D) 15 August

Q066: The Air (Prevention and Control of Pollution) Act, 1981 has ____ chapters
(A) 24 (B) 14 (C) 7 (D) 4

Q067: In which city of Rajasthan, the observatory of the Indian Weather Department is located?
(A) Jodhpur (B) Kota (C) Jaipur (D) Bikaner

Q068: A tailor had a number of shirt pieces to cut from a roll of fabric. He cut each roll of equal length into 10 pieces. He cut at the rate of 45 cuts a minute. How many rolls would be cut in 24 minutes?
(A) 120 (B) 45 (C) 450 (D) 240

Q069: Which of the following is **incorrect** regarding the fabric filters?
(A) They are liable to chemical attack
(B) They can handle large volume of gas at relatively high speed
(C) They have low efficiency in comparison to Electrostatic precipitator for ultra fine particles
(D) They can remove very small particle

Q070: Any project or activity specified in Category 'B' will be treated as Category 'A', if it is located in whole or in part within 10 km from the boundary of certain areas. Which of the following is **not** one of these areas?
(A) Protected area notified under Wildlife Act (B) Inter-city boundary
(C) International boundary (D) Critically polluted area as per CPCB

Q071: The stability of the stratosphere is due to which of the following reasons?
(A) Absorption of solar energy by ozone layer (B) Pressure is minimal
(C) Weak wind currents (D) Strong wind currents

Q072: Co-processing of municipal solid waste fraction, which is non-biodegradable, non-recyclable is suitably done if the calorific value of the waste is
(A) Less than 500 kcal/kg without adding supplementary fuel
(B) Less than 1500 kcal/kg after adding supplementary fuel
(C) More than 500 kcal/kg after adding supplementary fuel
(D) More than 1500 kcal/kg without adding supplementary fuel

Q073: Which of the following are contradictory plumes?
(A) Looping and coning (B) Neutral and lofting
(C) Lofting and fumigating (D) Fumigating and trapping

Q074: Which one of the following groups of animals belongs to the category of endangered species?
(A) Snow Leopard, Swamp Deer, Rhesus Monkey and Saras (Crane)
(B) Kashmir Stag, Cheetal, Blue Bull and Great Indian Bustard
(C) Lion-tailed Macaque, Blue Bull, Hanuman Langur and Cheetal
(D) Great Indian Bustard, Musk Deer, Red Panda and Asiatic Wild Ass

Q075: The major difference between activated sludge systems and aerated lagoons is that
(A) Aerated lagoon does not require external aeration
(B) Aerated lagoon is a batch process
(C) In aerated lagoons, settling tanks and sludge recirculation are absent.
(D) Aerated lagoon is an attached growth process

Q076: Loktak Lake, one of the largest freshwater lakes in North East India and famous for floating Keibul Lamjao National Park, is located in

- (A) Nagaland (B) Assam (C) Arunachal Pradesh (D) Manipur

Q077: Who is the only Indian Actor to have featured in the TIME magazines list of "100 most influential people of 2020"?

- (A) Rajnikant (B) Akshay Kumar (C) Ayushmann Khurrana (D) Shahrukh Khan

Q078: Who was the first woman to win the Nobel Prize?

- (A) Marie Curie (B) Emmanuelle Charpentier
(C) Irène Joliot-Curie (D) Maria Goeppert Mayer

Q079: Characterization of Municipal solid waste is done through ____ method

- (A) Quartering (B) Proximate (C) Chemical (D) Ultimate

Q080: From which district of Rajasthan does the Tropic of Cancer pass through?

- (A) Jaisalmer (B) Banswara (C) Kota (D) Jalore

Q081: The pyrolysis process is highly endothermic and it is also known as ____ distillation

- (A) Steam (B) Destructive (C) Fractional (D) Vacuum

Q082: Which one of the following is **not** a site for in-situ method of conservation of flora?

- (A) National park (B) Wildlife sanctuary (C) Botanical garden (D) Biosphere reserve

Q083: Who is considered as the Kuldevi of Yaduvanshi dynasty of Karauli?

- (A) Sheetla Mata (B) Karni Mata (C) Living mother (D) Kaila Devi

Q084: As per Bio-medical Waste Management Rules, 2016, which method of disposal is permitted only in rural or remote areas where there is no access to common bio-medical waste treatment facility?

- (A) Deep burial (B) Disinfection (C) Autoclaving (D) Incineration

Q085: Which of the following is **not** the tributary of Banas River?

- (A) Kothari (B) Mansi (C) Khari (D) Morel

Q086: As per the EIA Notification 2006, the validity of EC for River Valley Project remains for

- (A) 5 years (B) 15 years (C) 10 years (D) 25 years

Q087: Which one is **not** an international agreement/protocol related to environmental protection?

- (A) Paris Agreement (B) London Declaration (C) Montreal Protocol (D) Kyoto Protocol

Q088: It is desirable to know the frequency of sound along with its decibel level because

- (A) Perceptible noise to human ear relates to both frequency and sound pressure
(B) Frequency alone decides the annoyance level
(C) Sound pressure and frequency are important for sonic boom
(D) Decibel level depends on frequency of sound

Q089: 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) $\ln(C) \propto H^{-1/2}$ (D) $\ln(C) \propto H^{-1}$

Q090: Grain bowl of Rajasthan state is:

- (A) Kota (B) Sriganganagar (C) Hanumangargh (D) Jhalawar

Q091: Which of the following scattering phenomena is responsible for the blue colour of the sky?

- (A) Non-selective scattering (B) Diffraction
(C) Mie scattering (D) Rayleigh scattering

Q092: Which city has the largest waste dump in India in terms of area?

- (A) Chennai (B) Delhi (C) Mumbai (D) Kolkatta

Q093: What does the aerodynamic diameter of an aerosol indicate?

- (A) Size of the aerosol particle when floating in air
(B) Equivalent diameter of a sphere having same volume as that of the aerosol
(C) Average diameter of aerosol particles present in unit volume of air
(D) Maximum size of aerosol particle that can float in the air

Q094: 'Kalibangan' an Indus valley civilization site is located in which district of Rajasthan?

- (A) Hanumangarh (B) Jaisalmer (C) Jaipur (D) Bikaner

Q095: Which of the following is **not** a consequence of global warming?

- (A) Worsening health effects (B) Thickening of ice cap at the poles
(C) Rising sea level (D) Increased storm frequency and intensity

Q096: Geo-net is a _____ material used for drainage of _____

- (A) Synthetic, Liquids (B) Synthetic, Gases
(C) Fibrous, Liquids (D) Ceramic, Liquids

Q097: If mankind is able to stop the rise of earth's temperature and stabilize it, which of the statements is true?

- (A) Incoming energy exceeds outgoing energy in the earth system
(B) Energy dissipated from earth system exceeds incoming energy
(C) Incoming and outgoing energy from the earth system is same
(D) Incoming or outgoing energy has no relation with earth's temperature

Q098: What component of MSW is significantly higher in US and UK in comparison to India?

- (A) Inerts (B) Paper (C) Yard waste (D) Biodegradables

Q099: Which of the following is **not** a basic unit of 'SI System of Units'?

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

Q100: In which one among the following categories of protected areas in India are local people **not** allowed to collect and use the biomass?

- (A) Wildlife Sanctuaries (B) Biosphere Reserves
(C) National Parks (D) Wetlands declared under Ramsar Convention

Q101: Which one of the following is **not** a permissible application of materials made from construction and demolition waste?

- (A) Drainage layer in leachate collection system at the bottom of sanitary landfill
(B) Drainage Layer in top cover system above gas collection layer of sanitary landfill
(C) Daily cover sanitary landfill (D) Liner system in a sanitary landfill

Q102: If MACHINE is coded as 19-7-9-14-15-20-11, what will be the code of DANGER?

- (A) 13-7-20-9-11-25 (B) 13-7-20-10-11-25
(C) 11-7-20-16-11-24 (D) 10-7-20-13-11-24

Q103: A PM₁₀ sampler runs for 24 hours; at a flow rate of 1.1 m³/min for first 12 hours and at 0.9 m³/min for last 12 hours due to pressure drop. Under the same environmental conditions, the tare weight of the filter was 4.800 g, and final weight after the sampling (i.e. with PM₁₀) was 4.809 g. What is the 24-hour average PM₁₀ concentration, in µg/m³, in the air?

- (A) 9.25 (B) 6.25 (C) 4.95 (D) 7.55

Q104: Pugal is a breed of what in Rajasthan?

- (A) Sheep (B) Camel (C) Goat (D) Cow

Q105: UN Climate Change Conference was held in 2018 at:

- (A) Geneva (B) Bonn (C) Paris (D) Katowice

Q106: Which is the state bird of Rajasthan?

- (A) The Parrot (B) Ostrich
(C) The Great Indian Bustard (D) The Peacock

Q107: Diophantus's (Often known as the father of Algebra) youth lasted one sixth of his life. He grew a beard after one twelfth more. After one seventh more of his life, he married. 5 years later, he and his wife had a son. The son lived exactly one half as long as his father, and Diophantus died four years after his son. How many years did Diophantus live?

- (A) 64 years (B) 104 years (C) 84 years (D) 74 years

Q108: As per CPHEEO, Sanitary landfill should be constructed at minimum ____ distance from habitation?

- (A) 200 m (B) 400 m (C) 300 m (D) 500 m

Q109: 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) Horizontal wind speed and frictional velocity
(D) Cross wind speed and adjacent height of the building

Q110: Jaswant animal fair is conducted in which district of Rajasthan?

- (A) Karoli (B) Bharatpur (C) Kota (D) Jaisalmer

Q111: As per SWM Rules, horticulture waste from parks and gardens should be:

- (A) Collected and treated offsite (B) Collected separately and treated onsite
(C) Collected and treated chemically
(D) Collected along with the MSW and treated at disposal site

Q112: In an activated sludge process based wastewater treatment plant stiff white billowing foam is observed on the aeration tank surface. What does the presence of such foam indicate?

- (A) F/M ratio is very low (B) Mean cell residence time is less
(C) Very high oxygen content (D) Hydraulic retention is high

Q113: For effective composting of municipal solid waste, moisture content of the waste should be

- (A) Between 12 to 18% by weight (B) Less than 12% by weight
(C) More than 60% by weight (D) Between 45 to 55% by weight

Q114: Sloughing is the process in which

- (A) Weakening of attached biofilm occurs due to shearing action of wastewater
(B) Microorganisms grow in dense films on reaction with organic matter
(C) Re-establishment of biofilm due to high organic loading
(D) Endogenous metabolism occurs at the biofilm surface

Q115: Which of the following plume prevails under stable atmospheric conditions?

- (A) Neutral (B) Lofting (C) Fanning (D) Fumigating

Q116: Drinking Water Quality is assessed in terms of its physical, chemical, microbiological, and radiological parameters as defined in the Standard Specification of Drinking Water Quality published by Bureau of Indian Standards (BIS). Which of the following is this document?

- (A) IS-16075:2015 (B) IS-2296:1982 (C) IS-10500:2012 (D) IS-1172:1993

- Q117: In the field of meteorology a "tetroon" is a tool used to study _____
 (A) Pressure variations (B) Temperature deviations
 (C) Humidity (D) Wind patterns
- Q118: The contaminant that adheres to the porous material is called
 (A) Sorbate (B) Sorption (C) Sorbent (D) Adsorbent
- Q119: With reference to gas generation at a municipal solid waste landfill, concentration of ____ shall **not** exceed ____ of the lower explosive limit.
 (A) Carbon monoxide gas, 25% (B) Methane gas, 66.6%
 (C) Methane gas, 25% (D) Carbon monoxide and methane, 66.6%
- Q120: As per CPCB, the used masks, gloves and tissues or swabs contaminated with blood / body fluids of COVID-19 patients, including used syringes, medicines, etc., if any generated should be treated as:
 (A) Biomedical waste (B) Hazardous waste
 (C) Municipal solid waste (D) Infective waste
- Q121: Which solar project of Rajasthan in 2020 was recognized as the largest cluster of photovoltaic power plants in a single region in the world, with the installed power exceeding the 2.2 GW?
 (A) Charanka Solar Park (B) Kurnool Ultra Mega Solar Park
 (C) Bhadla Solar Park (D) Pavagada Solar Park
- Q122: In HEP (Habitat Evaluation Procedure) the HSI (Habitat Suitability Index) will be equal to
 (A) $HSI = (\text{Optimum habitat condition})/1000$
 (B) $HSI = (\text{Study area habitat condition})/1000$
 (C) $HSI = (\text{Study area habitat condition})/(\text{Optimum habitat condition})$
 (D) $HSI = \text{Study area habitat condition} \times \text{Optimum habitat condition}$
- Q123: Which river of Rajasthan is known as 'Van Ki Asha' (Hope of the forest)?
 (A) Chambal (B) Mahi (C) Luni (D) Banas
- Q124: In trickling filters, the wastewater is distributed over media upon which biological film growth develops containing living organisms that ____
 (A) allows water to flow (B) generates organic material
 (C) helps in oxidation of the organic material (D) filters water
- Q125: Which one of the following correctly represents process options that can be used for energy recovery from waste (i.e., conversion of waste material into usable heat, electricity, or fuel)?
 (A) Stabilization, neutralization, gasification, pyrolysis, anaerobic digestion, landfilling
 (B) Combustion, gasification, pyrolysis, anaerobic digestion
 (C) Combustion, gasification, pyrolysis, aerobic digestion, landfilling
 (D) Material recovery, gasification, pyrolysis, aerobic composting, neutralization
- Q126: A city has the following characteristics: Width=5 km, Length (along the wind direction) = 10 km, u (wind speed) = 2.5 m/s, H (atmospheric mixing height) = 1000 m, the upwind, or background, concentration of nitrous oxide is $b = 10 \mu\text{g}/\text{m}^3$. The emission rate per unit area is $q = 4 \times 10^{-6} \text{ g}/\text{s} \cdot \text{m}^2$. What is the steady-state concentration of nitrous oxide, in $\mu\text{g}/\text{m}^3$, over the city (assume there is no chemical reaction)?
 (A) 20 (B) 16 (C) 30 (D) 26
- Q127: In which state is the Indian Railways constructing the world's tallest pier Bridge?
 (A) Uttarakhand (B) Mizoram (C) Manipur (D) Assam
- Q128: Which of the following is **not** a natural hazard?
 (A) Earthquake (B) Volcanoes (C) Tsunami (D) Climate Change

Q129: Which national park in India has set up the country's first quarantine facility for animals?

- (A) Kaziranga National Park (B) Ranthambore National Park
(C) Jim Corbett Park (D) Gir Forest National Park

Q130: Who was the first person from Rajasthan to receive the Padma Vibhushan Award?

- (A) Daulat Singh Kothari (B) Rajesh Pilot
(C) Ghanshyam Das Birla (D) JRD Tata

Q131: As an approximate percentage, what part of area of India, does Rajasthan cover?

- (A) 5.3% (B) 10.4% (C) 2.3 % (D) 17.3%

Q132: Who was awarded for her achievements in mountaineering on the International Day of Women 2019?

- (A) Asha Jain (B) Poonam Sharma (C) Asha Jhajharia (D) Poonam Yadav

Q133: In wind analysis the 'Richardson number' indicates?

- (A) Mechanical turbulence and convective heat production
(B) Convective heat production only
(C) Critical fluid energy (D) Mechanical turbulence only

Q134: A rectangular channel (width = w and depth = d) connects the cascade aerator and flash mixer in a conventional water treatment plant. Being open channel, flow is calculated using the Manning's formula, i.e., $V = (1/n) \cdot (R^{2/3} S^{1/2})$. How is R calculated?

- (A) $R = (b+2d) / (b \cdot d)$ (B) $R = (b \cdot d) / (b+2d)$
(C) $R = 2(b \cdot d) / (b+d)$ (D) $R = (b \cdot d) / (2b+d)$

Q135: In design of an ASP based treatment system, two important design parameters are food to microorganism (F/M) ratio and mean cell residence time (MCRT). Which of the following are used for the computation of the F/M ratio?

- (A) Aeration tank volume and mixed liquor suspended solids
(B) Biochemical Oxygen Demand (BOD) of wastewater and Flow of wastewater
(C) MLSS and Biological Oxygen Demand of wastewater
(D) BOD of wastewater and mixed liquor volatile suspended solids

Q136: Winter rain in Rajasthan is known as:

- (A) Mango Showers (B) Kal Baisakhi
(C) Mawat (D) Norwester

Q137: Which of the following is **not** an advance thermal treatment technique?

- (A) Plasma systems (B) Pyrolysis (C) Gasification (D) Mass burning

Q138: The stoichiometric oxygen requirement for biological oxidation of ammonia to nitrate is ____ g of O_2 per g of ammonia removed

- (A) 4.57 (B) 6.50 (C) 8.00 (D) 0.25

Q139: The Ministry of Environment, Forest and Climate Change (MoEF&CC) has published the draft Environment Impact Assessment (EIA) Notification 2020, with the intention of replacing the existing EIA Notification, 2006 under the Environment (Protection) Act, 1986. Which of the following is/are the key change(s) from existing regulation?

- I. Removal of several activities from the purview of public consultation.
II. A list of projects has been included under Category B2, expressly exempted from the requirement of an EIA.

- (A) I and II both (B) Only II (C) Neither I nor II (D) Only I

- Q140: COD to BOD ratio for sewage (municipal wastewater) typically lies in the range of
 (A) 10.1 - 11.2 (B) 8.5 - 9.2 (C) 4.6 - 5.2 (D) 1.6 - 1.9
- Q141: The 5-day BOD (BOD_5) of a wastewater sample is calculated as 100 mg/L. What is the ultimate BOD_u at 20°C if $k_{20} = 0.2 \text{ day}^{-1}$?
 (A) 200 mg/L (B) 100 mg/L (C) 168 mg/L (D) 158 mg/L
- Q142: As per CPHEEO manual, an acceptable value of the weir loading rate for primary clarifier design, considering an average flow condition, is ____ $\text{m}^3/\text{m}/\text{day}$
 (A) 50 (B) 125 (C) 400 (D) 200
- Q143: Which of the following technologies is based on phytoremediation principle?
 (A) Constructed wetlands (B) SBR
 (C) ASP (D) Aerated lagoons
- Q144: A ____ calorimeter is a type of ____ calorimeter used in measuring the heat of combustion of a particular reaction.
 (A) Joule-Thomson, constant-volume (B) Joule-Thomson, constant-temperature
 (C) Bomb, constant-volume (D) Bomb, constant-temperature
- Q145: BOD concentration of sewage for any given city will **not** be dependent on which of the following parameters?
 (A) Population of the city
 (B) Organics released per capita
 (C) Commercial /Institutional water consumption in the city
 (D) Water consumption per capita
- Q146: Which of the following gases varies significantly over time and place at the atmospheric boundary level?
 (A) Oxygen (B) Water vapour
 (C) Carbon dioxide (D) Ozone
- Q147: Hardness in water is due to certain dissolved elements in water and tends to affect the lathering of soap. The permanent hardness of water is caused by the presence of which of the following?
 (A) Bicarbonates of calcium and magnesium
 (B) Carbonates and chlorides of sodium and potassium
 (C) Phosphates of sodium and potassium
 (D) Chlorides and sulfates of calcium and magnesium
- Q148: What will be the range of AQI for purple colour representing poor category
 (A) 0 – 50 (B) 301 and Above
 (C) 151 – 200 (D) 201 - 300
- Q149: The National Environmental Policy Act (NEPA) of 1969 (Pub. L. 91-190) of USA became effective on
 (A) January 1, 1969 (B) December 31, 1969
 (C) January 1, 1970 (D) December 31, 1970
- Q150: The recently discovered new height of Mt. Everest is 8848.86 m above the sea level. If the atmospheric lapse rate is 6 Kelvin per 1000 m and is maintained till the tip of the Mt. Everest and the temperature of the Earth at mean sea level is 25°C, then the air temperature at the tip of the Mt. Everest is ____.
 (A) -38.09°C (B) -18.09°C (C) -8.09°C (D) -28.09°C