Q. Increase in the fineness of cement results in

a) Increase in the rate of heat of hydration without changing the total amount of heat liberated

b) Decrease in the rate of heat of hydration without changing the total amount of heat liberated

c) Increase in the rate of heat of hydration with an increase in the total amount of heat liberated

d) Decrease in the rate of heat of hydration with a reduced amount of heat liberated

Q. Geometric design of highway includes:

(i) Horizontal alignment
(ii) Vertical alignment
(iii) Arbouri-culture
(iv) Cross section
Choose the right combination

a) (i), (ii) and (iii)

b) (i), (ii) and (iv)

c) (ii), (iii) and (iv)

d) (i), (ii), (iii) and (iv)

Q. On a circular curve, the rate of super elevation is 'e' while negotiating the curve, vehicle comes a stop. It was observed that the stopped vehicle is sliding inwards in radial direction. If the coefficient of friction is 'f' which of the following is true?

a) e > f   b) e < f

c) e < 2f   d) None of the is correct

Q. Stripping of asphalt pavement is primarily due to

a) Excessive asphalt content in mixture

b) Moisture damage

c) Fatigue damage

d) Use of less tougher aggregate

Q. The number of potential conflict points at an intersection of two lane national highway with another two-lane national highway (assuming both are two-way) is

a) 8   b) 16

c) 24   d) 32

Q. The ruling design speed on a national highway in plain terrain as per IRC recommendation is

a) 80 kmph

b) 100 kmph

c) 120 kmph

d) 150 kmph

Q. Match List-I with List-II and select the correct answer using the codes given below the lists:

List-I	List-II
A. Penetration test	1. Overlay design
B. Marshal test	2. Determination of softening point
C. Ring and Ball test	3. Gradation of asphalt cement
D. Benkelman beam test	4. Design of bituminous concrete mix

a) A-4, B-3, C-2, D-1

b) A-2, B-3, C-1, D-4

c) A-3, B-2, C-4, D-1

d) A-3, B-4, C-2, D-1

Q. Temperature variations affect the

a) Biological activity of bacteria in sewage

b) Viscosity of sewage

c) Solubility of gases in sewage

d) All options are correct

Q. 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) 5

Q. Why is proportional flow weir provided in a grit chamber?

a) To reduce the suspended solids entering the grit chamber

b) To maintain constant flow velocity in the grit chamber over a certain depth range

c) To maintain constant flow depth in the grit chamber

d) To allow sewage afresh into the grit chamber

Q. Chlorine demand of water is equal to

a) applied chlorine

b) residual chlorine

c) sum of applied and residual chlorine

d) difference of applied and residual chlorine

Q. Which of these sewers are preferred for combined system of sewage?

a) Circular Sewer

b) Egg shaped Sewer

c) Rectangular Sewer

d) Trapezoidal Sewer

Q. Cleaning is done by

a) scraping and removal of top layer in slow sand filter;

b) back washing in slow sand filter;

c) scraping and removal of top layer in rapid sand filter;

d) back washing in rapid sand filters.

Q. The bacteria which live and multiply with or without oxygen are called as

a) Aerobic Bacteria

b) Anaerobic Bacteria

c) Facultative Bacteria

d) Masophilic Bacteria

Q. The permeability of soil varies

a) inversely as square of grain size

b) as square of grain size

c) as grain size

d) inversely as void ratio

Q. A clay deposit suffers a total settlement of 5 cm with one-way drainage. With two-way drainage, the total settlement will be

a) 10 cm

b) 2.5 cm

c) 20 cm

d) 5 cm

Q. The compressibility of a field deposit is

a) the same as that shown by laboratory sample

b) somewhat greater than that shown by laboratory sample

c) somewhat smaller than that shown by laboratory sample

d) not at all related to that of a laboratory sample

Q. For a standard compaction test, the mass of hammer and the drop of hammer are as follows:

a) 2.60 kg. and 450 mm

b) 2.60 kg. and 310 mm

c) 4.89 kg. and 310 mm

d) 4.89 kg. and 450 mm

Q. The inclination of failure plane behind a vertical wall in the passive pressure case is inclined to the horizontal at

a) $45^\circ - \frac{\emptyset}{2}$

b) $45^\circ - \phi$

c) $45^\circ + \frac{\emptyset}{2}$

d) $45^\circ + \phi$

Q. In situ Vane shear test is used to measure shear strength of

a) sandy soil

b) stiff and fissured clays

c) very soft and sensitive clays

d) heterogeneous disintegrated rock

Q. For a soil, field capacity and permanent wilting coefficient are 30% and 12% respectively. The available water in this case is

a) 0.12   b) 0.18

c) 0.3   d) 0.42

Q. A crop requires a total water depth of 90 cm for a base period of 120 days. The discharge required to irrigate the crop in 2880 hectares is

a) 0.25 m^3/s

b) 1.0 m^3/s

c) 2.5 m^3/s

d) 10.0 m^3/s

Q. The useful storage is the volume of water stored in the reservoir between

a) minimum pool level and maximum pool level

b) minimum pool level and normal pool level

c) river bed level and normal pool level

d) river bed level and maximum pool level

Q. Trap efficiency of a reservoir is a function of

a) Outflow/inflow ratio

b) Capacity/inflow ratio

c) Capacity/outflow ratio

d) All of these is correct

Q. The base width of an elementary profile of a concrete gravity dam with no tension criteria and neglecting the uplift pressure is approximately

a) 65% of dam height

b) 75% of dam height

c) 85% of dam height

d) 95% of dam height