BYJU'S EXAM PREP

02/AE/CME/2012-12   Serial No. 602832

Candidate's Roll Number

Question Booklet Series

Question Booklet

D

Paper—VI

CIVIL ENGINEERING

SECTION—I

| Time Allowed : 1 Hour | (Objective) | 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. Immediately after commencement of the examination, you should check up your Question Booklet and ensure that the Question Booklet Series is printed on the top right-hand corner of the Booklet. The Booklet contains 7 printed pages and no page or question is missing or unprinted or torn or repeated. If you find any defect in this booklet, get it replaced immediately by a complete booklet of the same series.

5. 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.

6. An Answer Sheet will be supplied to you separately by the Invigilator to mark the answers. **You must write your Name, Roll No. and other particulars on the first page of the Answer Sheet provided, failing which your Answer Sheet will not be evaluated.**

7. You will encode your **Roll Number** and the **Question Booklet Series A, B, C or D** as it is printed on the top right-hand corner of this Question Booklet with Black/Blue ballpoint pen in the space provided on **Page-2** of your Answer Sheet. **If you do not encode or fail to encode the correct series of your Question Booklet, your Answer Sheet will not be evaluated correctly.**

8. Questions and their responses are printed in English only in this Booklet. Each question comprises **four** responses—(A), (B), (C) and (D). You are to select ONLY ONE correct response and mark 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.

9. In the Answer Sheet, there are **four** brackets—(A), (B), (C) and (D) against each question. To answer the questions you are to **mark with Black/Blue ballpoint pen** ONLY ONE bracket of your choice for each question. Select one response for each question in the Question Booklet and mark in the Answer Sheet. If you mark more than one answer for one question, the answer will be treated as wrong. **Any erasure or change is not allowed.**

10. 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.

11. 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.

1. In arid areas, with uneven land surface most suitable method of irrigation is

   (A) basin method

   (B) check flooding

   (C) furrow irrigation

   (D) sprinkler irrigation

2. Lacey gave a relation between

   (A) velocity and hydraulic mean depth

   (B) area and velocity

   (C) Both (A) and (B)

   (D) None of the above

3. If the depth of water in an open channel is greater than the critical depth, the flow is called

   (A) critical flow

   (B) turbulent flow

   (C) tranquil flow

   (D) torrential flow

4. A flow is called hypersonic, if the Mach number is

   (A) less than unity

   (B) unity

   (C) between 1 and 6

   (D) None of the above

5. Pick up the correct sequence of the parts of a canal system

   (A) Headwork—Main canal— Distributory—Branch canal —Minor

   (B) Headwork—Main canal— Branch canal—Distributory —Minor

   (C) Headwork—Main canal— Branch canal—Minor—Distributory

   (D) Headwork—Branch canal— Main canal—Distributory— Minor

6. In a barrage, the crest level is kept

   (A) high with large gate

   (B) low with large gate

   (C) high with no gate

   (D) low with no gate

7. Isopiastic lines are the contours

   (A) drawn to represent water table

   (B) drawn to represent piezometric heads

   (C) drawn to piezometric surface

   (D) drawn to represent points of equal rainfall

8. The most suitable location of a canal headwork is

   (A) boulder stage of the river

   (B) delta stage of the river

   (C) rock stage of the river

   (D) trough stage of the river

9. If V_0 is the critical velocity of a channel, its silt transporting power, according to Kennedy is proportional to

(A) $V_0^{1/2}$

(B) $V_0^{3/2}$

(C) $V_0^{5/2}$

(D) $V_0^{7/2}$

10. In Montague-type fall

(A) a straight glacis is provided

(B) a circular glacis is provided

(C) a parabolic glacis is provided

(D) No glacis is provided

11. A deficit of sediments in flowing water may cause a river

(A) meandering type

(B) aggrading type

(C) degrading type

(D) subcritical type

12. The turbine suitable for low head and high-flow rate is

(A) Pelton wheel

(B) Francis

(C) Kalpan

(D) All of the above

13. The main overturning force in gravity dam is the

(A) weight of the dam

(B) water pressure

(C) wind pressure

(D) uplift pressure

14. Outlet discharge for a particular crop is given by

(A) area/outlet factor

(B) area × outlet factor

(C) outlet factor/area

(D) None of the above

15. Roadway width for National Highway and State Highway (two lanes) as per IRC is

(A) 7·5 m

(B) 10 m

(C) 12 m

(D) 15 m

16. Along a horizontal curve, if centrifugal force exceeds lateral friction, a vehicle may

(A) skid

(B) slip

(C) overturn

(D) None of the above

17. The distance travelled by a moving vehicle during perception and brake reaction time is known as

(A) sight distance

(B) stopping distance

(C) lag distance

(D) passing distance

18. The value of ruling gradient in plains as per IRC is

(A) 1 in 10

(B) 1 in 15

(C) 1 in 30

(D) 1 in 40

19. Abrasion test is conducted to find

(A) hardness of aggregates

(B) strength of aggregates

(C) toughness of aggregates

(D) durability of aggregates

20. The result of ring and ball test on bitumen is given in terms of

(A) viscosity

(B) time

(C) temperature

(D) flow

21. The number of vehicles moving in a specified direction on a roadway that pass a given point during specific unit of time is called

(A) traffic volume

(B) traffic density

(C) traffic capacity

(D) basic capacity

22. A road sign indicating 'no parking' is

(A) warning sign

(B) prohibitory sign

(C) mandatory sign

(D) informatory sign

23. The position of base course in flexible pavement is

(A) over the subbase

(B) below the subbase

(C) over the subgrade but below the subbase

(D) over the wearing course

24. Critical load position in a rigid pavement design is taken as

(A) interior loading

(B) edge loading

(C) corner loading

(D) All of the above

25. A bridge having its floor supported at the top of the superstructure is called

(A) through bridge

(B) deck bridge

(C) skew bridge

(D) semi-through bridge

26. In design of bridge, wind and —— loads shall not be considered to act simultaneously.

(A) lateral

(B) longitudinal

(C) centrifugal

(D) seismic

27. The phenomena in which the segregation of bitumen and aggregates takes place in the presence of moisture is called

   (A) streaking

   (B) slippage

   (C) stripping

   (D) rutting

28. Which method is accurate for forecasting population for sound and rapidly increasing city?

   (A) Arithmetical increase method

   (B) Geometrical increase method

   (C) Incremental increase method

   (D) Graphical method

29. Hydraulically for dry weather flow, the best sewer section is

   (A) circular

   (B) oval-shaped

   (C) V-shaped with circular invert

   (D) rectangular

30. Strainer-type tubewells are considered unsuitable for

   (A) coarse gravel

   (B) fine-grained strata

   (C) clean gravel

   (D) All of the above

31. The pH value of water for public supplies is limited from

   (A) 4·5 to 5·5

   (B) 5·5 to 6·5

   (C) 6·5 to 8·5

   (D) 8·5 to 10

32. The yield of rapid sand filter is —— to that of slow sand filter.

   (A) 10 times

   (B) 15 times

   (C) 20 times

   (D) 30 times

33. The colour of fresh sewage is

   (A) blue

   (B) green

   (C) pink

   (D) grey

34. Pump commonly used for lifting water in water supply mains is

   (A) axial-flow pump

   (B) centrifugal pump

   (C) reciprocating pump

   (D) rotary-type pump

35. A valve that allows the water to flow in one direction but prevents its flow in the reverse direction is known as

   (A) sluice valve

   (B) reflux valve

   (C) air-relief valve

   (D) pressure-relief valve

36. The distribution arms of large trickling filter units are rotated at speed of

   (A) $\frac{1}{3} - \frac{1}{2}$ r.p.m.

   (B) 1–2 r.p.m.

   (C) 2–4 r.p.m.

   (D) None of the above

37. The function of a trap is to

   (A) stop flow of sewage

   (B) avoid back flow of sewage

   (C) separate flow of liquids and solids

   (D) prevent the escape of foul gases inside and outside the house

38. Which process occurs in an Imhoff tank?

   (A) Sedimentation

   (B) Digestion

   (C) Combination of sedimentation and digestion

   (D) Filtration

39. For which angle of triangular notch the discharge over it is maximum?

   (A) 30°

   (B) 45°

   (C) 60°

   (D) 90°

40. Bernad's distribution graph is a plot of time on x-axis and

   (A) total run-off on the y-axis

   (B) run-off on the y-axis

   (C) percentage of total surface run-off on y-axis

   (D) percentage of total surface run-off during uniform time interval on y-axis

41. The time required by the rain-water to reach the outlet of drainage basin is generally called

   (A) duration of rainfall

   (B) time of concentration

   (C) time of overland flow

   (D) concentration time of overland flow

42. A 100-year flood is

   (A) one which occur after every 100 years

   (B) one which will occur on an average once in 100 years

   (C) one which can never occur twice in 100 years

   (D) one which cannot occur next year

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43. According to Khosla, the exit gradient of surface flow

(A) depends upon the b/d ratio

(B) is independent of the b/d ratio

(C) is independent of the depth of d/s cut-off walls

(D) None of the above

44. The discharge over a rectangular notch is

(A) inversely proportional to $H^{3/2}$

(B) directly proportional to $H^{3/2}$

(C) inversely proportional to $H^{5/2}$

(D) directly proportional to $H^{5/2}$

45. The main factor which affects infiltration capacity is

(A) thickness of saturated layer

(B) depth of surface retention

(C) soil moisture

(D) All of the above

46. For the growth of plants, the useful soil moisture is

(A) rainwater

(B) capillary water

(C) gravity water

(D) chemically treated water

47. An artesian aquifer is the one whose

(A) water surface under the ground is at atmospheric pressure

(B) water is under pressure between two impervious strata

(C) watertable serves as upper surface of zone of saturation

(D) None of the above

48. Which precipitation is caused by natural rising of warmer lighter air in colder and denser surroundings?

(A) Cyclonic precipitation

(B) Orographic precipitation

(C) Convective precipitation

(D) None of the above

49. The duty of irrigation water will be less if

(A) area irrigated is more

(B) water supply required is more

(C) water supply required is less

(D) None of the above

50. Lysimeter is used to measure

(A) infiltration

(B) evaporation

(C) evapotranspiration

(D) radiation

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