

National Testing Agency

Question Paper Name :	Water Engineering and Management 22nd March 2025 Shift 2
Subject Name :	Water Engineering and Management
Creation Date :	2025-03-22 19:29:01
Duration :	90
Total Marks :	300
Display Marks:	Yes

Water Engineering and Management

Group Number :	1
Group Id :	17807068
Group Maximum Duration :	0
Group Minimum Duration :	90
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300

Water Engineering and Management

Section Id :	17807068
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	75
Number of Questions to be attempted :	75
Section Marks :	300
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	178070124
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 1780705078 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The minimum size of glass tubing that can be used to measure water level, if the capillary rise in the tube is not to exceed 0.25 cm. (Take surface tension of water in contact air as 0.0075 kg(f)/m).

1. 1.2 cm
2. 1 cm
3. 0.8 cm
4. 0.6 cm

Options :

17807020101. 1
17807020102. 2
17807020103. 3
17807020104. 4

Question Number : 2 Question Id : 1780705079 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

For the flow through a pipe, if Reynold's number is greater than 4000. It indicates:

1. Streamline flow
2. Laminar flow
3. Steady flow
4. Turbulent flow

Options :

17807020105. 1
17807020106. 2
17807020107. 3
17807020108. 4

Question Number : 3 Question Id : 1780705080 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
Type of fluids	Relationship between shear stress and velocity gradient
(A) Newtonian fluid	(I) Zero velocity gradient
(B) Non-Newtonian fluid	(II) With definite yield stress and linear relationship
(C) Ideal Fluid	(III) Linear
(D) Ideal Plastic	(IV) Non-linear

Choose the **correct** answer from the options given below:

1. (A) - (I), (B) - (IV), (C) - (III), (D) - (II)
2. (A) - (IV), (B) - (II), (C) - (III), (D) - (I)
3. (A) - (II), (B) - (III), (C) - (I), (D) - (IV)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Options :

17807020109. 1
17807020110. 2
17807020111. 3
17807020112. 4

Question Number : 4 Question Id : 1780705081 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
(Dimensionless number)	(Types of forces)
(A). Euler's number	(I). Pressure force
(B). Froude's number	(II). Gravity force
(C). Mach number	(III). Surface Tension
(D). Weber number	(IV). Compressibility force

Choose the **correct** answer from the options given below:

1. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Options :

17807020113. 1
17807020114. 2
17807020115. 3
17807020116. 4

Question Number : 5 Question Id : 1780705082 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Dynamic viscosity of a fluid is 2.2 poise and specific gravity is 0.7. Then kinematic viscosity in SI units is:

1. $3.14 \times 10^{-4} \text{ m}^2/\text{s}$
2. $3.14 \times 10^{-3} \text{ m}^2/\text{s}$
3. $1.5 \times 10^{-4} \text{ stokes}$
4. $1.5 \times 10^{-3} \text{ stokes}$

Options :

17807020117. 1
17807020118. 2
17807020119. 3
17807020120. 4

Question Number : 6 Question Id : 1780705083 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

In order to determine the workability of a concrete mixture, the recommended tests are

- (A). Flow test
- (B). Compaction Factor test
- (C). Flexural strength test
- (D). Slump test

Choose the **correct** answer from the options given below:

- 1. (B), (C) and (D) only
- 2. (A), (B) and (C) only
- 3. (A), (B), (C) and (D)
- 4. (A), (B) and (D) only

Options :

- 17807020121. 1
- 17807020122. 2
- 17807020123. 3
- 17807020124. 4

Question Number : 7 Question Id : 1780705084 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In proportion of concrete mix, 1:1:2 (M 25) represents

- 1. cement : fine aggregates : water
- 2. fine aggregates: cement : coarse aggregates
- 3. coarse aggregates : fine aggregates : cement
- 4. cement : fine aggregates : coarse aggregates

Options :

- 17807020125. 1
- 17807020126. 2
- 17807020127. 3
- 17807020128. 4

Question Number : 8 Question Id : 1780705085 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

As per IS code, the standard size of the brick in mm is:

- 1. 220 x 120 x 120
- 2. 190 x 90 x 90
- 3. 200 x 100 x 100
- 4. 210 x 110 x 110

Options :

- 17807020129. 1
- 17807020130. 2
- 17807020131. 3

Question Number : 9 Question Id : 1780705086 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Consider the following compounds of cement:

- (A). C_2S
- (B). C_4AF
- (C). C_3S
- (D). C_3A

The correct sequence of these compounds in the decreasing order of rate of hydration is

- 1. (D), (C), (B), (A)
- 2. (D), (B), (C), (A)
- 3. (B), (A), (D), (C)
- 4. (A), (B), (C), (D)

Options :

- 17807020133. 1
- 17807020134. 2
- 17807020135. 3
- 17807020136. 4

Question Number : 10 Question Id : 1780705087 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The length of the survey line was measured with a 30 m tape and was found to be 1000 m. As a check, the length was again measured with another 20 m tape, and was found to be 1010 m. On comparing the 30 m tape with a test gauge, it was found to be 0.10 m too long. Find the actual length of the 20 m chain.

- 1. 19.87 m
- 2. 20.87 m
- 3. 21.87 m
- 4. 22.87 m

Options :

- 17807020137. 1
- 17807020138. 2
- 17807020139. 3
- 17807020140. 4

Question Number : 11 Question Id : 1780705088 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The magnetic bearing of line AB is $88^{\circ}45'$. Calculate the true bearing if the magnetic declination is $5^{\circ}30'$ east.

1. $93^{\circ}15'$
2. $83^{\circ}15'$
3. $94^{\circ}15'$
4. $84^{\circ}15'$

Options :

17807020141. 1
17807020142. 2
17807020143. 3
17807020144. 4

Question Number : 12 Question Id : 1780705089 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The R.L. of the floor of a factory is 30.500. Staff reading on the floor is 1.610 m and staff reading when the staff is held inverted with the bottom touching the tie beam of the roof truss is 3.700 m. Find the height of the tie beam above the floor.

1. 6.310 m
2. 5.310 m
3. 7.310 m
4. 4.310 m

Options :

17807020145. 1
17807020146. 2
17807020147. 3
17807020148. 4

Question Number : 13 Question Id : 1780705090 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The fore bearing of line AB is $15^{\circ}30'$. What will be the back bearing of the line AB?

1. $196^{\circ}30'$
2. $197^{\circ}30'$
3. $165^{\circ}30'$
4. $195^{\circ}30'$

Options :

17807020149. 1
17807020150. 2
17807020151. 3
17807020152. 4

Question Number : 14 Question Id : 1780705091 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
Type of correction	Formula used (The symbols have their usual meaning)
(A). Sag correction	(I). $\mp L(1 - h/R)$
(B). Pull correction	(II). $- l/24 \times (W/P)^2$
(C). Temperature correction	(III). $\mp (T_f - T_s)L$
(D). Mean sea level correction	(IV). $\mp (P_f - P_s) \times L/AE$

Choose the **correct** answer from the options given below:

1. (A) - (II), (B) - (IV), (C) - (III), (D) - (I)
2. (A) - (I), (B) - (IV), (C) - (III), (D) - (II)
3. (A) - (IV), (B) - (I), (C) - (II), (D) - (III)
4. (A) - (I), (B) - (IV), (C) - (II), (D) - (III)

Options :

17807020153. 1
17807020154. 2
17807020155. 3
17807020156. 4

Question Number : 15 Question Id : 1780705092 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
Type of instrument	Used in
(A). Alidade	(I). Chain surveying
(B). Arrow	(II). Leveling
(C). Bubble Tube	(III). Plain table surveying
(D). Stadia hair	(IV). Theodolite surveying

Choose the **correct** answer from the options given below:

1. (A) - (III), (B) - (II), (C) - (I), (D) - (IV)
2. (A) - (II), (B) - (IV), (C) - (III), (D) - (I)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (III), (B) - (I), (C) - (II), (D) - (IV)

Options :

17807020157. 1
17807020158. 2

17807020159. 3

17807020160. 4

Question Number : 16 Question Id : 1780705093 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Consider the following characteristics of contour:

(A). A uniform slope is indicated when contour lines are spaced uniformly

(B). Contour lines cannot go anywhere but can close on themselves

(C). A set of closed contours indicates a depression or a summit, according to the lower or higher values being respectively inward

(D). A contour is an imaginary line passing through the points of an equal level on the surface of earth

Choose the **correct** answer from the options given below:

1. (A), (B) and (D) only
2. (A), (B) and (C) only
3. (A), (B), (C) and (D)
4. (B), (C) and (D) only

Options :

17807020161. 1

17807020162. 2

17807020163. 3

17807020164. 4

Question Number : 17 Question Id : 1780705094 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Consider the following statements:

(A). Engineering survey is used to collect requisite data for planning, design and execution of engineering projects.

(B). Reconnaissance survey is used to determine the feasibility and estimation of a scheme.

(C). Route survey is used for depiction of topography of a region.

(D). Archaeological survey is used for determining unearthing relics of antiquity.

Choose the **correct** answer from the options given below:

1. (A), (B), (C) and (D)
2. (A), (B) and (C) only
3. (A), (B), and (D) only
4. (B), (C) and (D) only

Options :

17807020165. 1

17807020166. 2

17807020167. 3

17807020168. 4

Question Number : 18 Question Id : 1780705095 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

As per Indian standard specifications, the length of one link in 30 meter chain is

1. 20 cm
2. 30 cm
3. 40 cm
4. 10 cm

Options :

17807020169. 1
17807020170. 2
17807020171. 3
17807020172. 4

Question Number : 19 Question Id : 1780705096 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

What is the volume of a 6 m deep tank having rectangular shaped top 6m X 4 m and bottom 4 m X 2 m? (use mean-area method).

1. 92 m³
2. 94 m³
3. 96 m³
4. 90 m³

Options :

17807020173. 1
17807020174. 2
17807020175. 3
17807020176. 4

Question Number : 20 Question Id : 1780705097 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
Elastic constants	Explanation
(A). Young's modulus	(I). Lateral strain to linear strain within elastic limit
(B). Poisson's ratio	(II). Stress to strain within elastic limit
(C). Bulk modulus	(III). Shear stress to shear strain within elastic limit
(D). Rigidity modulus	(IV). Direct stress to corresponding volumetric strain

Choose the **correct** answer from the options given below:

1. (A) - (II), (B) - (I), (C) - (IV), (D) - (III)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (II), (B) - (I), (C) - (III), (D) - (IV)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Options :

17807020177. 1
17807020178. 2
17807020179. 3
17807020180. 4

Question Number : 21 Question Id : 1780705098 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

What will be the degree of BMD curve, if the load intensity is of n degree?

1. $n + 2$
2. $n + 1$
3. $n + 3$
4. $n + 4$

Options :

17807020181. 1
17807020182. 2
17807020183. 3
17807020184. 4

Question Number : 22 Question Id : 1780705099 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A beam of triangular cross-section is subjected to a shear force of 50kN. The base width of the section is 250 mm and the height is 200 mm. The beam is placed with its base horizontal. The shear stress at neutral axis will be nearly-

1. 2.2 N/mm^2
2. 2.7 N/mm^2
3. 3.2 N/mm^2
4. 3.7 N/mm^2

Options :

17807020185. 1
17807020186. 2
17807020187. 3
17807020188. 4

Question Number : 23 Question Id : 1780705100 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Earliest finish of an activity is always:

1. Less than earliest event of the following node
2. Greater than earliest event of the following node
3. Less than or equal to earliest event of the following node
4. Greater than or equal to earliest event of the following node

Options :

17807020189. 1
17807020190. 2
17807020191. 3
17807020192. 4

Question Number : 24 Question Id : 1780705101 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Consider the following salient points in a stress-strain curve of mild steel bar:

- (A). Yield point
- (B). Breaking point
- (C). Proportionality limit
- (D). Ultimate point

The correct sequence in which they occur while testing the mild steel bar in tension from initial zero strain to failure is

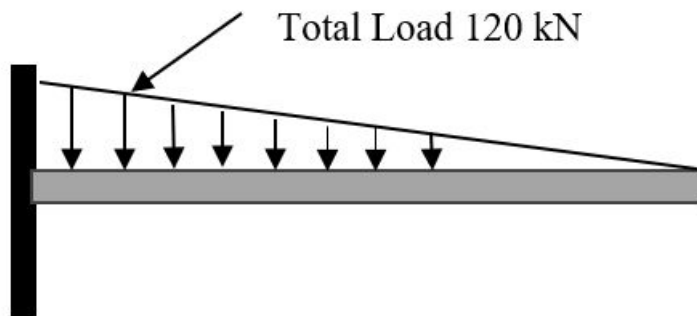
1. (A), (B), (C), (D)
2. (A), (C), (B), (D)
3. (C), (A), (D), (B)
4. (C), (B), (D), (A)

Options :

17807020193. 1
17807020194. 2
17807020195. 3
17807020196. 4

Question Number : 25 Question Id : 1780705102 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

What are the support reactions at the fixed end of the cantilever beam of 3 m length as shown in the diagram below?



1. 120 kN, 120 kN-m
2. 120 kN, 240 kN-m
3. 240 kN, 120 kN-m
4. 120 kN, 60 kN-m

Options :

17807020197. 1
17807020198. 2
17807020199. 3
17807020200. 4

Question Number : 26 Question Id : 1780705103 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The failure theory which is the most conservative for ductile materials is

1. maximum principal stress theory
2. maximum shear stress theory
3. maximum shear strain energy theory
4. maximum principal strain theory

Options :

17807020201. 1
17807020202. 2
17807020203. 3
17807020204. 4

Question Number : 27 Question Id : 1780705104 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The reduction in project time normally results in

1. increasing the direct cost and decreasing the indirect cost
2. decreasing the direct cost and increasing the indirect cost
3. increasing the direct cost and the indirect cost both
4. decreasing the direct cost and the indirect cost both

Options :

17807020205. 1

17807020206. 2

17807020207. 3

17807020208. 4

Question Number : 28 Question Id : 1780705105 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A point load applied at shear center induces

1. Zero shear force
2. Zero bending
3. Pure twisting
4. Pure bending

Options :

17807020209. 1

17807020210. 2

17807020211. 3

17807020212. 4

Question Number : 29 Question Id : 1780705106 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A beam has the same section throughout its length with moment of inertia $I = 1 \times 10^8 \text{ mm}^4$. It is subjected to a uniform BM = 40 kN-m, $E = 2 \times 10^5 \text{ N/mm}^2$. What is the radius of curvature of the circle into which the beam will bend in the form of an arc of a circle?

1. 1000 m
2. 500 m
3. 400 m
4. 350 m

Options :

17807020213. 1

17807020214. 2

17807020215. 3

17807020216. 4

Question Number : 30 Question Id : 1780705107 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following statement(s) is/are correct with regard to air pressure.

- (A). High pressure is related to cloudy sky and wet weather
- (B). Low pressure is associated with clear and sunny skies
- (C). The air always move from high pressure to low pressure areas
- (D). Low pressure involves air rising from earth's surface

Choose the *correct* answer from the options given below:

1. (A) and (B) only
2. (A), (B) and (C) only
3. (A), (B), (C) and (D)
4. (C) and (D) only

Options :

- 17807020217. 1
- 17807020218. 2
- 17807020219. 3
- 17807020220. 4

Question Number : 31 Question Id : 1780705108 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
Forms of precipitation	Characteristics
(A) Rain	(I) Diameter of drop less than 0.5 mm and intensity < 1 mm/h
(B) Glaze	(II) Water droplets in contact with cold water surface (0°C)
(C) Sleet	(III) Diameter of drop 0.5 mm to 6 mm and intensity > 1 mm/h
(D) Drizzle	(IV) Small pellets of transparent ice having a diameter of 5 mm or less

Choose the **correct** answer from the options given below:

1. (A) - (III), (B) - (II), (C) - (I), (D) - (IV)
2. (A) - (I), (B) - (III), (C) - (IV), (D) - (II)
3. (A) - (III), (B) - (II), (C) - (IV), (D) - (I)
4. (A) - (IV), (B) - (I), (C) - (II), (D) - (III)

Options :

- 17807020221. 1
- 17807020222. 2
- 17807020223. 3
- 17807020224. 4

Question Number : 32 Question Id : 1780705109 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The Penman's evapo-transpiration equation is based on

1. Water budget method
2. Energy balance approach only
3. Mass transfer approach only
4. Energy balance and mass transfer approach

Options :

17807020225. 1
17807020226. 2
17807020227. 3
17807020228. 4

Question Number : 33 Question Id : 1780705110 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
(Equation/ Method)	(Related to)
(A). Horton equation	(I). Maximum flood discharge
(B). Muskingum Method	(II). Flood Routing
(C). Chezy's formula	(III). Infiltration
(D). Dicken's formula	(IV). Flow velocity

Choose the **correct** answer from the options given below:

1. (A) - (III), (B) - (II), (C) - (IV), (D) - (I)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Options :

17807020229. 1
17807020230. 2
17807020231. 3
17807020232. 4

Question Number : 34 Question Id : 1780705111 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The coefficient of variation of the rainfall for existing six rain gauge stations in the catchment was found to be 29.54%. The optimum number of stations in the catchment for an admissible 10% error in the estimation of mean rainfall will be:

1. 3
2. 6
3. 9
4. 12

Options :

17807020233. 1
17807020234. 2
17807020235. 3
17807020236. 4

Question Number : 35 Question Id : 1780705112 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Potential evapotranspiration (PET) be denoted as

1. evapotranspiration when there is sufficient moisture available in a fully vegetated area
2. evapotranspiration of a forest area
3. actual evapotranspiration of a crop before application of irrigation water
4. amount of water needed to bring the moisture content of soil to its field capacity

Options :

17807020237. 1
17807020238. 2
17807020239. 3
17807020240. 4

Question Number : 36 Question Id : 1780705113 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

What would be the evaporation from the pond (in mm), if the pan evaporation is 45 mm and the pan coefficient is 0.70.

1. 13.5 mm
2. 19.28 mm
3. 31.5 mm
4. 64.28 mm

Options :

17807020241. 1
17807020242. 2
17807020243. 3
17807020244. 4

Question Number : 37 Question Id : 1780705114 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
(Types of graph/ plot)	(Relation)
(A). Hydrograph	(I). Cumulative rainfall vs time
(B). Mass curve	(II). Cumulative rainfall of nearby station vs Cumulative rainfall of concerned station
(C). Double mass curve	(III). Discharge vs time
(D). Hyetograph	(IV). Rainfall intensity vs time

Choose the **correct** answer from the options given below:

1. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
2. (A) - (I), (B) - (III), (C) - (IV), (D) - (II)
3. (A) - (III), (B) - (I), (C) - (II), (D) - (IV)
4. (A) - (III), (B) - (I), (C) - (IV), (D) - (II)

Options :

17807020245. 1
17807020246. 2
17807020247. 3
17807020248. 4

Question Number : 38 Question Id : 1780705115 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The rainfall on five successive days on a catchment was 2 cm, 6 cm, 9 cm, 5 cm and 3 cm . If the ϕ -index for the storm is taken as 3 cm/day, the total direct runoff from the catchment will be:

1. 26 cm
2. 16 cm
3. 11 cm
4. 13 cm

Options :

17807020249. 1
17807020250. 2
17807020251. 3
17807020252. 4

Question Number : 39 Question Id : 1780705116 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
Soil type	Origin
(A). Loess	(I). Deposited from suspension in running water
(B). Peat	(II). Deposits of marine origin
(C). Alluvial soil	(III). Deposits by wind
(D). Marl	(IV). Organic soil

Choose the **correct** answer from the options given below:

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (III), (B) - (II), (C) - (IV), (D) - (I)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Options :

17807020253. 1
17807020254. 2
17807020255. 3
17807020256. 4

Question Number : 40 Question Id : 1780705117 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
Range of particle size	Type of soil
(A). Less than 0.002 mm	(I). Gravel
(B). 0.075 mm to 0.002 mm	(II). Sand
(C). 80 mm to 4.75 mm	(III). Silt
(D). 4.75 mm to 0.075 mm	(IV). Clay

Choose the **most appropriate** answer from the options given below:

1. (A) - (IV), (B) - (III), (C) - (II), (D) - (I)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (IV), (B) - (III), (C) - (I), (D) - (II)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Options :

17807020257. 1
17807020258. 2
17807020259. 3
17807020260. 4

Question Number : 41 Question Id : 1780705118 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A sample of saturated soil has a water content of 29.6%. If the specific gravity of solids is 2.7, the dry unit weight (in gram/cm^3) of the soil is equal to

1. 0.5
2. 0.75
3. 1
4. 1.5

Options :

17807020261. 1
17807020262. 2
17807020263. 3
17807020264. 4

Question Number : 42 Question Id : 1780705119 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The most expansive clay mineral is

1. Quartz
2. Montmorillonite
3. Kaolinite
4. Illite

Options :

17807020265. 1
17807020266. 2
17807020267. 3
17807020268. 4

Question Number : 43 Question Id : 1780705120 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The levels of soil density are given below :

- (A). Saturated density
(B). Submerged density
(C). Wet density
(D). Dry density

Choose the **most appropriate** sequence in the decreasing order of magnitude of the densities of a soil sample:

1. (C), (B), (A), (D)
2. (A), (C), (B), (D)
3. (A), (C), (D), (B)
4. (C), (B), (D), (A)

Options :

17807020269. 1
17807020270. 2
17807020271. 3
17807020272. 4

Question Number : 44 Question Id : 1780705121 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

By placing a soil sample at 105°C for 24 hours in an oven

- (A). Hygroscopic moisture is lost
- (B). Capillary water is lost
- (C). Free water is lost
- (D). Structural water is lost

Which of the above statements are correct ?

- 1. (A), (B) and (D) only
- 2. (B), (C) and (D) only
- 3. (A), (B), (C) and (D)
- 4. (A), (B) and (C) only

Options :

17807020273. 1
17807020274. 2
17807020275. 3
17807020276. 4

Question Number : 45 Question Id : 1780705122 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Consider the following statements related to pore pressure parameter (A), A_f (value of A at failure) and R (over consolidation ratio)

- (A). A_f is zero when $R = 1$
- (B). A_f is negative when $R > 4$
- (C). A_f increases as R decreases
- (D). A_f decreases as R decreases

Choose the **most appropriate** answer from the options given below:

- 1. (A) and (C) only
- 2. (A) and (D) only
- 3. (B) and (C) only
- 4. (B) and (D) only

Options :

17807020277. 1
17807020278. 2
17807020279. 3

Question Number : 46 Question Id : 1780705123 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

If a sample of clay has a cohesion of 80 kPa and an angle of shearing resistance of 10° , the shear strength of clay at a normal stress of 100 kPa will be:

1. 97.63 kPa
2. 98.48 kPa
3. 78.78 kPa
4. 95.34 kPa

Options :

17807020281. 1
 17807020282. 2
 17807020283. 3
 17807020284. 4

Question Number : 47 Question Id : 1780705124 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

When effective stress on a normally consolidated clay is increased from 25 kN/m² to 50 kN/m², settlement becomes 5mm. If the stress is increased to 175 kN/m², settlement will increase to (assuming coefficient of volume-decrease to be constant)

1. 25 mm
2. 30 mm
3. 35 mm
4. 40 mm

Options :

17807020285. 1
 17807020286. 2
 17807020287. 3
 17807020288. 4

Question Number : 48 Question Id : 1780705125 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

An open channel of symmetric right-angled triangular cross-section is conveying a discharge 'Q'. If 'g' is the acceleration due to gravity, what is the critical depth for this channel?

1. $(Q^2/g)^{1/3}$
2. $(2Q^2/g)^{1/3}$
3. $(Q^2/g)^{1/5}$
4. $(2Q^2/g)^{1/5}$

Options :

17807020289. 1
 17807020290. 2
 17807020291. 3

Question Number : 49 Question Id : 1780705126 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The sequent ratio in a hydraulic jump formed in a horizontal rectangular channel is 16.48. The Froude number of the Supercritical stream is about:

1. 4.0
2. 8.0
3. 12.0
4. 14.0

Options :

17807020293. 1
17807020294. 2
17807020295. 3
17807020296. 4

Question Number : 50 Question Id : 1780705127 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Which one of the following condition is a typical characteristics of critical flow? (Symbols have their usual meaning)

1. $Q^2T/gA^3 = 1$
2. $QT^2/gA^2 = 1$
3. $Q^2/gA^2 = 1$
4. $Q^2T^2/gA^2 = 1$

Options :

17807020297. 1
17807020298. 2
17807020299. 3
17807020300. 4

Question Number : 51 Question Id : 1780705128 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

In a field test of a formation having a porosity of 25%, the hydraulic gradient was found to be 0.04, and the velocity of a tracer added to the ground water was 6 cm/h. The permeability of the aquifer is about:

1. 1 cm/s
2. 4 cm/s
3. 0.04 cm/s
4. 0.01 cm/s

Options :

17807020301. 1
17807020302. 2
17807020303. 3
17807020304. 4

Question Number : 52 Question Id : 1780705129 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Sequentially arrange the following steps in the water treatment process:

- (A). Screening
- (B). Filtration
- (C). Sedimentation
- (D). Disinfection

Choose the **correct** answer from the options given below:

- 1. (A), (B), (C), (D)
- 2. (A), (C), (B), (D)
- 3. (B), (A), (D), (C)
- 4. (C), (B), (D), (A)

Options :

- 17807020305. 1
- 17807020306. 2
- 17807020307. 3
- 17807020308. 4

Question Number : 53 Question Id : 1780705130 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
Instruments used	Parameter
(A). Tintometer	(I). Volatile solids
(B). Nephelometer	(II). Colour
(C). Imhoff cone	(III). Turbidity
(D). Muffle furnace	(IV). Settleable solids

Choose the **correct** answer from the options given below:

- 1. (A) - (II), (B) - (I), (C) - (III), (D) - (IV)
- 2. (A) - (IV), (B) - (III), (C) - (II), (D) - (I)
- 3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
- 4. (A) - (II), (B) - (III), (C) - (IV), (D) - (I)

Options :

- 17807020309. 1
- 17807020310. 2
- 17807020311. 3
- 17807020312. 4

Question Number : 54 Question Id : 1780705131 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The maximum rainfall intensity at a given location

1. increases with increase in duration
2. decreases with increase in duration
3. is independent of the duration of the rainfall
4. sometimes increases and sometimes decreases with increase in duration

Options :

17807020313. 1
17807020314. 2
17807020315. 3
17807020316. 4

Question Number : 55 Question Id : 1780705132 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Consider the following statements regarding the design of channels by the theory of Lacey's or Kennedy's

- (A). Theoretical concept of silt transportation remain same in both the theories
- (B). Lacey improves upon Kennedy theory
- (C). There are no defects in either the theories of Lacey or of Kennedy
- (D). Lacey and Kennedy theory related to designing a lined canal/channels

Choose the **correct** answer from the options given below:

1. (A) and (B) only
2. (A) and (D) only
3. (B) and (C) only
4. (B), (C) and (D) only

Options :

17807020317. 1
17807020318. 2
17807020319. 3
17807020320. 4

Question Number : 56 Question Id : 1780705133 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Dibbling is the process of

1. placing seeds in holes made in seedbed and covering them
2. applying fertilizer by hand with the main objective of spreading it uniformly over the entire field
3. removing weeds with the use of a tool through cutting vegetative parts
4. applying chemicals in powder form

Options :

17807020321. 1
17807020322. 2
17807020323. 3
17807020324. 4

Question Number : 57 Question Id : 1780705134 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Which of the following remain useful for engine selection and in choosing desirable operating points for an engine?

1. Engine performance map
2. Engine efficiency map
3. Engine testing map
4. Engine speed map

Options :

17807020325. 1
17807020326. 2
17807020327. 3
17807020328. 4

Question Number : 58 Question Id : 1780705135 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Which of the following irrigation method is not suitable for those crops having high water demand?

1. Border strip method
2. Check basin method
3. Sprinkler method
4. Furrow method

Options :

17807020329. 1
17807020330. 2
17807020331. 3
17807020332. 4

Question Number : 59 Question Id : 1780705136 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Which of the following expression stands true for the WME (mechanization index)?

LM = Average sum of the total work done by Tractor machine

LT = Average sum of the total work done by Human + Average sum of the total work done by Tractor machine

1. $WME = LM \times LT \times 100$
2. $WME = \frac{LM}{LT} \times 100$
3. $WME = \frac{LT}{LM} \times 100$
4. $WME = LM \times LT$

Options :

17807020333. 1
17807020334. 2
17807020335. 3
17807020336. 4

Question Number : 60 Question Id : 1780705137 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Traction prediction equations developed by Brixius can be used for the prediction of

- (A). gross traction ratio
- (B). motion resistance ratio
- (C). coefficient of traction
- (D). cone index

Choose the **correct** answer from the options given below:

- 1. (A), (B) and (D) only
- 2. (A), (B) and (C) only
- 3. (A), (B), (C) and (D)
- 4. (B), (C) and (D) only

Options :

17807020337. 1
17807020338. 2
17807020339. 3
17807020340. 4

Question Number : 61 Question Id : 1780705138 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The plough consists of a

- (A). Common main frame
- (B). Disc beam assemblies
- (C). Heavy spring-loaded furrow wheel
- (D). Gauge wheel

Choose the **correct** answer from the options given below:

- 1. (A), (B) and (D) only
- 2. (A), (B) and (C) only
- 3. (A), (B), (C) and (D)
- 4. (B), (C) and (D) only

Options :

- 17807020341. 1
- 17807020342. 2
- 17807020343. 3
- 17807020344. 4

Question Number : 62 Question Id : 1780705139 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Which of the following is not connected with tractor performance test

- 1. Engine output (measured by belt or power take off dynamometers)
- 2. Fuel economy
- 3. Drawbar pull, drawbar horsepower and drawbar fuel company
- 4. Braked and driven force

Options :

- 17807020345. 1
- 17807020346. 2
- 17807020347. 3
- 17807020348. 4

Question Number : 63 Question Id : 1780705140 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A heat engine remain as a device which converts heat energy into

- 1. Chemical energy
- 2. Mechanical energy
- 3. Kinetic energy
- 4. Potential energy

Options :

17807020349. 1
17807020350. 2
17807020351. 3
17807020352. 4

Question Number : 64 Question Id : 1780705141 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
(Type of power tiller)	(Utility)
(A). General Purpose	(I). Two-wheel tractor coupled with a rotary tiller
(B). Pull type	(II). Steering mechanism
(C). Tilling type	(III). Miscellaneous operations for rotary as well as traction work
(D). Dog type	(IV). Used for ploughing, leveling, seeding and transport work

Choose the correct answer from the options given below:

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Options :

17807020353. 1
17807020354. 2
17807020355. 3
17807020356. 4

Question Number : 65 Question Id : 1780705142 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
(Soil)	(Characteristic)
(A). Podzolization	(I). Silica accumulation
(B). Laterization	(II). Clay migration
(C). Lessivage	(III). Iron and aluminum oxides
(D). Pedoturbation	(IV). Intermixing of soil particles due to external factors

Choose the **correct** answer from the options given below:

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Options :

17807020357. 1
17807020358. 2
17807020359. 3
17807020360. 4

Question Number : 66 Question Id : 1780705143 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The desert development program was initiated in the year of

1. 1967-68
2. 1977-78
3. 1987-88
4. 1997-98

Options :

17807020361. 1
17807020362. 2
17807020363. 3
17807020364. 4

Question Number : 67 Question Id : 1780705144 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
(Aquifers)	(Characteristics)
(A). Specific yield	(I). Volume of water released or stored per unit surface area of the aquifer per unit change in the component of head normal to that of the surface
(B). Coefficient of storage	(II). Volume of water the aquifer releases from or takes into storage per unit area of the aquifer
(C). Specific retention	(III). Ratio of volume of water a material retains after drainage by gravity to the total volume
(D). Transmissivity	(IV). Rate at which water get transmitted through a unit width of the aquifer and extending through the full saturated thickness of the aquifer, under a hydraulic gradient

Choose the **correct** answer from the options given below:

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Options :

17807020365. 1
17807020366. 2
17807020367. 3
17807020368. 4

Question Number : 68 Question Id : 1780705145 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A watershed of 1500 hectares is discharging through a drain at an average rate of $2.5 \text{ m}^3/\text{s}$. Calculate the drainage coefficient. If the drainage coefficient is 3 cm, what would be the discharge through drain?

1. $0.11 \text{ m}^3/\text{s}$
2. $0.22 \text{ m}^3/\text{s}$
3. $0.33 \text{ m}^3/\text{s}$
4. $0.44 \text{ m}^3/\text{s}$

Options :

17807020369. 1
17807020370. 2
17807020371. 3
17807020372. 4

Question Number : 69 Question Id : 1780705146 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following is not a colour order system?

1. Munsell
2. CIELAB
3. MATLAB
4. Hunter Lab

Options :

17807020373. 1
17807020374. 2
17807020375. 3
17807020376. 4

**Question Number : 70 Question Id : 1780705147 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1**

In general, the storage principles that may help to prevent the loss and spoilage of the commodity includes

- (A). Lower the moisture content, longer the storage life
(B). Lower the temperature, longer the shelf-life of the commodity
(C). Airtight/thermally insulated structures that prevent spoilage of perishables and semi-perishables
(D). Enzymatic activities do not play a major role

Choose the **correct** answer from the options given below:

1. (A), (B) and (D) only
2. (A), (B) and (C) only
3. (A), (B), (C) and (D)
4. (B), (C) and (D) only

Options :

17807020377. 1
17807020378. 2
17807020379. 3
17807020380. 4

**Question Number : 71 Question Id : 1780705148 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1**

The essential proteins present in wheat grain include

(A) Albumins

(B) Globulins

(C) Glutenin

(D) Gliadins

1. (A), (B) and (D) only
2. (A), (B) and (C) only
3. (A), (B), (C) and (D)
4. (B), (C) and (D) only

Options :

17807020381. 1

17807020382. 2

17807020383. 3

17807020384. 4

Question Number : 72 Question Id : 1780705149 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Radappertization is a method used for food preservation in which

1. Food is preserved by addition of bacteriocin
2. Food is sterilized by radiation
3. Food is preserved by heating
4. Food is preserved by dehydration

Options :

17807020385. 1

17807020386. 2

17807020387. 3

17807020388. 4

Question Number : 73 Question Id : 1780705150 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Probiotics usually consist of

- (A). *Lactobacillus*
- (B). *Saccharomyces boulardii*
- (C). *Bifidobacterium*
- (D). *Zymomonas*

Choose the **correct** answer from the options given below:

1. (A), (B) and (D) only
2. (A), (B) and (C) only
3. (A), (B), (C) and (D)
4. (B), (C) and (D) only

Options :

- 17807020389. 1
- 17807020390. 2
- 17807020391. 3
- 17807020392. 4

Question Number : 74 Question Id : 1780705151 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

Match **List-I** with **List-II**

List-I	List-II
(Fruit/Vegetable)	(Cold storage temperature requirement/degree Celsius)
(A). Apple	(I). 0.0 - 1.7
(B). Tomato	(II). 1.7 - 3.3
(C). Orange	(III). 7.2 - 8.9
(D). Mango	(IV). 3.9 - 5.6

Choose the **correct** answer from the options given below:

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

Options :

- 17807020393. 1
- 17807020394. 2
- 17807020395. 3
- 17807020396. 4

Question Number : 75 Question Id : 1780705152 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Is Question Mandatory : No Correct Marks : 4 Wrong Marks : 1

The maximum limit of grain moisture content (% wet basis) for safe storage of raw and parboiled rice be

1. 11 and 12
2. 13 and 14
3. 14 and 15
4. 15 and 16

Options :

17807020397. 1
17807020398. 2
17807020399. 3
17807020400. 4