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NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR

Recruitment for the post of Technical Assistant (Architecture)

[Ref – Recruitment Notice No./NITRR/R-1/Advt./2024/947 dated 04/03/2024]

Time Allowed: 3 hours **Maximum Marks: 100**

Name of the Candidate: _____ App. No. _____

Serial Number of the Response Evaluation Sheet _____

_____ _____

Signature of Candidate Signature of Invigilator

INSTRUCTIONS TO THE CANDIDATES:

1. *This booklet consists of _____ **pages and 100 questions.** Please check that this Question Booklet does not have any missing or torn pages or items, if so, get it replaced by another Question Booklet.*

2. *You have to mark all your responses ONLY on the separate Response Sheet provided. It should not be folded or mutilated. No additional Response Sheet shall be provided.*

3. *Use only Black Ball point pen for filling all particulars of Question Booklet, Response Sheet as well **as darkening the circle** of the Response in the Response Sheet.*

4. *This Question Booklet **contains 100 Multiple Choice Questions,** and each question is followed by four alternative answer options for examples A, B, C and D out of **which only one most appropriate option is** to be chosen. You need to darken the most appropriate correct circle of the Response Sheet by black ball point pen.*

5. *For each question, darken only one circle on the Response Evaluation Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as invalid. **Cutting/ Alterations/ Corrections** are not permitted. Answers once darkened cannot be changed in the Response sheet. If you do not wish to attempt a question, leave all the circles in corresponding row blank and in such condition zero marks will be awarded for that question.*

6. *Every correct answer will be awarded **1** mark and **-0.25** will be deducted for each wrong answer. **No marks for non-attempted/invalid/cutting/alteration responses would be assigned**.*

7. *Use of **Electronic Gadgets**, Pager, Mobile Phone, Scientific Calculator etc. are strictly prohibited. Use of Unfair Means will lead to the cancellation of candidature. Do not carry any loose paper.*

8. *Blank spaces and blank pages at the end of this Booklet can be used for Rough Work.*

9. *Strictly adhere to disciplines during the course of examination and you are not permitted to leave the Examination Hall until the end of the test.*

10. *Return the Question Booklet and Response Sheet to the Invigilator after completion of examination, else your candidature treated as cancelled.*

1. What is the name of the first Indian woman who wins the Man Booker Prize?
   (a) Salman Rushdie
   (b) Arundhati Roy
   (c) V.S. Naipaul
   (d) Kiran Desai

2. Under what circumstances can children between the ages of 16 and 18 be tried as adults?
   (a) They can always be tried as adults.
   (b) After a preliminary assessment by the Juvenile Justice Board.
   (c) When they have committed any offense, regardless of the severity.
   (d) When they reach the age of 18.

3. Which one of the following countries is not a member of the G20?
   (a) Egypt
   (b) Mexico
   (c) Republic of Korea
   (d) Turkiye

4. Which Tennis player won the Wimbledon men's single title in 2023?
   (a) Novak Djokovic
   (b) Rafael Nadal
   (c) Carlos Alcaraz
   (d) Stephano Tsitsipas

5. Change the direct narration to indirect narration:
   He said, "I am going for a movie with my friends."
   (a) He said that I am going to a movie with my friends.
   (b) He said that I am going to the movie with his friends.
   (c) He said that he was going for a movie with his friends.
   (d) None of the above

6. Choose the option which is closest in meaning to the underlined bold word:
   Dappled light filtered through the trees on to the ground.
   (a) Patches of
   (b) Rays
   (c) Stirring
   (d) Slanting

7. Sushil could be easily arrested because the police were *tipped off* in an advance.
   (a) Toppled over
   (b) Bribed
   (c) Given advance information
   (d) Threatened

8. A good judge never jumps --------- the conclusion.
   (a) to
   (b) at
   (c) on
   (d) for

9. Neha moved a distance of 19 metres towards the north. She then turned to the left and walked for about 25 metres, turn left again and walked 100 metres. Finally, she turned to the right at an angle of 45 degrees. In which direction was she finally moving?
   (a) Northeast
   (b) Northwest
   (c) South
   (d) Southwest

10. A group of 8 members sit in a circle. D is between A and F and is opposite to G. E is to the right of A but on the left of C whose right-hand neighbour is G. B enjoys having H to his left. Find the member whose diagonally opposite to A.
   (a) B
   (b) F
   (c) G
   (d) H

11. If the 7th day of month is 3 days earlier than Friday, which day will be on the 19th day of the month?
   (a) Friday
   (b) Wednesday
   (c) Sunday
   (d) Monday

12. The distance between the points (0,5) and (-5,0) is
   (a) 5 (b) $5\sqrt{2}$
   (c) $2\sqrt{5}$ (d) 10

13. The value of (tan1° tan 2° tan 3° …tan89°) is
    (a) 0
    (b) 1
    (c) 2
    (d) 1/2

14. Value(s) of k for which the quadratic equation $2x^2 - kx + k = 0$ has equal roots is/are
    (a) 0
    (b) 4
    (c) 8
    (d) 0, 8

15. Area of the largest triangle that can be inscribed in a semi-circle of radius r units is
    (a) r^2 sq. Units
    (b) $1/2\ r^2$ sq. Units
    (c) $2\ r^2$ sq. Units
    (d) $\sqrt{2}\ r^2$ sq. units

16. Buckminsterfullerene is an allotropic form of
    (a) Phosphorous
    (b) Sulphur
    (c) Carbon
    (d) tin

17. You are given water, mustard oil, glycerine and kerosene. In which of these media, a ray of light incident obliquely at same angle would ben the most?
    (a) Kerosene
    (b) Water
    (c) Mustard oil
    (d) Glycerine

18. In peas, a pure tall plant (TT) is crossed with a short plant(tt). The ratio of pure tall plants to short plants in F_2 is
    (a) 1:3
    (b) 3:1
    (c) 1:1
    (d) 2:1

19. Ethanol reacts with sodium and forms two products. These are
    (a) sodium ethanoate and hydrogen
    (b) sodium ethanoate and oxygen
    (c) sodium ethoxide and hydrogen
    (d) sodium ethoxide and oxygen

20. In Mendeleev's periodic table gaps were left for the elements to be discovered later. Which of the following elements found a place in the periodic table later?
    (a) Germanium
    (b) Chlorine
    (c) Oxygen
    (d) Silicone

21. The angle of friction is the angle between:
    (a) The resultant force and the normal reaction
    (b) The resultant force and the inclined plane
    (c) The normal reaction and the inclined plane
    (d) The resultant force and the frictional force

22. Assuming constant temperature condition and air to be an ideal gas, the variation in atmospheric pressure with height calculated from fluid statics is
    (a) Linear
    (b) Exponential
    (c) Quadratic
    (d) Cubic

23. A body of weight W is suspended by a rope wrapped around a smooth vertical pole. The tension in the rope is:
    (a) $\frac{W}{\sqrt{2}}$
    (b) W
    (c) $\sqrt{2}$ W
    (d) 2 W

24. A cantilever beam of length Land flexural rigidity EI is subjected to a point load P at the free end. The slope at the free end of the cantilever beam is:

    (a) PL^2/2EI
    (b) PL^3/3EI
    (c) PL^2/3EI
    (d) PL^3/6EI

25. A rigid bar AB of length Lis supported by a pin at A and a roller at B. A point load P is applied at the midpoint of the bar. The reaction at the pin support A is:

(a) P/2
(b) P
(c) P/4
(d) 0

26. A thin cylindrical shell of radius r and thickness t is subjected to an internal pressure p. The longitudinal stress in the shell is:

(a) pr/t
(a) pr/2t
(b) pr^2/2t
(c) 2pr/t

27. A simply supported beam of length L is subjected to a point load Pat a distance a from the left support. The reaction at the left support is:

(a) P(L−a)/L
(b) Pa/L
(c) P(L+a)/L
(d) Pa/L(L−a)

28. A solid circular shaft of radius r and length L is subjected to a torque T. The shear stress τ in the shaft is:

(a) T/πr^3
(b) Tr/J
(c) Tr^2/J
(d) 2T/πr^3

29. A beam is fixed at one end and free at the other end. This type of beam is called a:

(a) Simply supported beam
(b) Cantilever beam
(c) Overhanging beam
(d) Continuous beam

30. A force F is applied at an angle θ to the horizontal. The horizontal component of the force is:

(a) Fcosθ
(b) Fsinθ
(c) Ftanθ
(d) Fcotθ

31. In a concrete mix, the proportion of cement, sand, and gravel is 1:2:4 by volume. If the weight of the cement is 50 kg, the weight of the sand (assuming specific gravity of cement and sand are 3.15 and 2.65 respectively) is:
(a) 50 kg
(b) 100 kg
(c) 132 kg
(d) 67 kg

32. For concrete to be durable, the water-cement ratio should not be more than:
(a) 0.30
(b) 0.40
(c) 0.50
(d) 0.60

33. A concrete mix of proportion 1:1.5:3 is used for a project. The bulk density of coarse aggregate is 1600 kg/m³, and the bulk density of fine aggregate is 1600 kg/m³. If the water-cement ratio is 0.5 and the density of cement is 1440 kg/m³, the density of the concrete is:
(a) 2240 kg/m³
(b) 2400 kg/m³
(c) 2520 kg/m³
(d) 2640 kg/m³

34. The minimum cement content, the maximum water-cement ratio, and the minimum grade of concrete for plain and reinforced concrete structures are specified by IS 456:2000. The maximum water-cement ratio for mild exposure is:
(a) 0.55
(b) 0.50
(c) 0.45
(d) 0.60

35. The allowable bearing capacity of a soil is 300 kN/m². If a square footing of size 2m x 2m is provided, the ultimate load-carrying capacity of the footing is:

(a) 1200 kN
(b) 300 kN

(c) 600 kN
(d) 1500 kN

36. A concrete mix design specifies a water-cement ratio of 0.55 and requires a slump of 100 mm. During the slump test, the measured slump was found to be 50 mm. To achieve the desired slump of 100 mm, the water content needs to be increased by 5%. The new water-cement ratio will be:

(a)0.575
(b)0.578
(c)0.580
(d)0.583

37. The 7-day compressive strength of a standard cement mortar cube tested under standard conditions is 30 MPa. The expected 28-day compressive strength of the same cement is approximately:

(a) 37 MPa
(b) 42 MPa
(c) 50 MPa
(d) 57 MPa

38. The ratio of the weight of water to the weight of cement in a concrete mix is known as:

(a) Water-cement ratio
(b) Cement-water ratio
(c) Workability ratio
(d) Consistency ratio

39. Which of the following aggregates is formed as a result of natural disintegration of rocks?

(a) Gravel
(b) Sand
(c) Crushed stone
(d) Alluvial deposits

40. Which one of the following cement types is used for the construction of underwater structures?

(a) Rapid hardening cement
(b) Low heat cement
(c) Ordinary Portland cement
(d) Sulphate resisting cement

41. A foundation of size 4 m × 3 m is subjected to a uniform pressure of 200 kPa. The pressure distribution below the foundation at a depth of 1 m from the base is _____ kPa.

(a) 50
(b) 100
(c) 150
(d) 200

42. The coefficient of permeability of a soil is 2 × 10^-4 cm/sec. If a soil sample is subjected to a hydraulic gradient of 0.03, the seepage velocity of water through the soil is _____ cm/day (up to 2 decimal places).

(a) 0.06
(b) 0.18
(c) 0.36
(d) 1.08

43. The coefficient of permeability of a soil sample is 5 x 10^-4 cm/sec. The hydraulic conductivity (in m/day) is _____.

(a) 0.005
(b) 0.05
(c) 0.5
(d) 5.0

44. A triaxial compression test was conducted on a saturated soil sample. The deviator stress at failure was 200 kPa, and the mean stress was 100 kPa. The angle of internal friction (in degrees) of the soil is _____.

(a) 30
(b) 45
(c) 60
(d) 90

45. The ultimate bearing capacity (in kPa) of a square footing of size 1 m × 1 m, located at a depth of 2 m below the ground surface, is 200. The safe bearing capacity (in kPa) for this footing, considering a factor of safety of 3, is _____.

(a) 50
(b) 60
(c) 70
(d) 80

46. The base area of a retaining wall is 10 m^2. The backfill soil has a unit weight of 18 kN/m^3 and an angle of internal friction of 30°. If the height of the wall is 5 m, the active earth pressure (in kN) acting on the wall is closest to _____.

(a) 180
(b) 225
(c) 270
(d) 315

47. A cylindrical soil sample has a diameter of 5 cm and a height of 10 cm. It was subjected to a vertical stress of 200 kPa. The change in diameter was measured to be 0.1 cm. The coefficient of volume compressibility (mv) of the soil sample (in cm^2/kN) is _____.

(a) 0.01
(b) 0.02
(c) 0.03
(d) 0.04

48. The natural water content of a soil sample is 20%, and its liquid limit is 45%. The liquidity index of the soil is 0.50. The plastic limit of the soil is:

(a) 15%
(b) 20%
(c) 25%
(d) 30%

49. A sand deposit has a relative density of 70%, maximum void ratio of 0.85, and minimum void ratio of 0.50. The in-situ void ratio of the sand deposit is:

(a) 0.595
(b) 0.620
(c) 0.645
(d) 0.670

50. The coefficient of permeability of a soil is 4×10^{-6} m/s. The total head loss over a length of 10 m is 5 m. The discharge per unit width of flow is:

(a) $2\times10-6\ m^2/s$
(b) $2\times10-5\ m^2/s$
(c) $2\times10-4\ m^2/s$
(d) $2\times10-3\ m^2/s$

51. A clayey soil has a liquid limit of 60% and a plastic limit of 30%. The natural water content of the soil is 40%. The consistency index of the soil is:

(a) 0.33
(b) 0.50
(c) 0.67
(d) 1.00

52. A soil has a void ratio of 0.60. The critical hydraulic gradient for the soil is approximately:

(a) 0.5
(b) 1.0
(c) 1.2
(d) 1.5

53. Which of the following is a distinguishing feature of a micrometre theodolite compared to a vernier theodolite?

(a) A micrometer theodolite uses vernier scales for measurement.
(b) A micrometer theodolite uses a micrometer drum for fine angular measurements.
(c) A micrometer theodolite is less accurate than a vernier theodolite.
(d) A micrometer theodolite can only measure horizontal angles, not vertical angles.

54. Which type of theodolite would typically be used for higher precision requirements in surveying applications?

(a) Vernier Theodolite
(b) Transit Theodolite
(c) Non-Transit Theodolite
(d) Micrometer Theodolite

55. In a traverse survey, the deflection angle at point B between the lines AB and BC is measured as 135°. If the bearing of line AB is N 45° E, what is the bearing of line BC?

(a) S 90° E
(b) S 45° E
(c) N 90° W
(d) S 45° W

56. In a theodolite survey, the vertical angle measured from a point on the ground to the top of a tower is 30°. If the horizontal distance between the point and the base of the tower is 100 m, calculate the height of the tower above the point.

(a) 50 m
(b) 57.7 m
(c) 100 m
(d) 115.5 m

57. If the whole circle bearing of a line is 225°, its quadrantal bearing is:

(a) S45°W
(b) N45°W
(c) S45°E
(d) N45°E

58. In a closed traverse, the sum of the measured interior angles is found to be 1060°. The traverse has 6 sides. The correction to be applied to each angle to get the correct interior angles is:

(a) 0°
(b) +20°
(c) -20°
(d) +10°

59. In a tacheometric survey, the staff intercept is 2.5 m and the tacheometer is fitted with an anallactic lens. The horizontal distance between the tacheometer and the staff station is:

(a) 25 m
(b) 50 m
(c) 75 m
(d) 100 m

60. The reduced level (RL) of a point A is 100.0 m. The backsight reading taken from A is 2.5 m and the foresight reading taken to a point B is 1.0 m. The reduced level of point B is:

(a) 101.5 m
(b) 99.0 m
(c) 102.5 m
(d) 100.0 m

61. A distance of 1000 m was measured using an Electronic Distance Measurement (EDM) instrument. The measured distance was found to be 999.8 m. If the instrument has a systematic error of -0.2 m per km and a random error of ±0.05 m, the true distance is:

(a) 999.95 m
(b) 1000.00 m
(c) 1000.05 m
(d) 1000.20 m

62. Which of the following statements is correct regarding transit and non-transit theodolites?

(a) In a transit theodolite, the telescope can be transited, i.e., rotated through 360° in a vertical plane.
(b) In a non-transit theodolite, the telescope can be transited, i.e., rotated through 360° in a vertical plane.
(c) In a transit theodolite, the telescope cannot be rotated through 360° in a vertical plane.
(d) Both transit and non-transit theodolites allow the telescope to be rotated through 360° in a vertical plane.

63. The first National Highway Development Project (NHDP) in India, which aimed to improve the Golden Quadrilateral, was initiated during which Five-Year Plan?

(a) Eighth Five-Year Plan
(b) Ninth Five-Year Plan
(c) Tenth Five-Year Plan
(d) Eleventh Five-Year Plan

64. Which of the following is a key objective of transportation planning?

(a) Increasing traffic congestion
(b) Reducing accessibility
(c) Improving safety and efficiency
(d) Ignoring environmental impacts

65. The Nagpur Road Plan was developed in which year?

(a) 1937
(b) 1947
(c) 1957
(d) 1967

66. In a typical flexible pavement structure, which layer is responsible for distributing traffic loads to the lower layers?

(a) Subgrade
(b) Base course

(c) Subbase course
(d) Surface course

67. Angle parking is a method of parking where vehicles are parked at an angle:
(a) Greater than 90 degrees to the curb
(b) Less than 90 degrees to the curb
(c) Parallel to the curb
(d) In the middle of the road

68. Which type of grade intersection allows traffic to flow freely without the need for stopping or yielding?
(a) Diamond interchange
(b) Cloverleaf interchange
(c) Trumpet interchange
(d) Continuous flow intersection

69. The traffic signal cycle length is the:
(a) Time taken for all signal phases to complete once
(b) Time taken for one signal phase to complete
(c) Time taken for all signal phases to complete one cycle
(d) Time taken for one complete traffic light change

70. What is the primary material used in the construction of gravel roads?
(a) Concrete
(b) Asphalt
(c) Crushed stone
(d) Brick

71. Which of the following is NOT a step in the construction of a cement concrete road?
(a) Preparation of subgrade
(b) Placing of reinforcement
(c) Mixing and placing of concrete
(d) Application of surface coating

72. Which of the following statements is true about broad gauge railways?
(a) They have a track gauge of 1067 mm
(b) They are mainly used in mountainous regions
(c) They offer greater stability and load-carrying capacity
(d) They are more expensive to construct than standard gauge railways

73. Which of the following is a characteristic of a terminal station?
(a) It serves as a point where trains can pass each other
(b) It is located at the intersection of two or more railway lines
(c) It is a dead-end station where trains terminate
(d) It is used for the maintenance and repair of trains

74. Which of the following is a key feature of a locks system in railway interlocking?
(a) Use of electronic sensors
(b) Manual operation by signal operators
(c) Remote control from a central location
(d) Integration with train control systems

75. Which of the following statements about atmospheric pressure is NOT correct?
(a) Atmospheric pressure decreases with increasing altitude
(b) Atmospheric pressure is the pressure exerted by the weight of the atmosphere
(c) Atmospheric pressure is higher at sea level than at mountain tops
(d) Atmospheric pressure is independent of temperature

76. Gauge pressure is:
(a) The pressure measured by a pressure gauge
(b) The difference between absolute pressure and atmospheric pressure
(c) The pressure exerted by a fluid on a surface
(d) The pressure exerted by a column of fluid due to its weight

77. Which of the following types of manometers is used to measure very low pressures?
(a) U-tube manometer
(b) Inclined tube manometer
(c) Diaphragm manometer
(d) Piston manometer

78. The principle behind the operation of a simple mercury barometer is based on:

(a) Pascal's law
(b) Archimedes' principle
(c) Boyle's law
(d) Newton's third law

79. The pressure on an inclined surface submerged in a fluid is highest when the surface is inclined at an angle of:

(a) 0 degrees (horizontal)
(b) 45 degrees
(c) 90 degrees (vertical)
(d) It depends on the density of the fluid

80. The loss of head in a pipe due to sudden enlargement is:

(a) Directly proportional to the square of the velocity
(b) Inversely proportional to the square of the diameter of the pipe
(c) Directly proportional to the velocity
(d) Inversely proportional to the velocity

81. The discharge coefficient of an orifice meter is affected by:

(a) Density of the fluid
(b) Viscosity of the fluid
(c) Shape of the orifice
(d) All of the above

82. A rectangular weir with a notch length of 1.5 m and a head of 0.25 m has a discharge of approximately:

(a) 0.31 m^3/s
(b) 0.41 m^3/s
(c) 0.51 m^3/s
(d) 0.61 m^3/s

83. A pipe carries water with a velocity of 2 m/s. If the Reynolds number is 4000, the diameter of the pipe is 0.2 m, and the kinematic viscosity of water is 1×10^{-6} m^2/s, the density of water is approximately:

(a) 995 kg/m^3
(b) 1005 kg/m^3
(c) 1015 kg/m^3
(d) 1025 kg/m^3

84. Which of the following methods is NOT used for the measurement of velocity in open channels?

(a) Current meter method
(b) Float method
(c) Pitot tube method
(d) Orifice meter method

85 . Frictional loss of head includes the loss of energy due to

(a) viscosity
(b) turbulence
(c) both (a) and (b)
(d) none of these.

86. The water demand for a city with a population of 50,000 is estimated to be 200 littres per capita per day (lpcd). If the population growth rate is 2% per year and the planning period is 20 years, the total water demand at the end of the planning period is approximately:

(a) 20,000 m^3/day
(b) 25,000 m^3/day
(c) 30,000 m^3/day
(d) 35,000 m^3/day

87. An inverted siphon is a type of intake structure used to:

(a) Extract water from underground sources
(b) Divert water from one reservoir to another
(c) Cross a natural or man-made obstacle such as a river or valley
(d) Store water for future use

88. The process of using infiltration wells in river beds is called:

(a) River bed filtration
(b) River bed infiltration
(c) River bed percolation
(d) River bed recharge

89. Which of the following is/are NOT active disinfectant(s) in water treatment?

(a) OH (hydroxyl radical)
(b) O3 (ozone)
(c) OCI (hypochlorite ion)
(d) CI (chloride ion)

90. A rapid sand filter comprising a number of filter beds is required to produce 99 MLD of potable water. Consider water loss during backwashing as 5%, rate of filtration as 6.0 m/h and length to width ratio of filter bed as 1.35. The width of each filter bed is to be kept equal to 5.2 m. One additional filter bed is to be provided to take care of break-down repair and maintenance. The total number of filter beds required will be
(a) 19
(b) 20
(c) 21
(d) 22

91. The present population of a community is 28000 with an average water consumption of 4200 $m3/d$. The existing water treatment plant has a design capacity of 6000 $m3/d$. It is expected that the population will increase to 44000 during the next 20 years. The number of years from now when the plant will reach its design capacity, assuming an arithmetic rate of population growth, will be
(a) 5.5 years
(b) 8.6 years
(c) 15 years
(d) 16.5 years

92. Some of the nontoxic metals normally found in natural water are
(a) Arsenic, lead and mercury
(b) Calcium, sodium and silver
(c) cadmium, chromium and copper
(d) iron, manganese and magnesium

93. Which of the following is NOT a commonly used coagulant in water treatment?
(a) Aluminium sulphate (alum)
(b) Ferric chloride
(c) Sodium hypochlorite
(d) Polyalanine chloride (PACl)

94. The main disadvantage of a pumping distribution system compared to a gravity system is:
(a) Higher initial cost
(b) Greater energy consumption
(c) Limited water storage capacity
(d) Lower reliability

95. The Rational Method is commonly used to estimate:
(a) Wastewater flow rates
(b) Stormwater runoff
(c) Groundwater recharge
(d) Water demand in buildings

96. Study the following statements and identify the correct
(A): "Flocculation causes the particles to increase in mass and settle at a faster rate" is type III settling
(B): "The concentration of particles is so high that sedimentation can only occur through compaction of the structure" is Hindered or Zone settling.
(a) Statement A is true but statement B is false
(b) Statement A is false but statement B is true
(c) Both statements are true.
(d) Both statements are false.

97. Study the following statements and identify the correct combinations of statements.
Statements:
(A): Trickling filter is a secondary treatment unit having aerobic attached growth mechanism.
(B): The septic tank is a tertiary treatment unit having anaerobic suspended growth mechanism.
(a) Statement A is true but statement B is false
(b) Statement A is false but statement B is true
(c) Both statements are true.
(d) Both statements are false.

98. Incineration is a waste disposal method that involves:
(a) Burying waste in a landfill
(b) Burning waste at high temperatures
(c) Compressing waste into blocks
(d) Recycling waste materials

99. The efficiency of a septic tank in treating wastewater is primarily dependent on:

(a) Tank size
(b) Soil type in the drain field
(c) Depth of the tank
(d) Inlet and outlet design

100. An error of 1% in measuring the head of water over the crest of a rectangular weir, produces an error in the discharge which is equal to

(a) 1.25%
(b) 1.5%
(c) 1.75%
(d) 2.25%