

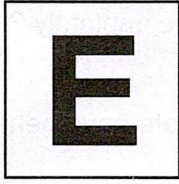


10/CME/M – 2025-06

Booklet Serial No.

2410173

Booklet Series



Question Booklet  
CIVIL ENGINEERING  
Paper – VI

Candidate's Roll Number

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Time Allowed : 01 Hour

Maximum Marks : 100

Read the following instructions carefully before you begin to answer the questions.

**IMPORTANT INSTRUCTIONS**

1. This Question Booklet contains **50** questions in all.
2. **All** questions carry equal marks.
3. Attempt **all** questions.
4. An Answer Sheet has been supplied inside the question booklet to mark the answers. **You must write your Roll Number and encode it and write other particulars in the space provided in the Answer Sheet, failing which your Answer Sheet will not be evaluated.**
5. **Immediately after commencement of the examination, you should check up your Question Booklet and attached answer sheet and ensure that the Question Booklet Series is printed on the top left-hand corner of the Booklet and the series encoded in answer sheet are same. Also please check that the Booklet contains 12 printed pages including two pages (Page Nos. 11 and 12) for Rough Work and no page or question is missing or unprinted or torn or repeated or question booklet and answer sheet have different series. If you find any defect in this Booklet and attached answer sheet, get it replaced immediately by a complete Booklet with OMR sheet of the same series.**
6. You must write your Roll Number in the space provided on the top of this page. Do not write anything else on the Question Booklet.
7. Questions and their responses are printed in English version in this Booklet. Each question comprises of **four** responses — (A), (B), (C) and (D). You are to select **ONLY ONE** correct response and mark it in your Answer Sheet. In case you feel that there are more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each question. Your total marks will depend on the number of correct responses marked by you in the Answer Sheet.
8. In the Answer Sheet, there are **four** circles — (A), (B), (C) and (D) against each question. To answer the questions, you are to mark with **Black/Blue ink ballpoint pen ONLY ONE circle** of your choice for each question. Select only one response for each question and mark it in your Answer Sheet. If you mark more than one circle for one question, the answer will be treated as wrong. **Use Black/Blue ink ballpoint pen only to mark the answer in the Answer Sheet. Any erasure or change is not allowed.**
9. You should not remove or tear off any sheet from the Question Booklet. You are not allowed to take this Question Booklet and the Answer Sheet out of the Examination Hall during the examination. **After the examination has concluded, you must hand over your Answer Sheet to the Invigilator.** Thereafter, you are permitted to take away the Question Booklet with you.
10. Failure to comply with any of the above instructions will render you liable to such action or penalty as the Commission may decide at their discretion.
11. Candidates must assure before leaving the Examination Hall that their Answer Sheets will be kept in Self Adhesive LDPE Bag and completely packed/sealed in their presence.

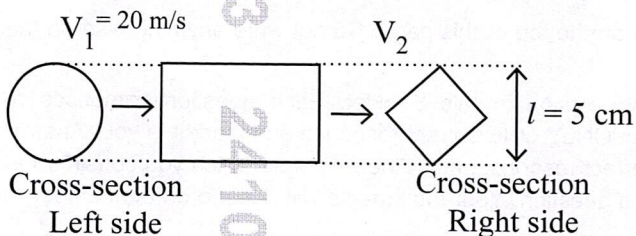




1. The drainage layer is

- (A) Base
- (B) Surface course
- (C) Sub grade
- (D) Sub base

2. The below figure shows a pipe with a circular cross section of diameter 5 cm on the left end and a square cross section with diagonal 5 cm on the right end. Water enters the left end with a velocity 20 m/s and leaves the right end with a velocity  $V_2$ . Find  $V_2$  (neglect losses in the pipe).



- (A) 31.41 m/s
- (B)  $V_2$  cannot be found as the length of the pipe is not given
- (C) 20 m/s
- (D)  $V_2$  cannot be found as the intermediate cross sections are not given

3. In which of the below types of pavement can joints be eliminated completely ?

- (A) Pre-stressed concrete pavement
- (B) Continuous reinforced concrete pavement
- (C) Jointed plain concrete pavement
- (D) Jointed reinforced concrete pavement

4. Which of the following statement is wrong ?

- (A) The critical tractive force approach helps in designing unstable channels in alluviums
- (B) Threshold condition is the one in which a few particles on the bed will just start moving
- (C) The knowledge of threshold condition is required for the computation of sediment load
- (D) Knowledge of critical velocity helps in designing stable non-scouring channels





5. The measure **not** adopted to take care of the embankment failure is
- (A) Stone pitching
  - (B) Benching
  - (C) Rise of embankment above HFL
  - (D) Grass turf
6. Transition curve is introduced in
- (A) Between horizontal curve and circular curve
  - (B) Horizontal curve
  - (C) Vertical curve
  - (D) Circular curve
7. The streamlines of the particles in a flow are recorded. If the streamline distribution remain the same even after sometime, what type of flow can it be ?
- (A) uniform
  - (B) steady
  - (C) non-uniform
  - (D) unsteady
8. A well is to be constructed in a fine sandy sub-soil formation. The discharge of the well under the depression head of 4 m is  $0.004 \text{ m}^3/\text{sec}$ . Calculate the diameter of the well.
- (A) 3 m
  - (B) 2 m
  - (C) 3.5 m
  - (D) 2.5 m
9. According to the Hydraulic design, the dams are classified as
- (A) overflow and non-overflow dam
  - (B) diversion and detention dams
  - (C) arch and buttress dam
  - (D) storage and diversion dams
10. Which hydrological method is commonly used for estimating flood peaks in ungauged watersheds ?
- (A) HEC-RAS Modeling
  - (B) Rational Method
  - (C) Unit Hydrograph Method
  - (D) SCS Curve Number Method





11. Bitumen is a by-product of

- (A) Kerosene
- (B) Wood
- (C) Coal
- (D) Petroleum

12. What is the basic cause of retrogression ?

- (A) Silt carrying capacity
- (B) Flood levels
- (C) Fault in the design of protection works
- (D) Seepage pressure

13. The facility provided to stop the entry of heavy debris present in the storm water into the sewers is called as

- (A) Catch basin
- (B) Curb inlet
- (C) Clean-outs
- (D) Gutter inlet

14. A water flows through a pipe at a velocity 2 m/s. The pressure gauge reading is 2 bar. The datum head is given to be 2 m. Find the piezometric head.

(Assume all Bernoulli's assumptions, Density of water =  $1000 \text{ kg/m}^3$ ,  $g = 9.8 \text{ m/s}^2$ ).

- (A) 20.4 m
- (B) 22.4 m
- (C) 20.6 m
- (D) 22.6 m

15. Consider the following statement regarding the depth of sand of the rapid gravity filter.

- i. It should be checked against breakage of floc.
- ii. The sand depth should lie between 100 – 200 cm.
- iii. The floc should be attached through the sand bed.

Which of the above statement is/are correct ?

- (A) ii, iii
- (B) only i
- (C) only ii
- (D) i, ii

16. Which irrigation method is most efficient in water use, especially in arid regions ?

- (A) Drip irrigation
- (B) Flood irrigation
- (C) Surface irrigation
- (D) Sprinkler irrigation





17. What is the difference between a weir and a barrage ?

- (A) Storage capacity
- (B) Discharge capacity
- (C) Velocity of flow
- (D) No solid obstruction

18. Consider the following statement.  
The storm water flow depends on

- i. Catchment area
- ii. Ground slope
- iii. Quality of water
- iv. Rainfall duration

Which of the following is correct?

- (A) i, ii, iv
- (B) i, ii
- (C) i, iv
- (D) i, ii, iii

19. How many types of aspects are determined by using the hydraulic design in design for a weir ?

- (A) 8
- (B) 3
- (C) 7
- (D) 6

20. What does "3 - Es" of traffic engineering stands for ?

- (A) Engineering, Education and Expulsion
- (B) Engineering, Education and Enthusiasm
- (C) Enforcement, Empowerment and Eradication
- (D) Engineering, Education and Enforcement

21. If compressibility force and surface tension force are neglected from the Newton's second law of motion, which of the following equation will be obtained ?

- (A) Bernoulli's equation
- (B) Navier-Stokes equation
- (C) Reynolds equation
- (D) Euler's equation

22. The amount of electrical energy that can be generated by a hydroelectric power plant depends upon

- (A) Specific weight of water
- (B) Head of water
- (C) Efficiency of alternator
- (D) Quantity of water





23. A paddy crop requires 12 cm of water every 10 days, with a crop period of 120 days. What is the total water depth (delta) needed ?
- (A) 180 cm
  - (B) 120 cm
  - (C) 240 cm
  - (D) 144 cm
24. In which of the following joint, pipes do **not** have sockets or spigots ?
- (A) Spigot and socket joint
  - (B) Tyton joint
  - (C) Expansion joint
  - (D) Coupled joint
25. Which of the following is correct ?
- (A) Pathlines of two particles in an one-dimensional flow can intersect only if the two particles move along the same direction
  - (B) Pathlines of two particles in an one-dimensional flow can never intersect
  - (C) Pathlines of two particles in an one-dimensional flow cannot intersect if the two particles move along different directions
  - (D) Pathlines of two particles in an one-dimensional flow can never intersect if the two particles move along the same direction
26. The highest CBR number is required for
- (A) Sub base
  - (B) Pavement
  - (C) Base
  - (D) Sub grade
27. The Froude's number for a flow in a channel section is 1. What type of flow is it ?
- (A) Super critical
  - (B) Sub Critical
  - (C) Tranquil
  - (D) Critical
28. \_\_\_\_\_ pavement has a concrete slab as the topmost layer.
- (A) Portable
  - (B) Fixed
  - (C) Rigid
  - (D) Flexible
29. A frontal precipitation occurs
- (A) When two air masses with different temperatures meet, turbulent conditions are produced
  - (B) When the air being heated becomes light and rises up in convection currents
  - (C) When warm, humid air strikes an Orographic barrier (a mountain range) head-on
  - (D) All of the above





30. What is the most important point to be considered while fixing the canal capacity ?
- (A) Water demand  
(B) Keenest demand  
(C) Demand  
(D) Average demand
31. The basic mechanism behind the phenomenon of sediment transport is
- (A) free motion of the sediment particles  
(B) drag force opposite to the direction of the flow  
(C) force exerted by water vertically  
(D) drag force in the direction of the flow
32. Rigid pavements are stiffer than flexible pavements due to
- (A) High modulus of rigidity  
(B) Low modulus of rigidity  
(C) High modulus of elasticity  
(D) Low modulus of elasticity
33. What is the Field Irrigation Requirement (FIR) ?
- (A) Amount of water required to delivered at the field to meet evapotranspiration and leaching needs  
(B) Amount of water required to meet the field irrigation requirements plus water lost in conveyance through the canal system  
(C) Amount of water required to meet the net irrigation requirements plus water lost due to surface runoff and percolation  
(D) The water required to meet the evaporation needs of a crop
34. Open well has big diameter than tube well because
- i. Open well has to irrigate more area.  
ii. Water contribution to the well is natural and therefore, the percolation area has to be more.  
iii. Storage of water has to be made before irrigation is done.
- (A) ii and iii  
(B) i and ii  
(C) i, ii and iii  
(D) i and iii





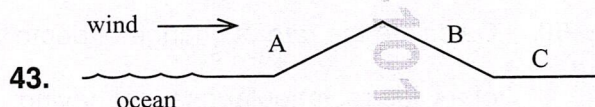
35. The temporary structures that are built to enclose certain worksite is
- (A) timber dam
  - (B) storage dam
  - (C) steel dam
  - (D) coffer dam
36. The term "septic" refers to
- (A) drainage of waste materials
  - (B) anaerobic bacterial environment that develops in the tank
  - (C) aerobic bacterial environment that develops in the tank
  - (D) refers to safety and precaution
37. Which method is commonly used for flood routing in hydrological studies ?
- (A) Puls method
  - (B) Reservoir routing
  - (C) Gumbel's method
  - (D) ISD method
38. The inverted filter used in protection arrangement, protects the weir from what ?
- (A) Piping
  - (B) Silting action
  - (C) Leakage problems
  - (D) Scouring
39. The structures that are constructed at suitable intervals along the sewerage systems are called as
- (A) Pumps
  - (B) Manholes
  - (C) Sewer appurtenances
  - (D) Catch basins
40. The uplift pressure on a dam can be controlled by
- i. Constructing cutoff under upstream face
  - ii. Constructing drainage channels between the dam and its foundation
  - iii. By pressure grouting in foundation
- The correct answer is
- (A) both (i) and (iii)
  - (B) only (i)
  - (C) (i), (ii) and (iii)
  - (D) both (i) and (ii)
41. Which of the following causes thickening of the biofilm ?
- (A) Reduction in air supply
  - (B) Reduction of intake wastewater
  - (C) Increase in acidity
  - (D) Rapid growth of organisms





42. Estimate the type of flow in a channel having cross sectional area of  $50 \text{ m}^2$  and top of the channel is 5 m. The mean velocity of flow is 0.1 m/s and the absolute viscosity of water is  $0.625 \text{ N-s/m}^2$ .

- (A) Transition
- (B) Laminar
- (C) Steady
- (D) Turbulent



The diagram above represents a cross section through a coastal mountain range. Which of the following statements is correct ?

- (A) Region C would receive the most precipitation
- (B) Region A would receive the most precipitation
- (C) Regions A, B, and C would receive about the same amount of precipitation
- (D) Region B would receive the most precipitation

44. When sand and gravel foundation strata are available at a proposed dam site of moderate height, the dam may be of the type

- (A) concrete gravity dam
- (B) earthen or rockfill dam
- (C) double arch dam
- (D) masonry gravity dam

45. Which of the following is the number of vehicles crossing a section of road in a unit time at any selected period ?

- (A) Traffic volume study
- (B) Traffic density study
- (C) Traffic mass study
- (D) Traffic characteristic study

46. The amount of irrigation water required to meet the evapotranspiration needs of the crop during its full growth is called

- (A) consumptive irrigation requirement
- (B) effective rainfall
- (C) net irrigation requirement
- (D) consumptive use





47. Consider the following statements.

- i. The arithmetical increase method is suitable for new cities
- ii. The decreasing growth rate method is used where the rate of growth shows a downward pattern
- iii. The geometrical increase method is used for older cities

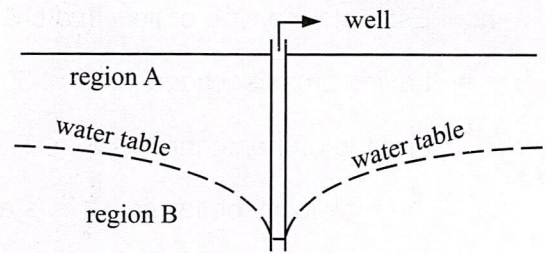
Which of the following above statements is/are correct ?

- (A) only ii
- (B) i, ii and iii
- (C) ii and iii
- (D) i and iii

48. By what structures the regulator can control the supplies entering the off take channel ?

- (A) Piers and Planks
- (B) Sluice Gates
- (C) Dams
- (D) Falls

49.



In the diagram above region A is the

- (A) saturated zone
- (B) discharge zone
- (C) unsaturated zone
- (D) recharge zone

50. Calculate the rate of change of depth of a wide rectangular channel having uniform flow depth of 2 m and the depth during GVF is 1.5 m.

Given :  $y_c = 1$  m,  $S_0 = 1$  in 1500.

- (A)  $3.4 \times 10^{-4}$  m
- (B)  $1.4 \times 10^{-4}$  m
- (C)  $4.4 \times 10^{-4}$  m
- (D)  $2.4 \times 10^{-4}$  m





SPACE FOR ROUGH WORK

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