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Live Leak - Coal India Limited (CE)

2017 Model Question Paper based on

Predicted Pattern

Paper – 1

English Language

Q1. Fill in the blanks with the most appropriate word out of the four alternatives suggested below each question.

Many of us believe that science is something modern ______ the truth is otherwise.

- a) Unless
- b) Though
- c) If
- d) As if
- Q2. Fill in the blanks with the most appropriate word out of the four alternatives suggested below each question.

Manorama was exceptionally _____ in singing and dancing.

- a) Fluctuating
- b) Cooperative
- c) Accomplished
- d) Conducive
- Q3. In the question below, a part of the sentence is underlined. Below are given alternatives to the underlined part which may improve the sentence. Choose the correct alternative. In case

no improvement is needed choose 'No improvement'.

The dark rain clouds gathered in the city like a blanket of sadness.

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- a) gathered below
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- b) gathered over
- c) gathered on
- d) No improvement
- Q4. In the question below, a part of the sentence is underlined. Below are given alternatives to the underlined part which may improve the sentence. Choose the correct alternative. In case no

improvement is needed choose 'No improvement'.

She <u>bowed</u> to avenge the death of her lover.

- a) Wowed
- b) Vowed
- c) took a bow
- d) No improvement

Q5-9) Read the passage given below and then answer the questions given below the passage. Some words may be highlighted for your attention. Pay careful attention.

On account of the scatteredness of the share-holdings of private commercial banks as well as the limited amount of paid-up capital in relation to the total deposits, it is necessary to examine the ownership and control of private commercial banks in India. Here, it is necessary to distinguish between the persons who own shares in the banking companies and those who put their deposits in the banks. As we have seen the ratio of paid-up capital of the total number of deposits is extremely low. Consequently, the depositors have much higher stakes in the successful operations of private commercial banks, financially speaking, than the owners of share capital. Nevertheless, it is found, as already indicated above, that the ownership and control of the total finances of the banking system rests with very small number of persons who are able to determine the patterns of allocation and investment of bank finance according to their own individual interest and convenience.

With the present system of private ownership of banks, the security enjoyed by the depositors is considerably weakened since it rests on the ability and competence of those who control the allocation and investment of bank finances. But from the point



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of view of social justice and of encouragement of the confidence of depositors in the banking system, it is necessary that they should be ensured a complete security for their deposits with the banks which can be done only if the banking system was to be nationalised and the ownership of banks was to rest in the Government. This is because the first claim on the resources of a bank in case of its failure would be that of depositors and not of the owners of share capital, and this would be best ensured by a nationalised banking system.

While under any law the private banking institutions can go bankrupt, there is nothing like a phenomenon called government going bankrupt. Hence the interests of the depositors cannot be admittedly secured beyond any doubt whereas in case of private banking, insecurity can never be ruled out.

If ownership alone is to be the criterion it stands to reason to state that the depositors whose deposits are infinitely far greater in proportion to the total paid-up capital should be considered the legitimate owners of the banks rather than the market shareholders, and an ordinary depositor, in fact, exercises greater control over government and governmental activities than he can ever do in the case of private bank. Thus even from the point of view of exercise and control in the case of nationalized institution, the depositor will not be an invisible owner but an active participant in the exercise of control.

- Q5. Who have much higher stakes in successful operations of private commercial banks?
 - a) Depositors
 - b) Creditors
 - c) Shareholders
 - d) Governments
- Q6. Why has the security enjoyed by depositors weakened under the present system of private ownership of banks?
 - a) Any loan given out can be recalled as per the whims of bank owners.
 - b) The rate of interest has drastically reduced under private bank ownership.
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- c) The ownership and control of bank finances rests with a small group of people who can determine allocation and investment patterns as per individual interests, thereby affecting the general depositor in the long run.
- d) The ownership having become public has increased the interest rates for the depositors.
- Q7. Choose the correct meaning of the word 'encouragement' as highlighted in the paragraph in context to the whole from the given options.
 - a) Cheering
 - b) Pepping
 - c) Invigorating
 - d) Incitement
- Q8. What is best ensured under a nationalized banking system?
 - a) Higher interests rates translating to more profits for shareholders in banks.
 - b) In case of failure, depositors would have first claim on bank resources and not the owners of share capitals.
 - c) In case of failure, owners of share capital would have first claim on bank resources and not the depositors.
 - d) In case of failure, government will be able to bail out the bank in distress.
- Q9. According to the paragraph how can the depositor not be an invisible owner?
 - a) By buying shares ordinary depositors can stop being invisible owners.
 - b) Private Banks can hire ordinary depositors to list their views for bank management.
 - c) Ordinary depositors can leave their suggestions and comments in the boxes provided by private banks to play a more active role in bank management.
 - d) If banks are nationalized, ordinary depositors who exercise more control over government and its activities will cease to be invisible owners and become active participants.

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Q10-14) Directions: Below, a passage is given with five blanks labelled (A)-(E). Below the passage, five options are given for each blank. Choose the word that fits each blank most appropriately in the context of the passage, and mark the corresponding answer.

All along the south coast of Cape Wrath rose crumbling stone watchtowers, raised in ancient days to give warning of Dornish raiders ____(A) ____ in across the sea. Villages had grown up about the towers. A few had ____(B) ____ into towns.

The *Peregrine* made port at the Weeping Town, where the corpse of the Young Dragon had once ____(C) ____for three days on its journey home from Dorne. The **banners flapping from the town's stout wooden walls still displayed King Tommen's** stag-and-lion, suggesting that here at least the writ of the Iron Throne might still **hold sway. "Guard your ____(D) ___," Arianne warned her company** as they **disembarked. "It would be best if King's Landing never knew we'd passed this way." Should Lord Connington's re**bellion be put down, it would go ill for them if it was known that Dorne had sent her to treat with him and his pretender. That was another ____(E) ___ that her father had taken pains to teach her, 'choose your side with care, and only if it has the chance to win.'

Q10. Which of the following words most appropriately fits the blank labelled (A)?

- a) Running
- b) Stealing
- c) Arriving
- d) Conquering
- Q11. Which of the following words most appropriately fits the blank labelled (B)?
 - a) Proliferated
 - b) Sprouted
 - c) Degenerated
 - d) Flowered
- Q12. Which of the following words most appropriately fits the blank labelled (C)?

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- a) Swayed
- b) Jumped







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- c) Dangled
- d) Surfaced
- Q13. Which of the following words most appropriately fits the blank labelled (D)?
 - a) Noses
 - b) Ears
 - c) Tongues
 - d) Teeth

Q14. Which of the following words most appropriately fits the blank labelled (E)?

- a) Lesson
- b) Story
- c) Chapter
- d) Rhyme
- Q15. In the following question a short passage is given with one of the lines in the passage missing and represented by a blank. Select the best out of the five answer choices given, to make the passage complete and coherent.

The problems of child labour continue to pose a challenge for the nation. Government has been taking various pro-active measures to tackle this problem. However, considering the magnitude and extent the problem and that is essentially a socio-economic problem inextricably linked to poverty and illiteracy. ______. Still, the Government has been taking several steps to tackle this problem through strict enforcement of legislative provisions along with simultaneous rehabilitation measures. Yet, it will require concerted efforts from all sections of the society to make a dent in the problem.

- a) The Government has been successful in eliminating poverty in many areas.
- b) Thus, it is of no use to try and reach a solution to this issue without collective aid.
- c) As long as poverty continued, it would be difficult totally eliminate child labour.

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d) Many children consent to child labour on being forced by their parents.











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Q16. Complete the paragraph given below with a suitable sentence from among the given options.

Network neutrality advocates wanted to regulate broadband provides as public **utilities, a step known to insiders as 'reclassification'. They mounted a** successful lobbying campaign, submitting millions of comments to the agency urging a stronger stance. ______.

- a) They felt their priorities shifting when late last year President Barack Obama deflated the idea of reclassification.
- b) They gained an important ally in November when President Barack
 Obama endorsed reclassification.
- c) The stronger stance came at the price of increased scrutiny though, and it was found that much of the comments were simply copies of each other.
- d) There are, however, stronger cases to be made than reclassification, and this is what net neutrality advocates are failing to see right now.
- Q17. Complete the paragraph given below with a suitable sentence from among the given options.

It's difficult to imagine coins without a head and tail. And the very first tail was probably an owl. The Athenian Owl coin featured Athena's head on the front and an owl — a symbol of Athens and wisdom — on the back. The silver coin was very valuable and used internationally for large transactions. Starting in 512 BC, the coin had more than 400 years of active circulation, and that consistent use helped it come to represent coins in general.

- a) The coin was used very regularly in Athens and other parts of Greece as well.
- b) The coin is a symbol of Athens' and Sparta's enduring friendship.
- c) The silver coin, in fact, was so valuable that in many places it was more valuable than gold coins.
- d) Undoubtedly, its long tenure helped cement the idea of what the front and back of a coin should look like.
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Q18. Below is given a single word with options to its meaning in different contexts. You have to select all those options which are synonyms of the word when the context is changed. Select the correct alternative from (1), (2), (3), (4) and (5) which represents

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all those synonyms.

COMBAT

- (1) Battle
- (2) Alarm
- (3) Fight
- (4) Conflict
 - a) Only(A)
 - b) Both (A) and (D)
 - c) Only (B), (C) and(D)
 - d) Only (A), (C)and(D)
- Q19. Below is given a single word with options to its meaning in different contexts. You have to select all those options which are synonyms of the word when the context is changed. Select the correct alternative from (1), (2), (3), (4)and (5) which represents all those synonyms.

INTERDICT

- (1) Permit
- (2) Prohibit
- (3) Forbid
- (4) Ban
 - (a) Only C
 - (b) Only A
 - (c) B and C
 - (d) B, C and D
 - (e) All of the above
- Q20. Directions: The 1st and the last parts of the paragraph are numbered 1 and 6. The rest of the paragraph are split into four

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1. Typically, the personality and habits of a person are gauged by the kinds of friends he has.

P. However, as they say "opposites attract" so it is quite possible that we make friends of opposite nature by accident, chance or out of ignorance invalidating the above statement.

Q. Therefore, if a man has good, well behaved and respectable friends, he is adjudged to be a gentleman.

R. Usually a man seeks the company of like minded persons.

S. On the other hand, if his friends are not so reputable or have done anything **that society calls 'misbehavior', then he is considered to be a man of the same** character.

6. We need to judge people not by the company they keep but by their individual personalities.

- a) PQRS
- b) QRPS
- c) SRQP
- d) QSRP
- Q21. Directions: The 1st and the last parts of the paragraph are numbered 1 and 6. The rest of the paragraph are split into four parts and named P, Q, R and S. These four parts are not given in their proper order. Read the sentence/ paragraph and find out which of the four combinations is correct.

1. Obesity is caused by an excessive accumulation of fat in our body. It is the most prevalent medical problem having, a negative impact, in the world.

P. "Prevention is always better than a cure". If we are to overcome this, we need to look towards its roots in childhood.

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Q. Exercise, sports and changing our diet in our formative years is one way of





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fighting against this situation in later life.

R. Severe health complications like diabetes, high blood pressure, heart attack, and nervedamage,etc.are associated with obesity

S. A social stigma is attached to obese people, who often become a laughing stock when they are incapable, due to their excess weight, of performing any task independently.

6. Making it of utmost importance to create awareness about the serious repercussions in the minds of people of all ages.

- a) PQRS
- b) QRPS
- c) SRQP
- d) RPQS
- Q22. Directions: The 1st and the last parts of the paragraph are numbered 1 and 6. The rest of the paragraph are split into four parts and named P, Q, R and S. These four parts are not given in their proper order. Read the sentence/ paragraph and find out which of the four combinations is correct.

1. In Septembe<mark>r 1519 the Armada de Molucca of five ships and 250 sailors has set out from San lucar de Barrameda under the command of Fernando de Magellan.</mark>

P. It was to sail to the spice islands of the Malayan Archipelago where they were to exchange an assortment of bells, mirrors and scissors for cinnamon and cloves.

Q. In September 1522 Victoria was the sole survivor of the Armada.

R. It limped into the Spanish port San Lucar, manned by a skeleton crew of 15, so weak they could not talk.

S. Its cargo consisted of 38 sacks of spices and Magellan himself had been hacked to pieces on the beach of Mactan in the Phillipines.





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6. So contrary to popular belief it was the crew of the Victoria who were the first men to have sailed around the globe.

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- a) PQSR
- b) PSQR
- c) PRSQ
- d) PQRS
- Q23. Directions: The 1st and the last parts of the paragraph are numbered 1 and 6. The rest of the paragraph are split into four parts and named P, Q, R and S. These four parts are not given in their proper order. Read the sentence/ paragraph and find out which of the four combinations is correct.

1. The government of India directs substantial bank credit to what it deems are 'priority sectors' for the Indian economy.

P. In my view, a priority sector should be an area of market failure.

Q. Priority sectors include agriculture, small scale industries, housing, exports, etc.

R. Economics say that a market has failed when the market does not provide efficient outcomes for society.

S. It is not clear how sectors get identified for the priority tag, as there is no clearly articulated logic.

6. Markets fail for a variety of reasons.

- a) QSPR
- b) SPRQ
- c) QPRS
- d) QPSR
- Q24. Some parts of the sentence have errors and some are correct. Find out which part has an error and mark that part as your answer. If there are **no errors, mark option 4 'No error' as your answer.** No sooner did the rabbit come out of the bush when the hunter killed it.











- a) No sooner did the rabbit
- b) Come out of the bush
- c) When the hunter killed it.
- d) No error.
- Q25. Some parts of the sentence have errors and some are correct. Find out which part has an error and mark that part as your answer. If

there are no errors, mark option 4 'No error' as your answer.

'The Arabian Nights' are enjoyed by all kinds of readers.

- a) 'The Arabian Nights'
- b) Are enjoyed
- c) By all kinds of readers.
- d) No error.

Reasoning

- Q26. In the word 'DETERMINATION', how many pairs of letters are there, such that there are as many letters between them as in the English alphabet, (going only left to right)?
 - A. None
 - B. One
 - C. Two
 - D. More than two

Q27. Directions: In the following question, find the odd word from the given alternatives.

- A. Swimming
- B. Sailing
- C. Diving
- D. Driving

Q28. Directions: In the given question select the related numbers from the given alternatives.

17:24 :: 153:?

A. 216













- B. 218
- C. 198
- D. 213

Q29. Directions: In the following question, a series is given, with one termmissing. Choose the correct alternative from the given ones that will complete the series.

56, 90, 132, 184, 248, ____.

- A. 368
- B. 316
- C. 362
- D. 326

Q30. Which one of the sets of letters when sequentially placed at gaps in the given letter series shall complete it?

aba_baca_ba_bacaabac_aca

- A. cacb
- B. ccab
- C. cabc



Q31. Directions: Find the missing letter from the given responses. AGM, BHN, CIO, ?

- A. COU
- B. FQK
- C. DJP
- D. QXD

Q32. In a code language the following alphabets are coded in a particular way

A B C D E M NOS R U

Which word can be decoded from the following?



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A. BOUND		

- B. BONUS
- C. BUNCH
- D. BOARD

Q33. If PALE is coded as 2134, EARTH is coded as 41590, how is PEARL coded in that code?

- A. 29530
- B. 24153
- C. 25413
- D. 25430

Q34. If BILLION is written as IBLLOIN, how will CLINTON be coded?

- A. TLINCON
- B. NITLNOC
- C. LCNIOTN
- D. NLITONC

Q35. If 'room' is called 'chair', 'chair' is called 'bed', 'bed' is called 'table' and 'table' is called 'house', what would you sleep on?

- A. Chair
- B. Bed
- C. Table
- D. House

Q36. A man standing at point P, walks to point Q, located 10km away from point P in south direction. He takes a right turn from Q and reaches point R after 5km. He turns to his right from R and covers 10km and turns left at point S. He moves in left direction from S and stops at point T after 10km. Find distance between his initial and final point.

- A. 5km
- B. 10km







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- C. 20km
- D. 15km

Q37. Pointing towards a photograph, Gurneet said, "I am the only daughter of her father's one of the daughters." How is the person in the photograph related to Gurneet"?

- A. Mother
- B. Aunt
- C. Mother or Aunt
- D. Cousin

Q38. If '+' means ' × ', '-' means ' \div ', ' × ' means '-' and ' \div ' means '+' then what will be the value of 16 \div 64 - 8 × 4 + 2?

- A. 12
- B. 24
- C. 16
- D. 18

Q39. Find the number that is common for all the clues given below:

- I) Virgo
- II) Volleyball
- III) A highest scoring shot of a particular sport
- IV) Extra sensory perceptions.
- A. 8
- B. 4
- C. 2
- D. 6

Q40. Which interchange of the signs would make the equation correct?

 $5 + 3 \times 8 - 12 \div 4 = 3$

- Q41-Q46). Directions: Study the following information carefully and answer the questions given below:
- B, M, K, H, T, R, D, W and A are sitting around a circle facing at the centre. R is third to the right of B. H is second to the right of A who is second to the right of R. K is









third to the right of T who is not an immediate neighbour of H. D is second to the left of T. M is fourth to the right of W.

- Q41. Who is third to the left of M?
 - A. B
 - B. W
 - C. K
 - D. R
- Q42. Who is to the immediate left to W?
 - A. R
 - B. T
 - C. B
 - D. Data inadequate

Q43. There are five friends Suresh, Kaushal, Madhar, Amit and Ramesh. Suresh is shorter than Kaushal but taller than Ramesh. Madhur is the tallest. Amit is a little shorter than Kaushal but little taller than Suresh. If they stand in the order of their heights, who will be the shortest?

- A. Amit
- B. Madhur
- C. Ramesh
- D. Kaushal

Q44. Shahrukh speaks truth only in the morning and lies in the afternoon, whereas Salman speaks truth only in the afternoon. A says that B is Shahrukh. Is it morning or afternoon and who is A - Shahrukh or Salman?

- A. Shahrukh, afternoon
- B. Salman, afternoon
- C. Shahrukh, morning
- D. Either 1 or 2

Q45. Anna is 300 days older than Varun and Sandeep is 50 weeks older than Anna. If Sandeep was born on Tuesday, on which day was Varun born?

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- A. Tuesday
- B. Monday











- C. Wednesday
- D. Thursday

Q46. Which one of the areas marked I – VII represents the urban educated who are not hardworking?



- Α. Β. 11
- C. I

D. IV

Q47. Some statements are given followed by three conclusions I, II and II. You have to consider the statements to be true, even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusion if any, follow from the given statements. Indicate your answer.

Statements:

All chickens are birds.

Some chickens are hens.

Female birds lay eggs.

Conclusion:

I. All birds lay eggs.

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- II. Some hens are birds.
- III. Some chickens are not hens.
 - A. All conclusions I, II and III follow















- B. Only conclusion I follow.
- C. Only conclusion II follows.
- D. Conclusion II and III both follow.

Q48. If a mirror is placed on the line MN, then which of the answer figures is the right image of the question figure?



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Q49. Directions: In question, one statement(s) is followed by two conclusions/assumptions, I and II. You have to consider the statement(s) to be true, even if they seem(s) to be at variance from commonly known facts. You have to decide which of the given conclusions/assumption if any, follows from the given statement(s).

Statement: A car had driven off the road and hit a tree. The driver was efficient enough. The road was not good. The driver drove the car for last fifteen years.

Conclusion:

- I. The accident occurred due to bad condition of road.
- II. There was a mechanical fault in the car.
 - A. Only conclusion I is true.
 - B. Only conclusion II is true.
 - C. Both the conclusions can be true.
 - D. None of the conclusions can be true.

Q50. Directions: In the following question, a statement is given followed by two conclusions/assumptions. You have to consider the statement to be true even if it seems to be at variance from commonly known facts. You have to decide which of the given conclusions/assumptions, if any, follow from the given statement.

Statement: If people are intelligent they should be creative. Assumptions:

I. Creativity and intelligence are related.

- II. Creative people are intelligent.
- A. Both assumptions I and II are invalid.
- B. Only assumption I is valid.
- C. Only assumption II is valid
- D. Both assumptions I and II are valid.

<u>Quantitative Aptitude</u>









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- a) 18.3 litres
- b) 16.2 litres
- c) 15.6 litres
- d) 21.5 litres

Q52. Milk and water in two vessels A and B are in the ratio of 3 : 7 and 3 : 2 respectively. In what ratio the liquid of both the vessels should be mixed to get a new mixture in vessel C having milk and water in the ratio 1 : 2?

- a) 8:9
- b) 2:5
- c) 3:10
- d) 8:1

Q53. The ratio of number of boys and girls in a school is 2 : 3. If 30% of the boys and 40% of the girls are scholarship holders, then what is the percentage of those students who do not get scholarship?

- a) 42%
- b) 48%
- c) 56%
- d) 64%

Q54. Aditya and Bimal are partners in a firm out of which Aditya is Sleeping partner and Bimal is working partner. Aditya invests Rs. 60, 000 and Bimal invests Rs. 50, 000. Bimal receives 12.5 % of profit for managing the business and balance is shared betwe**en them in ratio of their investments. Bimal's share of** profit in profit of Rs. 8800 is

- a) 3500
- b) 3750
- c) 4200
- d) 4600





Q55. The volume of the metal of a cylindrical pipe is 748 cm³. The length of the pipe is 14 cm and its external radius is 9 cm. Its thickness is (Take $\pi = \frac{22}{7}$)

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- a) 1 cm
- b) 5.2 cm
- c) 2.3 cm
- d) 3.7 cm

Q56. A man spends his three months' income in four months' time. If the monthly income is Rs. 2,000, then what is the amount of the money he saves annually

- a) Rs. 3,000
- b) Rs. 4,000
- c) Rs. 6,000
- d) Rs. 9,000

Q57. A train overtakes two persons who are walking in the same direction in which the train is running, at the rate of 2 kmph and 4 kmph and passes them completely in 9 and 10 seconds respectively. The length of the train (in metres)

- a) 72
- b) 45
- c) 54
- d) 50

Q58. Supravat deposited a sum of money with a bank on 1st January, 2016 at 5% simple interest per annum. He received an amount Rs. 3, 750 on 20th July, 2016. The money he deposited with the bank was

- a) Rs. 3,080
- b) Rs. 2,550
- c) Rs. 3,650
- d) Rs. 3,200

Q59. If $\sec^2\theta + \tan^2\theta = 5/3$, then the value of θ , when $0^\circ \le \theta \le 90^\circ$, is

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- a) 60°
- b) 30°
- c) 0°







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d) 90°

Q60. A water reservoir has two inlets and one outlet. Through the inlet it can be filled in 3 hours and 3 hours 45 mins respectively. It can be emptied completely in 1 hour by the outlet. If the two inlets are opened at 2 pm and 3 pm respectively and the outlet at 4 pm, then it will be emptied at

- a) 6:30 pm
- b) 6 pm
- c) 6:20 pm
- d) 6:55 pm

Q61. If
$$x + \frac{1}{x} = 3$$
, then the value of $x^5 + \frac{1}{x^5}$ is

- a) 132
- b) 110
- <mark>c)</mark> 122
- d) 123

Q62. A donor has 945 notes of Rs.50 and 2475 notes of Rs.10. He divides them into envelopes, keeping both notes separate and having the same number of notes in each envelope. If these envelopes contain as many notes as possible, then the maximum number of notes in each envelope and total number of envelope required for the purpose are respectively

- a) 15 and 228
- b) 9 and 380
- c) 45 and 76
- d) 46 and 75

Q63. PQ is a tower with Q on the ground. The angle of elevation of P form A is x° such that tan $x^{\circ} = 3/4$ and AQ = 300m. The angle of elevation of P from a nearer point B is y° with BQ = 225 m. The value of y° is:

- a) 30°
- b) 60°
- c) 45°
- d) 75°





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Q64. If the difference between areas of the circumcircle and in-circle of an equilateral triangle is 44 cm², then the area of the triangle is (Take $\pi = \frac{22}{7}$)

- a) 28 cm²
- b) $7\sqrt{3} \text{ cm}^2$
- C) $14\sqrt{3}$ cm²
- d) 21 cm²

Q65. In how many ways can the letters of word OLIVER be arranged so that the vowels in the word always occur in the dictionary order as we move from left to right?

- a) 24
- b) 60
- c) 120
- d) 90

Q66. A vendor purchased 40 dozen bananas for Rs. 300. Out of these 30 bananas were rotten and could not be sold. At what rate per dozen should he sell the remaining bananas to make a profit of 25%

- a) Rs. 8
- b) Rs. 6
- c) Rs. 10
- d) Rs. 12

Q67. The sides of a triangle in decreasing order are in the ratio $\frac{1}{3}:\frac{1}{x}:\frac{1}{5}$. The perimeter of the triangle is 94cm. The length of the shortest side is 24cm. Value of x is: (where x is an integer)

- a) 3
- b) 4
- c) 5
- d) 6

Q68. A village road is to be constructed by a team of 350 workers. After 14 days it was found that only 2/9th part of the work was completed. To complete the rest in another 35 days. How many more workers should be employed?

a) 150 workers











- b) 152 workers
- c) 125 workers
- d) 140 workers

Q69. The number of sides in two regular polygons are in the ratio 5 : 4 and the difference between each interior angle of the polygons is 6°. Then the number of sides are

- a) 15,12
- b) 30,24
- c) 10, 8
- d) 20,16

Q70. If I walk at 5 km/hr, I miss a train by 7 minutes. However, if I walk at 6 km/hr I reach the station 5 minutes before the departure of the train. The distance between my house and the station is

- a) 5 km
- b) 6.5 km
- c) 7 km
- d) 6 km

Q71-Q75). Study the following graph carefully and answer the question that follow:



GET ENTIRE TEST SERIES AT USE CODE COAL INDIA MT testbook **FLAT 50%** CILMT50 Population of Cities A and B in Different Years (in thousand) ■A ■B 80 70 Population (in thousand) 70 65 65 60 60 60 50 50 50 50 45 40 40 30 20 10 0 2006 2007 2008 2009 2010 Years

Q71. What is ratio of the sum of the population of city 'A' in 2007 and 2010 to the population of city 'B' in 2006?

- a) 5:6
- b) 2:7
- c) 1:3
- d) 5:2

Q72. What was the percentage increase in the population of city 'A' from 2007 to 2008?

- a) 30%
- b) 25%
- c) 20%
- d) 50%

Q73. What was the percentage increase in city 'B' from 2006 to 2010?

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- a) 50%
- b) 75%
- c) 38%
- d) 45%



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Q74. For the given period what was the average population of city B (in thousands)?

- a) 57
- b) 51
- c) 59
- d) 63

Q75. What was the ratio of the average population of city 'B' in 2006, 2008 and 2009 to average population in 2009 and 2010 of city 'A'?

- a) 61:32
- b) 41:47
- c) 70:69
- d) 81:103

General Awareness

Q76. Losar Festival marks the celebration of New Year is celebrated in which part of the country?

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- a) Jammu & Kashmir
- b) Arunachal Pradesh
- c) Meghalaya
- d) Mizoram

Q77. ISKCON's Govardhan village is located in which state?

- a) Gujarat
- b) Madhya Pradesh
- c) Maharashtra
- d) Telangana
- Q78. Mahakaruna Divas was recently celebrated in
 - a) Mumbai
 - b) Leh
 - c) Gangtok
 - d) Ahmedabad









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Q79. Which state government has announced a new legislation to deduct the salary of government employees who failed to take care of their elderly parents?

- a) Assam
- b) West Bengal
- c) Rajasthan
- d) Kerala

Q80. Bhitarkanika national park is located in which state?

- a) Maharashtra
- b) Bihar
- c) West Bengal
- d) Odisha
- Q81. Center of Excellence for Para Sports will be built in which state?
 - a) Gujarat
 - b) Maharashtra
 - c) Bihar
 - d) Uttar Pradesh
- Q82. Moon Express has recently become the first private entity to secure funding for its moon exploration program. Which of the given fact/s is/are false?

(i) It has raised \$20 million in funding.

(ii) It will send its space vehicle in 2017.

(iii) It is one of 17 teams that have competed for funding as part of Google's

Lunar X Prize initiative.

(iv) Only three countries have landed spacecraft on the moon.

- a) Only i
- b) i, ii and iv
- c) Both ii and iii
- d) Only iii
- Q83. Which of the following countries was the largest recipient of remittances in 2016?

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- a) USA
- b) India













- c) Saudi Arabia
- d) China

Q84. National Capital Region of India consists of how many states?

- a) 3
- b) 4
- c) 5
- d) 6

Q85. Mumbai city was built combining how many islands?

- a) 7
- b) 8
- c) 10
- d) 6

Q86. In which South Indian state is the Mullaperiyar dam situated?

- a) Orissa
- b) Andhra Pradesh
- c) Kerala
- d) Karnataka

Q87. Where amongst the following would you find 'Terra rossa'?

- a) Hot area
- b) Red terrain
- c) Lateritic region
- d) Region near to the poles

Q88. Through which continent does both Tropic of cancer and Capricorn run?

- a) Australia
- b) Africa
- c) South America
- d) North America
- Q89. The controversial Ilbert Bill of 1883 in British India was introduced by
 - a) Courtenay Ilbert
 - b) Lord Lytton
 - c) Lord William Bentinck





GET ENTIRE TEST SERIES AT USE CODE COAL INDIA MT testbook **FLAT 50%** CILMT50 d) Marquess of Ripon Q90. Simon Commission was set up to inquire which of the following Acts under the British Rule? a) Govt. of India Act, 1935 b) Govt. of India Act, 1907 c) Govt. of India Act, 1929 d) Govt. of India Act, 1919 Q91. Muslim invasion began in India with which of the following rulers? Changez Khan a) b) Muhammad Ghori c) Mahmuh Ghazni d) Siraj-ud-daulah Q92. Rath temples at Mahabalipuram were built in the reign of which Pallava ruler? a) Mahendravarman I b) Narashinghavarman c) Parameshwarvarman I d) Nandivarman I Q93. Which of the following articles prohibits discrimination on the grounds of religion, race, sex, caste? a) Article 15 b) Article 16 c) Article 17 d) Article 18 Q94. Erythrocytes are another name for a) White Blood Cells

- b) Red Blood Cells
- c) Central Nervous Tissues
- d) Chromosomes
- Q95. What is the escape velocity of Earth?
 - a) 20000 km/h
 - b) 40000 km/h















- c) 30000 km/h
- d) 25000 km/h
- Q96. Indian Neutrino Observatory is located in which state?
 - a) Gujarat
 - b) Karnataka
 - c) Tamil Nadu
 - d) None of the above
- Q97. Which is the chief constituent of Gobar Gas?
 - a) Methane
 - b) Chlorine
 - c) Propane
 - d) Ethane
- Q98. Which of the following is a constellation?
 - a) Ursa Major
 - b) Andromeda
 - c) Sirius
 - d) Charon

Q99. Which of the following makes up about 84% of earth's surface?

- a) Mantle
- b) Crust
- c) Core
- d) None of the above

Q100. Out of the following diseases which ones are caused by a virus?

- a) Chickenpox
- b) SARS (Severe acute respiratory syndrome)
- c) Influenza
- d) All of the above















Paper – 2

Civil Engineering

Q1. Which of the following types of lime is used for plastering and white washing?

- a) Quick lime
- b) Slaked lime
- c) Hydraulic lime
- d) Fat lime

Q2.In paints, methylated spirit, naphtha and turpentine are used as:

- a) Base
- b) Binder
- c) Solvent
- d) Extender

Q3. Fine sand has a fineness modulus in the range of:

- a) 2.0 2.4
- b) 2.2 2.<mark>6</mark>
- c) 2.6 2.9
- d) 2.9 3.2

Q4. Quartzite and marble are by nature:

- a) Volcanic
- b) Plutonic
- c) Sedimentary
- d) Metamorphic

Q5. The plasticity to mould bricks in suitable shape is contributed by:

- a) Alumina
- b) Lime
- c) Magnesia
- d) Silica
- Q6. The object of curing is not to:
- a) Prevent the loss of water by evaporation.
- b) Reduce the shrinkage of cement concrete.
- c) Preserve the properties of concrete.













d) Reduce the properties of concrete.

Q7. Air entrainment in the concrete cause:

- a) Decrease in durability and plasticity
- b) Decrease in Strength
- c) Decrease in Freeze and Thaw resistance
- d) Increase in the unit weight

Q8. Basalt stone is by nature:

- A) Metamorphic
- B) Volcanic
- C) Plutonic
- D) Sedimentary

Q9. An aggregate is known as cyclopean aggregate if its size is more than:

- A) 75 mm
- B) 4.75 mm
- C) 30 mm
- D) 60 mm

Q10. How many days, a timber may require for natural seasoning?

- a) 20 mon<mark>ths</mark>
- b) 4-6 months
- c) 1 year
- d) 2 years

Q11. The ratio of tangential shrinkage to linear shrinkage of wood due to reduction in moisture content is

- a) In the range from 3.1 to 5.1
- b) In the range from 40 to 60
- c) In the range from 1 to 2
- d) Less than or equal to 1

Q12. Consider the following air pollutants:

- 1. Nox
- 2. PAN
- 3. CO2
- 4. CO

Which of the above air pollutants is/are present in an auto exhaust gas?

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- a) 1 only
- b) 1 and 2

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c) 2 and 3

d) 1, 3 and 4

- Q13. Total number of elastic constant of an orthotropic material are:
- a) 2
- b) 5
- c) 9
- d) 21

Q14. Timber can be made reasonably fire – resistant by:

- a) Soaking it in Ammonium Sulphate
- b) Coating with Tar paint
- c) Pumping creosote oil into timber under high pressure
- d) Seasoning process

Q15. Blast furnace slag has approximately:

- a) 45% calcium oxide and about 35% silica
- b) 50% alumina and 20% calcium oxide
- c) 25% magnesia and 15% silica
- d) 25% calcium sulphate and 15% alumina

Q16. The rate of heat of hydration of the four Bogue compounds in ascending order is

- a) C₂S, C₃S, C₃A, C₄AF
- b) C3S, C3A, C2S, C4AF
- c) C₄AF, C₃A, C₂S, C₃S
- d) C₄AF, C₃A, C₃S, C₂S

Q17. Bangalore and Indore process of composting are which of the following?

- a) Both anaerobic processes.
- b) Both aerobic processes.
- c) Anaerobic process and aerobic process respectively.
- d) Aerobic process and anaerobic process respectively.

Q18. The purpose of intermediate stiffeners in a plate girder is to:

- A) Prevent buckling of web plate
- B) Reduce the shear stress
- C) Take care of bearing stress
- D) Increase the moment carrying capacity of the girder
- Q19. Web crippling in beams generally occurs at the points where:
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- a) Concentrated loads act.
- b) Bending moment is maximum.
- c) Shear force is maximum.
- d) Deflection is maximum.

Q20. Consider the following statements about the characteristics of contours:

- 1. Closed contour lines with higher values inside show a lake.
- 2. Contour is an imaginary line joining points of equal elevations.
- 3. Closely spaced contours indicates steep slope.
- 4. Contour lines can cross each other in case of an overhanging cliff.
- Which of these statements are correct?
- a) 2, 3 and 4
- b) 1 and 2 only
- c) 1 and 4
- d) 1, 2 and 3
- O21. A rectangular plot of 16km² in area is shown on a map by a similar rectangular area of 1cm². R. F. of the scale to measure a distance of 40 km will be:



Q22. Which of the following is a serviceability criteria in the design of steel structure? a) Stability against overturning

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- b) Sway Stability
- c) Fire resistance
- d) Fatigue

Q23. Where should splices be provided in the columns?

- a) At the floor levels
- b) At the mid height of columns
- c) At the beam-column joints
- d) At one-fourth height of columns

Q24. Why are tie plates provided in laced columns?

- a) To check the buckling of column as a whole.
- b) To check the buckling of the lacing flats.
- c) To check the buckling of the component columns.











d) To check the distortion of the end cross sections.

Q25. Lug angles:

- a) Are necessarily unequal angles.
- b) Are always equal angles.
- c) Increase the shear resistance of joint.
- d) Reduce the length of joint.

Q26. In reinforced and plan concrete footing resting on soils, the thickness at edge shall not be less than:

- a) 30 cm
- b) 50 cm
- c) 15 cm
- d) 25 cm

Q27. For a tachometer, the additive and multiplying constants are respectively: a) 100 and 0

- b) 0 and 100
- c) 0 and 0
- d) 100 and 100

Q28. Doglegged stairs are:

- a) Quarter <mark>turn stairs</mark>
- b) Three quarter turn stairs
- c) Half turn stairs
- d) Straight stairs

Q29. A block of mass m, side 'a' as shown in figure. A force P at an angle 45° is applied

at edge A. What is the magnitude of force P so that block is just lifted from roller D?







Q30. A mass of 60 kg is supported on the ground. It is tied to a rope through a spring of stiffness 10 N/mm. At the end of the rope a force of 200 N is applied as shown in figure. What is reaction of the ground on the mass, $g = 9.8 \text{ m/s}^2$?



A block weighing 200 N is lying on floor. A pushing force P is applied on block. Find the value of P so that block starts sliding

- a) 37.5 N
- b) 47.5 N
- c) 57.5 N
- d) 67.5 N
- Q32. Consider the vehicle with 2 sets of wheels: driving wheel (rear side) and rear wheels (front side). Which of the statements are correct?





- a) Friction on driving wheels acts towards right.
- b) Friction on driven wheels act towards left
- c) If road is smooth, the wheels will simply rotate but do not move forward.
- d) All of above

Q33. A triangle ABC, with base b and height h is shown in figure. What is the ratio of









- A uniform ladder of length L and weight 100 N rests on smooth floor and against a vertical wall. A horizontal rope CD prevents it from slipping. What is the tension in rope?
- a) 70.7 N
- b) 80.6 N
- c) 100 N
- d) 141.4 N



Q35. The total deflection of stepped bar due to self-weight as shown in figure is

- Q36. The normal annual rainfall at stations A, B, C and D in a basin are 72, 70, 64 and 90 cm respectively. In the year 2010, the station D was inoperative and



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stations A, B and C recorded annual perceptions of 90, 70 and 80 cm respectively. What was the rainfall at station D in that year?

a) 90 cm

- b) 100 cm
- c) 95 cm
- d) 105 cm

Q37. The interception loss expressed as a percentage of rainfall:

- a) Increases with increase in the rainfall and reaches an asymptotic value
- b) Decreases with increase in rainfall to reach an asymptotic limit
- c) Is independent of rainfall magnitude
- d) Is constant for small values of rainfall but decreases for higher rainfall values.
- Q38. The slope at the supports of a simply supported beam loaded as in the given figure will be given by



Q39. In an indeterminate structure, when there is no lack of fit, the partial derivative of strain energy with respect to any of the redundant:

- a) Is zero
- b) Will give deflection in the direction of redundant
- c) Will give slope in the direction of redundant is maximum
- d) Is maximum

Q4O. The reaction locus in a two – hinged semi-circular arch is: a) Circle











b) Parabola

- c) Straight line
- d) Hyperbola
- Q41. A Three hinged symmetric parabolic arch is hinged at the spring and at the crown. The span and rise are 40 m and 10 m respectively. The left half of the arch is loaded with UDL of 3t/m. The horizontal thrust at the springing will be
- a) 15 t
- b) 20 t
- c) 30 t
- d) 40 t
- Q42. A fixed end beam carries a load W and clock wise moment WL at length 'X' from one the fixed ends. Then the value of 'X' such that the moment at one of the end is zero, will be



Q43. The overhang length (in the figure below) to make the slope at propped end zero, will be



Q44. What is the degree of indeterminacy of the frame shown in the figure given below?



- Q46. For a linear elastic frame, if stiffness matrix is doubled with respect to the existing stiffness matrix, the deflection of the resulting frame will be
- a) Twice the existing value
- b) Half the existing value
- c) The same as existing value
- d) Indeterminate value
- Q47. A steel plate is bent into a circular arc of radius 10 m. Modulus of elasticity of steel is 2×10^3 t/cm². If the plate sections were 12 cm wide and 2 cm thick, then the maximum stress induced in the plate will be











a) 4 t/cm²

- b) 2 t/cm²
- c) 1 t/cm²
- d) 0.5 t/cm²
- Q48. A uniform bar, circular in cross section, when simply supported on a span of one metre, is found to deflect one cm due to a central load of 960 kg. Its self-weight **is negligible. Euler's critical load one the bar when used in a column two metres** long with pinned ends will be
- **a) 400** π^{2} kg
- **b) 500** π^2 kg
- **c) 1000** π² kg
- **d) 2000** π^{2} kg
- Q49. Two solid shafts A and B of different materials are rigidity fastened together and attached to rigid support 3/ metre a part, as shown in figure. The ratio of resisting torque of shaft A and B when $G_B = 2G_A$ is



Q50. Consider a propped cantilever beam ABC under two loads of magnitude P each as shown in the figure below. Flexural rigidity shown in the figure below. Flexural rigidity of the beam is E*I*.





Q51. The ratio of thickness of thin cylindrical shell to the thickness of its Hemispherical (cylinder with its hemispherical end) for a pressure vessel subjected to internal fluid pressure so that the junction failure will not occur is:



d) $\frac{\mu}{2-\mu}$

Q52. In a PERT network, the expected time to finish one activity is 22 days and variance of the activity is 16 days. What will be the ratio of pessimistic time to optimistic time if most likely time for finishing the activity is 23 days.

- a) 4
- b) 6
- c) 4/3
- d) 5/2

Q53. The natural void ratio of a sand sample is 0.6 and its density index is 0.6. If its void ratio in the loosest state is 0.9, then the void ratio in the densest state will be

- a) 0.2
- b) 0.3
- c) 0.4
- d) 0.5

Q54. The net ultimate bearing capacity of a purely cohesive soil

- a) Depends on the width of the footing and is independent of the depth of the footing
- b) Depends on the width as well as the depth of the footing
- c) Depends on the depth, but is independent of the width, of the footing
- d) Is independent of both the width and the depth of the footing

Q55. Consider the following statements:

Increasing width of footing results in:









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- i. Increase in settlement of a consolidating clay layer
- ii. Increase in bearing capacity of sandy soils
- iii. Decrease in bearing capacity of clays

Which of these statements is/are correct?

- a) 1 only
- b) 1 and 2 only
- c) 2 and 3 only
- d) 1, 2 and 3

Q56. If the average daily water consumption of a city is 24000 cum, the peak hourly demand (of the maximum day) will be

- a) 1000 cum/hr
- b) 1500 cum/hr
- c) 1800 cum/hr
- d) 2700 cum/hr

Q57. The total water requirement of a city is generally assessed on the basis of

- a) Maximum hourly demand
- b) Maximum daily demand + fire demand
- c) Average daily demand + fire demand
- d) Greate<mark>r of (a) and (b)</mark>

Q58. As compared to the geometrical increase method of forecasting population, the arithmetical increase method gives.

- a) Lesser value
- b) Higher value
- c) Equal value
- d) May vary as it may depend on the population figures

Q59. Match List – I (Parameter) with List – II (Impact) and select he correct answer using the codes given below the lists:

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List – I

- A. Excess sulphates
- B. Lack of iodide
- C. Excess hardness
- D. Excess dissolved oxygen

List – II

- 1. Greater soap consumption
- 2. Laxative effect
- 3. Goitre
- 4. Corrosion of pipes











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Codes:

- a) A 2, B 1, C 3, D 4
- b) A-4, B-3, C-1, D-2
- c) A − 2, B − 3, C − 1, D − 4
- d) A 4, B 1, C 3, D 2

Q60. The treatments which are generally given to treat raw water supplies, follow the sequence

- a) Screening, sedimentation, disinfection, filtration
- b) Screening, sedimentation, filtration, disinfection
- c) Screening, sedimentation, disinfection, aeration
- d) Screening, sedimentation, coagulation, disinfection

Q61. The ratio of minimum hourly flow to the average flow of sewage, is

- a) 1/3
- b) ½
- c) 2/3
- d) 3

Q62. The value of the coefficient of runoff for perfectly impervious areas, tend to:

- a) Zero
- b) 0.5
- c) 1.0
- d) Infinity

Q63. The specific gravity of sewage is

- a) Zero
- b) Slightly less than 1
- c) Equal to 1
- d) Slightly greater than 1
- Q64. The settling velocity of inorganic particles of less than 0.1 mm dia., varies with the dia (d), in proportion to:
- a) d³
- b) d²
- c) d
- d) None of them, as diameter does not affect the settling velocity

Q65. Gases, which are generally evolved during aerobic decomposition of sewage, are:

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a) $\frac{\text{CO}_2 + \text{NH}_3 + \text{H}_2\text{S}}{45 \mid \text{P a g e}}$











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- b) $CO_2 + NH_3 + H_2S + CH_4$
- c) $CO_2 + NH_3 + SO_2$
- d) $CO_2 + NH_3 + SO_2 + CH_4$

Q66. The most significant primary gaseous pollutant, found in vehicular emissions, is

- a) CO
- b) benzene
- c) SO₂
- d) O3
- Q67. The ratio of permissible shear stress in limit state method of design and working stress method of design is
- a) 25 : 16
- b) 5:4
- c) 16:25
- d) 4:5

Q68. The contribution of bent up bars towards shear resistance shall not be more than

- a) 50% of total shear reinforcement
- b) 40% of total shear reinforcement
- c) 55% of total shear reinforcement
- d) 30% of total shear reinforcement

Q69. A beam of rectangular cross-section ($b \times d$) is subjected to a torque T. What is the maximum torsional stress induced in the beam (b > d and α is a constant)?

- a) $\frac{T}{\alpha b^2 d}$
- b) $\frac{T}{T}$
- $(D) \frac{\alpha b d^2}{T}$
- C) $\frac{1}{\alpha b d}$
- d) $\frac{T}{bd}$
- Q70. The minimum cover in a slab should neither be less than the diameter of bar nor less than
- a) 10 mm
- b) 15 mm
- c) 25 mm
- d) 13 mm









Q71. The ratio of the maximum and minimum percentage of longitudinal reinforcement that can be provided in a column is

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- a) 6
- b) 7.5
- c) 5
- d) 8

Q72. In the context of collecting undisturbed soil samples of high quality, following statements are made:

- 1. Area ratio should be less than 10%
- 2. Clearance ratio should be less than 1%

With reference to above statements, which of the following applies?

- a) Both the statements are true
- b) Statements 2 is true but 1 is false
- c) Statement 1 is true but 2 is false
- d) Both the statements are false

Q73. The number of blows observed in a Standard Penetration Test (SPT) for different penetration depths are given as follows:

Penetration of sampler	Number of blows	
0 – 150 mm	6	
150 – 300 mm	8	
300 – 450 mm	10	

The observed N value is

- a) 8
- b) 14
- c) 18
- d) 24
- Q74. Two footing, one circular and the other square are founded on the surface of a purely cohesion less soil. The diameter of the circular footing is same as that of the side of the square footing. The ratio of their ultimate bearing capacities is
- a) 3/4
- b) 4/3
- c) 1.0
- d) 1/3



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- Q75. If σ_h , σ_v represent the total horizontal stress, total vertical stress on a soil element, respectively, and σ'_h and σ'_h represent the effective horizontal stress, effective vertical stress respectively, the coefficient of earth pressure at rest for saturated soil is given by:
- a) $\frac{\sigma_h}{\sigma_v}$

- b) $\frac{\sigma'_h}{\sigma'_v}$ c) $\frac{\sigma_v}{\sigma_h}$
- d) $\frac{\sigma'_v}{\sigma'_h}$
- Q76. In desire-line diagram:
- a) Width of desire-line is proportional to the number of trips in one direction.
- b) Length of the desire-line is proportional to the number of trips in both directions.
- c) Width of desire-line is proportional to the number of trips in both directions.
- d) Both length and width of desire-line are proportional to the number of trips in both directions.
- Q77. A typical Marshall test graph is shown in the given figure. The variable on the X-axis is % binder content by weight of total mix. The variable on the Y-axis for the given graph will be:

a) Stability value

- b) Flow value
- c) Percentage of voids
- d) Unit weight
- Q78. Given that
- r = radius of load distribution
- E = modulus of elasticity of concrete

×Х

- K = modulus of subgrade reaction
- μ = Poisson's ratio of concrete







USE CODE



- h = thickness of slab
- P = wheel load

The combination of parameters required for obtaining the radius of relative stiffness of cement concrete slab is

- a) Ε, Κ, μ, r
- b) h, K, μ, r
- c) Ε, h, K, μ
- d) Ρ, h, K, μ
- Q79. It was noted that on a section of road, the free speed was 80 kmph and the jam density was 70 vpkm. The maximum flow in vph that could be expected on this road is
- a) 800
- b) 1400
- c) 2800
- d) 5600

Q80. Which of the criteria given below are used for the design of valley vertical curves on roads?

- 1. Rider Co<mark>mfort</mark>
- 2. Headlight Sight Distance
- 3. Drainag<mark>e</mark>

Select the correct answer using the codes given below:

- a) 1, 2 and 3
- b) 1 and 3
- c) 2 and 3
- d) 1 and 2
- Q81. Which one of the following diagrams illustrates the relationship between VMA and % bitumen content (BT) in Marshall test?

















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- a) Have exaggeration of the vertical scale and horizontal scale
- b) Are not geometrically similar to the prototypes
- c) Have same vertical and horizontal scale as that of the prototypes
- d) Have same Froude number as that for the prototypes

Q83. Venturimeter is used to measure

- a) The velocity of flowing liquid
- b) The pressure of flowing liquid
- c) The discharge of flowing liquid
- d) The pressure difference between two points in a pipe line

Q84. A point in a compressible flow where the velocity of fluid is zero, is called

- a) Critical point
- b) Vena-contracta
- c) Stagnation point
- d) None of these

Q85. The head over a 90° V notch weir is increased from 0.15 m to 0.30 m. The ratio of new discharge to the original discharge will be

- a) 1.414
- b) 2.00
- c) 4.00
- d) 5.657

Q86. The relationship $dp/dx = d\tau/dy$ is valid for

- a) Irrotational flow
- b) Nonuniform flow
- c) Uniform flow
- d) Unsteady flow
- Q87. For a turbulent boundary layer (under zero pressure gradient), the velocity profile is described by the one-fifth power law. What is the ratio of displacement thickness to boundary layer thickness?

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- a) 1/7
- b) 1/6
- c) 1/5
- d) 1/4













Q88. The ratio of maximum velocity to average velocity for steady flow between fixed parallel plates is:

- a) 2/3
- b) 4/3
- c) 3/2
- d) 2
- Q89. The distance from pipe boundary, at which the turbulent shear stress is onethird the wall shear stress, is
- a) 1/3 R
- b) 1/2 R
- c) 2/3 R
- d) 3/4 R

Q90. Consider the following statements in regard to the critical flow:

- i. Specific energy is maximum for a given discharge.
- ii. Specific force is maximum for a given discharge
- iii. Discharge is maximum for a given specific force.
- iv. Discharge is maximum for a given specific energy.

Which of these statements are correct?

- a) 1, 2, 3 and 4
- b) 1 an<mark>d 2</mark>
- c) 2 and 3
- d) 3 and 4

Q91. If F_1 and F_2 are the Froude numbers of flow before and after the hydraulic jump occurring in a rectangular channel, then

a)
$$F_2^2 = \frac{F_1^2}{\left(-1+\sqrt{1+8F_1^2}\right)^3}$$

b) $F_2^2 = \frac{8F_1^2}{\left(-1+\sqrt{1+8F_1^2}\right)^3}$

C)
$$F_2^2 = \frac{F_1^2}{\left(-0.5 + \sqrt{1 + 8F_1^2}\right)^3}$$

d)
$$F_2^2 = \frac{8F_1^2}{\left(-0.5 + \sqrt{1 + F_1^2}\right)^3}$$







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Q92. A wide channel is 1 m deep and has a velocity of flow V is 2.13 m/s. If a disturbance is caused, an elementary wave can travel upstream with a velocity of

a) 1.00 m

- b) 2.13 m
- c) 3.13 m
- d) 5.26 m
- Q93. S2 profile can occur at
- a) A break in slope from mild to steep
- b) A break in slope from steep to mild
- c) The downstream of a sluice gate on a steep slope
- d) A sudden drop in bed in a steep slope

Q94. A surge tank is provided in hydropower scheme to:

a) Reduce water hammer pressure.

- b) Reduce frictional losses.
- c) Increases net head.
- d) Strengthen the penstocks.

Q95. ABCD is a regular parallelogram plot of land of whose angle BAD is 60°. If the bearing of line AB is 30° the bearing of line CD is

- a) 90°
- b) 120°
- c) 210°
- d) 270°
- Q96. In an old map a line was drawn to a magnetic bearing of 10°30', the magnetic declination being 2° East at that time. The magnetic bearing to which the line should be set now if the present magnetic declination is 4°30' west.
 - a) 17°
 - b) 15°
 - c) 10°
 - d) 8°

Q97. Which of the following sights will be applicable for a change point?

- a) Back sight
- b) Intermediate sight and fore sight
- c) Fore sight
- d) Back sight and fore sight





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Q98. A line of levels was run from Bench Mark A (770.815) to a Bench Mark B (772.940). The sum of back sights was 32.665 m and sum of fore sights was 30.44. The closing error is (in m)

- a) 0.105
- b) 0.100
- c) 0.205
- d) 0.200

Q99. The downhill end of a 30 m tape is held 90 cm too low. What is the horizontal distance measured.

- a) 29.8265 m
- b) 29.9865 m
- c) 30.0125 m
- d) None of these

Q100. Which type of fall can be generally used for discharge of upto 15cumes and low fall heights of 1m to 1.5m?

- a) Vertical drop fall
- b) Ogee fall
- c) Straigh<mark>t Glacis fall</mark>
- d) Well Ty<mark>pe fall</mark>

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