



Live Leak - Coal India Limited (ME) 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



O2. 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

 $\ \, \cap \circ \ \, \textbf{improvement is needed choose `No improvement'}.$

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

a) gathered below











- 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









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.









- 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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FLAT 50%





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 rebellion 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)?

- a) Swayed
- b) Jumped









- 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.
- 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.











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 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









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











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
- O22. 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 September 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.
 - 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.











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



Which word can be decoded from the following?













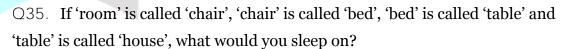
- A. BOUND
- B. BONUS
- C. BUNCH
- D. BOARD

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



- 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









- 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 ' \times ', '-' means ' \div ', ' \times ' means '-' and ' \div ' means '+' then what will be the value of 16 \div 64 8 \times 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.

- O41. 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?
 - 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?

Symbols	Meanings
\triangle	Urban
	Hard workers
	Educated
VI V VII	

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



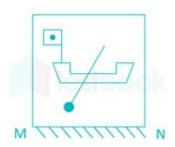






- B. Only conclusion I follow.
- C. Only conclusion II follows.
- D. Conclusion II and III both follow.

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

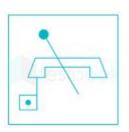




В.



C.











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.

Quantitative Aptitude









- Q51. In February 2016 the average consumption of diesel of first 15 days of the month by a truck driver was 12.4 litres/day. And the average of last 15 days of the month was 12.6 litres/day. If the average consumption of that month was 12.3 Litres/day then what was the fuel consumption of 15 February 2016.
 - 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 between 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 $\pi = \frac{22}{7}$)

- 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 $o^\circ \le \theta \le 90^\circ$, is

- a) 60°
- b) 30°
- c) O°









- 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
 - c) 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°



FASTEST WAY TO PREPARE CURRENT AFFAIRS







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:



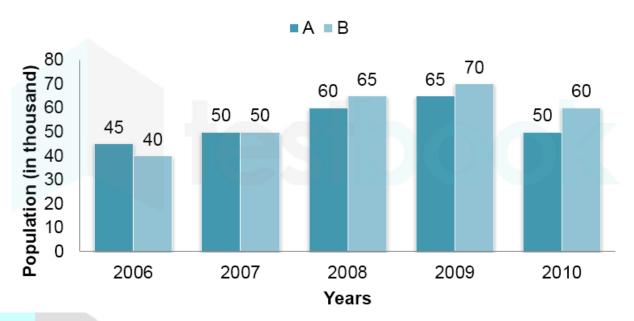








Population of Cities A and B in Different Years (in thousand)



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?

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











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?
 - 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











- 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?
 - 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









- 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?
 - a) Changez Khan
 - 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







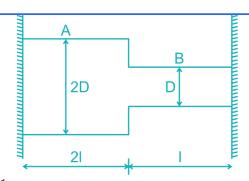


Paper – 2

Mechanical Engineering

- Q1. Which one of the following refrigerants has the highest critical temperature?
 - a) Water
 - b) Carbon dioxide
 - c) Freon 12
 - d) Ammonia
- Q2. The centre to centre distance between two consecutive rivets in a row is called
 - a) Pitch
 - b) Backlash
 - c) Margin
 - d) Centre distance
- Q3. TTT diagram indicates time, temperature and transformation of
 - a) Cementite
 - b) Pearlite
 - c) Ferrite
 - d) Austenite
- Q4. A spherical drop of molten metal of radius 2 mm was found to solidify in 10 seconds. A similar drop of radius 4 mm would solidify in
 - a) 14.14 sec
 - b) 20 sec
 - c) 18.3 sec
 - d) 40 sec
- Q5. Two solid shafts A and B of different materials are rigidity fastened together and attached to rigid support 3 meters a part, as shown in figure. The ratio of resisting torque of shaft A and B when $G_B = 2G_A$ is





- a) 1
- b) 2
- c) 4
- d) 8
- Q6. Kinematic similarity between model and prototype is the similarity of
 - a) Shape
 - b) Discharge/motion
 - c) Stream
 - d) Forces
- Q7. Benson boiler is one of the boiler having
 - a) One drum
 - b) One water drum and one steam drum
 - c) Three drum
 - d) No drum
- Q8. The specific heat at constant pressure for an ideal gas is given by $C_P = 0.9 + (2.7 \times 10^{-4}) \text{T}$ (kJ/kgK) where T is in Kelvin. The change in enthalpy for this ideal gas undergoing a process in which the temperature changes from 27°C to 127°C is most nearly
 - a) 90 kJ/kg
 - b) 108.9 kJ/kg
 - c) 99.5 kJ/kg
 - d) 105.2 kJ/kg
- Q9. What will be the diameter of best size wire for the 20 mm ISO coarse thread of 2.5 mm pitch and 60° thread angle?
 - a) 1.443 mm
 - b) 2.5 mm
 - c) 2.886 mm

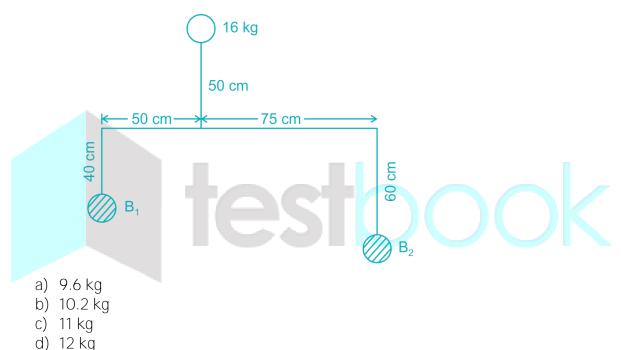








- d) 5 mm
- Q10. Cash discounts are reduction in price of goods
 - a) Sold on credit
 - b) Which depends on assurance of payment
 - c) Which depends on prompt cash payment
 - d) Obtainable on bad debt loans
- Q11. If the planes of rotation of the three masses are parallel, then the balance mass B₁ is



- Q12. What are the advantages of powder metallurgy?
 - 1. Extreme purity product
 - 2. Low labor cost
 - 3. Low equipment cost

Select the correct answer using the code given below:

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

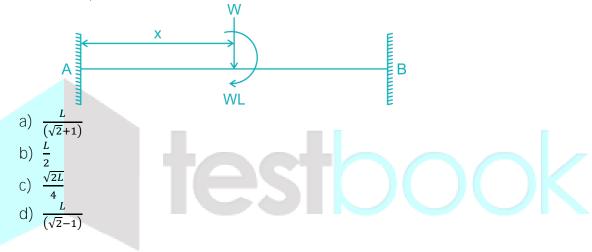








- Q13. A vessel of volume 1 m^3 contains oxygen (molecular weight = 32) at P = 1 bar and T = 47°C. The mass of oxygen in the vessel is (take universal gas constant as 8314 J/mol-K)
 - a) 40 kg
 - b) 3 kg
 - c) 1.2 kg
 - d) 1 kg
- Q14. A fixed end beam carries a load W and clock wise moment WL at length 'X' from one the fixed ends. Then the value of 'X' such that the moment at one of the end is zero, will be



- Q15. There is no geometrical distinction between the streamline, pathline and streakline in case of
 - a) Steady flow
 - b) Uniform flow
 - c) Laminar flow
 - d) Irrotational flow
- Q16. Which one of the following is the value for the tolerance grade IT-8?
 - a) 10 i
 - b) 16 i
 - c) 25 i
 - d) 40 i

Where i is standard tolerance unit.

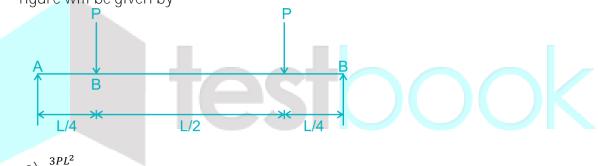








- Q17. In a vapor compression refrigeration system, the refrigeration capacity is 2100 kJ/min and heat rejection factor is 1.2. What will respectively be the heat rejected from the condenser and COP?
 - a) 5040 kJ/minute and 5
 - b) 2520 kJ/minute and 5
 - c) 2520 kJ/minute and 4
 - d) 5040 kJ/minute and 4
- Q18. In D.C. reverse polarity arc welding
 - a) The W.P is made positive and electrode is made negative
 - b) The W.P. is made negative and electrode is made positive
 - c) Both the W.P and electrode are made positive
 - d) Both the W.P and electrode are made negative
- Q19. The slope at the supports of a simply supported beam loaded as in the given figure will be given by



- a) $\frac{3PL^2}{32EI}$
- b) $\frac{PL}{16EI}$
- C) $\frac{PL^2}{8EI}$
- d) $\frac{PL^2}{6EL}$
- Q20. If nozzle angle is 30°, the De Laval turbine will have a maximum efficiency of
 - a) 0.43
 - b) 0.5
 - c) 0.75
 - d) 0.875
- Q21. A solar assisted air conditioning system, 1 kg/sec of ambient air is to be preheated by the same amount of air leaving the system. A counter-flow heat exchanger having an area of 60 m² with overall heat transfer coefficient of 25









 W/m^2k is used for this purpose. Assuming C_p for air is 1 kJ/kgK. The effectiveness of the heat exchanger is

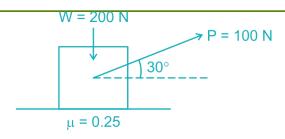
- a) 0.4
- b) 0.6
- c) 1.6
- d) 25
- O22. The angular speed of a Watt's governor when its height is 20 cm, will be equal to
 - a) 20 rad/sec
 - b) 10 rad/sec
 - c) 6 rad/sec
 - d) 7 rad/sec
- Q23. In a plate clutch axial force is 4 kN. The inside radius of contact surface is 50 mm and the outside radius is 100 mm. For uniform pressure the mean radius of friction surface will be
 - a) 78 mm
 - b) 60 mm
 - c) 75 mm
 - d) 80 mm



- Q24. 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
- Q25. 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
- Q26. The length of divergent part of venturi-meter in comparison to convergent portion is
 - a) Same
 - b) More
 - c) Less
 - d) More or less depends on application
- Q27. The gear train usually employed in clocks is
 - a) Reverted gear train
 - b) Simple gear train
 - c) Sum and planet gear train
 - d) Differential gear train
- Q28. A diamond locating pin is used in jigs and fixtures because
 - a) Diamond is very hard and wear resistance
 - b) It occupies very little space
 - c) It helps in assembly with tolerance on center distance
 - d) It has a long life
- Q29. For an isolated system executing a process
 - 1. No heat transfer takes place
 - 2. No work is done
 - 3. No mass crosses the boundary
 - 4. No chemical reaction takes place within the system









Which of the above statement are correct?

- a) 1, 2 and 3
- b) 1, 3 and 4
- c) 2, 3 and 4
- d) All of the above
- Q30. The Young's modulus and the Poisson's ratio for a certain material are stated to be 1000 GPa and 0.25 respectively. The bulk modulus of the material will be about
 - a) 450 GPa
 - b) 600 GPa
 - c) 666 GPa
 - d) 400 GPa
- Q31. In a triangular notch there is an error of 6% in observing the head. The error in the computed discharge is
 - a) 10%
 - b) 6%
 - c) 12%
 - d) 15%



- Q32. Octane number of natural gas is
 - a) 60 80
 - b) 80 100
 - c) > 100
 - d) < 60
- Q33. The engine of a car has three cylinder with total displacement of 770 cc. The compression ratio is 8.7. What is the clearance volume of each cylinder?
 - a) 34.4 cc
 - b) 33.33 cc
 - c) 32.33 cc
 - d) 35.2 cc
- Q34. In an MRP system, component demand is
 - a) Forecasted
 - b) Ignored



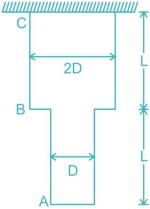






- c) Established by the masters production schedule
- d) Calculated by the MRP system from the master production schedule

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



- a) $\frac{\gamma L^2}{2E}$
- b) $\frac{\gamma L^2}{4E}$
- C) $\frac{5}{4} \frac{\gamma L^2}{E}$
- d) $\frac{\gamma L^2}{E}$

(Where γ is unit weight and E is modulus of elasticity)

Q36. Boundary layer flow separates from the surface if

- a) $\frac{du}{dy} = 0$ and $\frac{dp}{dx} = 0$
- b) $\frac{du}{dy} = 0$ and $\frac{dp}{dx} > 0$
- C) $\frac{du}{dy} > 0$ and $\frac{dp}{dx} < 0$
- d) Boundary layer thickness is zero

Q37. The standard fixed point of thermometry is

- a) Ice point
- b) Sulphur point
- c) Triple point of water
- d) Normal boiling point of water

Q38. Tandem drawing of wires and tubes is necessary because









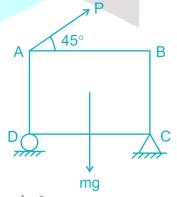
- a) It is not possible to reduce at one stage
- b) Annealing is needed between stages
- c) Surface finish improves after every drawing stage
- d) Accuracy in dimensions is not possible otherwise

Q39. An assembly line data is given below:

Station	1	2	3	4	5	6
Cycle time	90	90	90	90	90	90
time						
Task	70	70	80	70	80	60
time						
Idle	20	20	10	20	10	20
time						

The percentage utilization of labors on the assembly line is

- a) 20.37
- b) 25.58
- c) 26.63
- d) 79.62
- Q40. 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?



- a) **2**mg
- b) $\frac{mg}{2\sqrt{2}}$
- C) $\frac{mg}{2}$
- d) $\frac{mg}{\sqrt{2}}$
- Q41. 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
- Q42. Which of the following statements does NOT apply to the volumetric efficiency of a reciprocating air compressor
 - a) It decreases with increase in inlet temperature
 - b) It increases with decrease in pressure ratio
 - c) It increases with decrease in clearance ratio
 - d) It decreases with increase in clearance to stroke ratio
- Q43. The size of Gear is specified by
 - a) Circular pitch
 - b) Diametral pitch
 - c) Module
 - d) All of the above
- Q44. Which one of the following is true for black body
 - a) $\tau = 1$, $\alpha = \rho = 0$
 - b) $\alpha = 1, \rho = 0, \tau = 0$
 - c) $\rho = 1$, $\alpha = \tau = 0$
 - d) $\alpha + \tau = 1, \rho = 0$
- Q45. A strip is to be rolled from a thickness of 30 mm to 15 mm using a two high mill having rolls of diameter 300 mm. The coefficient of friction for unaided bite should be
 - a) 0.35
 - b) 0.5
 - c) 0.25
 - d) 0.07
- Q46. The integrating factor of quasi-static displacement work is
 - a) 1/T
 - b) 1/P
 - c) 1/V
 - d) P/T







- Q47. Sinking fund factor (for n years and r, rate of interest) is equal to
 - a) $\frac{r}{(1+r)^n-1}$
 - b) $\frac{(1+r)^n-1}{r}$
 - C) $\frac{(1+r)^n}{r-1}$
 - d) $\frac{r}{(1+r)}$
- Q48. The value of critical pressure ratio for superheated steam is
 - a) 0.5
 - b) 0.546
 - c) 0.454
 - d) 0.64
- Q49. An SI engine sometimes continues to run for a very small period even after the ignition is switched off. This phenomenon is called
 - a) Over burning
 - b) Pull up period
 - c) Dieseling
 - d) Throttle sticking



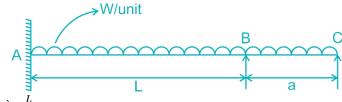
- Q50. While cooling, a cubical costing of side 40 mm undergoes 3%, 4% and 5% volume shrinkage during the liquid state, phase transition and solid state respectively. The volume of metal compensated from the riser is
 - a) 2%
 - b) 7%
 - c) 8%
 - d) 9%
- Q51. If an engine of 40% thermal efficiency drives a refrigerator having a coefficient of performance of 5, then the heat input to engine for each kJ of heat removed from the cold body of the refrigerator is
 - a) 0.50 kJ
 - b) 0.75 kJ
 - c) 1 kJ
 - d) 1.25 kJ







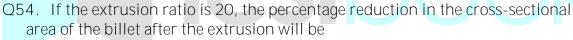
Q52. The overhang length (in the figure below) to make the slope at propped end zero, will be



- a) $\frac{L}{\sqrt{6}}$ b) $\frac{2L}{\sqrt{6}}$
- C)
- d)

Q53. The depth of centre of pressure for a rectangular lamina immersed vertically in water up to height h is given by

- a) h/2
- b) h/4
- c) 2h/3
- d) 3h/2



- a) 98%
- b) 95%
- c) 20%
- d) 5%

Q55. The fixed costs for a year is Rs 8 lakhs, variable cost per unit is Rs 40/- and the selling price of each unit is Rs 200/-. If the annual estimated sales is Rs. 20,00,000/-, then the break-even volume is

- a) 2000
- b) 3000
- c) 3333
- d) 5000

Q56. Which of the following P/M products is made by impregnation?

- a) Bearings and bushings
- b) Gears









- c) Cams
- d) Valve guides
- Q57. The effectiveness of a fin will be maximum in an environment with
 - a) Free convection
 - b) Forced convection
 - c) Radiation
 - d) Convection and radiation
- Q58. If the temperature of the source is increased keeping sink temperature fixed, the efficiency of the Carnot engine
 - a) Increases
 - b) Decreased
 - c) Does not change
 - d) Depends on working fluid
- Q59. The approximate value of the tool life exponent 'n' of cemented carbide tool is
 - a) 0.03 to 0.08
 - b) 0.08 to 0.20
 - c) 0.20 to 0.48
 - d) 0.48 to 0.70
- Q60. The angle between the face of the tool and the plane parallel to the base of the cutting tool is called
 - a) Back rake angle
 - b) Cutting edge angle
 - c) Clearance angle
 - d) Lip angle
- Q61. If item cost, inventory carrying cost, ordering cost and demand get doubled, what is the ratio of modified economic order quantity (EOQ) and the present EOQ?
 - a) $\sqrt{2}$
 - b) 2
 - c) 4
 - d) 8







- Q62. When a body is subjected to a direct tensile stress (σ_x), in one plane accompanied by a simple shear stress (τ_x), the maximum shear stress is
 - a) $\frac{\sigma_x}{2} + \frac{1}{2}\sqrt{\sigma_x^2 + 4\tau_{xy}^2}$
 - b) $\frac{\sigma_x}{2} \frac{1}{2} \sqrt{\sigma_x^2 + 4\tau_{xy}^2}$
 - c) $\frac{\sigma_x}{2} + \frac{1}{2}\sqrt{\sigma_x^2 4\tau_{xy}^2}$
 - d) $\frac{1}{2}\sqrt{\sigma_x^2 + 4\tau_{xy}^2}$
- Q63. 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
- Q64. 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



- Q65. The standard atmospheric pressure is 762 mm of Hg. At a specific location, the barometer reads 700 mm of Hg. At this place, what does at absolute pressure of 380 mm of Hg corresponds to?
 - a) 320 mm of Hg vacuum
 - b) 382 mm of Hg vacuum
 - c) 62 mm of Hg vacuum
 - d) 62 mm of Hg gauge
- Q66. Air at state 1 (DPT = 1°C, w = 0.0040 kg/kg_{ab}) mixes with air at state 2 (DPT = 18°C, w = 0.0051 kg/kg_{ab}) in the ratio of 1 to 3 by weight. The degree of saturation (%) of the mixture is (The specific humidity of saturated air at 13.6° C, is w = 0.01 kg/kg_{ab})
 - a) 25
 - b) 30
 - c) 48
 - d) 62











- Q67. In unsteady state heat conduction the two significant dimensionless parameter used are
 - a) Fourier number & Reynolds number
 - b) Reynolds number & Prandtl number
 - c) Biot number & Fourier number
 - d) Reynolds number & Biot number
- Q68. A journal bearing of diameter 30 cm and length 50 cm carries a load of 150 kN. The average bearing pressure is
 - a) 1.5 MPa
 - b) 1 MPa
 - c) 2 MPa
 - d) None of these
- Q69. The correct order of co-ordination number in SC, BCC, FCC and HCP unit cells is
 - a) 12, 12, 8, 6
 - b) 6, 8, 12, 12
 - c) 6, 6, 8, 12
 - d) 12, 8, 6, 12



Q70. Five jobs (A, B, C, D, and E) are waiting to be processed. Their processing times and due dates are given below. Using the shortest processing time dispatching rule, find the jobs delayed?

Job	Processing	Job due	
	time	date	
	(days)	(days)	
А	4	7	
В	7	4	
С	8	11	
D	3	5	
Е	5	8	

- a) E, B, C
- b) C, E, A
- c) A, D, B
- d) B, E, C

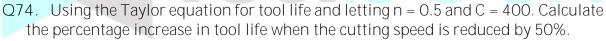








- Q71. Aluminium tie pin and gold tie pin, both serve the purpose of keeping the tie in position, but the gold pin has significance due to:
 - a) Exchange value
 - b) Use value
 - c) Esteem value
 - d) Cost value
- Q72. In on-off control refrigeration system, which one of the following expansion devices is used?
 - a) Capillary tube
 - b) Thermostat
 - c) Automatic expansion valve
 - d) Float valve
- Q73. The ratio of maximum displacement of forced vibration to the deflection due to the static force is known as
 - a) Magnification factor
 - b) Transmissibility
 - c) Logarithmic decrement
 - d) Amplitude of vibration



- a) 100%
- b) No change
- c) 400%
- d) 300%
- Q75. Find out the present value of Rs.10000 payment expected in two years. The rate of interest is 4.5%.
 - a) 9157
 - b) 8337
 - c) 4500
 - d) 10450
- Q76. Which one of the following is not a technique of PMTS?
 - a) Synthetic data
 - b) Stopwatch time study









- c) Work-factor
- d) MTM
- Q77. 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 on 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** π^2 kg
 - d) **2000** π^2 kg
- Q78. The distance from pipe boundary, at which the turbulent shear stress is one-third of the wall shear stress, is
 - a) 1/3 R
 - b) 1/2 R
 - c) 2/3 R
 - d) 3/4 R
- Q79. Cupola is used to make
 - a) Pig Iron
 - b) Cast Iron
 - c) Wrought Iron
 - d) Steel
- Q80. Which key transmits power through frictional resistance only
 - a) Woodruff
 - b) Kennedy
 - c) Sunk
 - d) Saddle
- Q81. For the same peak pressure and heat input
 - a) $\eta_{Otto} > \eta_{Dual} > \eta_{Diesel}$
 - b) $\eta_{Otto} > \eta_{Diesel} > \eta_{Dual}$
 - c) $\eta_{Diesel} > \eta_{Dual} > \eta_{Otto}$
 - d) $\eta_{Diesel} > \eta_{Otto} > \eta_{Otto}$











- Q82. Which of the following motion of cam roller-follower leads to the lowest jerk?
 - a) Uniform
 - b) Simple harmonic
 - c) Cycloidal
 - d) Parabolic
- Q83. The rake angle of a cutting tool is 15% shear angle 45% and cutting velocity 35 m/min. What is the chip velocity along the tool face?
 - a) 25.3 m/min
 - b) 27.3 m/min
 - c) 28.5 m/min
 - d) 23.5 m/min
- Q84. In electro-discharge machining (EDM) the tool material is made of
 - a) Copper
 - b) HSS
 - c) CI
 - d) Plain carbon steel
- Q85. Standardization of products is done to
 - a) Eliminate unnecessary varieties in design
 - b) Simplify manufacturing varieties in design
 - c) Make interchangeable manufacture possible
 - d) Reduce material cost
- Q86. Two parallel shafts whose axes are separated by a distance of 75 mm are to be connected a spur gear set so that the output shaft rotates at 50% of the speed of the input shaft which of the following could be the possible pitch circle diameters of the gears.
 - a) 25 mm and 50 mm
 - b) 30 mm and 60 mm
 - c) 50 mm and 100 mm
 - d) 60 mm and 120 mm
- Q87. The structure of austenite is
 - a) Body-centered cubic
 - b) Face-centered cubic
 - c) Hexagonal close-packed

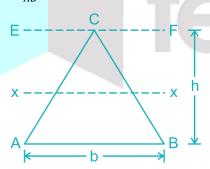






- d) Body-centered tetragonal
- Q88. A single-cylinder engine running at 1800 rpm develops a torque of 8 N-m. The indicated power of the engine is 1.8 kW. The loss due to friction power in the percentage is
 - a) 22.6%
 - b) 13.1%
 - c) 28.5%
 - d) 16.22%
- Q89. If the probability of an acceptance of a 3% defective lot is 0.97, then AOQ is
 - a) 0.0291
 - b) 0.3
 - c) 0.03
 - d) 0.291
- Q90. A triangle ABC, with base b and height h is shown in figure. What is the ratio





- a) 3
- b) 2
- c) 1.5
- d) 0.5
- Q91. The relationship $dp/dx = d\tau/dy$ is valid for
 - a) Irrotational flow
 - b) Non-uniform flow
 - c) Uniform flow
 - d) Unsteady flow









- Q92. Assume that the two 2 mm thick steel sheets are being sport welded at a current of 5500 A and current-flow time t=0.15s. Using electrodes 6 mm in diameter, estimate the amount of heat generated in resistance spot welding. (Take $R_C=250$ $\mu\Omega$)
 - a) 1032 J
 - b) 1120 J
 - c) 995 J
 - d) 1134 J
- Q93. Consider a single server queuing model with Poisson arrivals ($\lambda = 4/hour$) and exponential service ($\mu = 4/hour$). The number in the system is restricted to a maximum of 10. The probability that a person who comes in leaves without joining the queue is
 - a) 1/11
 - b) 1/10
 - c) 1/9
 - d) ½
- Q94. In a cotter joint the width of the cotter at the centre is 50 mm and its thickness is 12 mm. the load acting on the cotter is 60 kN. What is the shearing stress developed in the cotter?
 - a) 120 N/mm²
 - b) 100 N/mm²
 - c) 75 N/mm²
 - d) 50 N/mm²
- Q95. The purpose of reaming is
 - a) For making a hole initially
 - b) To enlarge the diameter of the hole
 - c) To improve the finish of the hole
 - d) To achieve correct diameter
- Q96. The demand and forecast for February are 12000 and 10275, respectively. Using single exponential smoothening method (smoothening coefficient = 0.25), forecast for the month of March is
 - a) 431
 - b) 9587
 - c) 10706
 - d) 12431









- Q97. An electronic device in the form of a wire is found to dissipate maximum heat when its outer most diameter = 32 mm. Keeping all the parameter same, it is proposed to use the same device in spherical form. The ideal diameter would be
 - a) 32 mm
 - b) 16 mm
 - c) 64 mm
 - d) 8 mm
- Q98. If C_1 is the coefficient of speed fluctuation of a flywheel then the ratio of $\frac{\omega_{max}}{\omega_{min}}$

will be

- a) $\frac{1-2C_1}{1+2C_1}$
- b) $\frac{2-2C_1}{2+2C_1}$
- C) $\frac{1+2C_1}{1-2C_1}$
- d) $\frac{2+C_1}{2-C_1}$
- Q99. 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
- Q100. 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?
 - a) 1/7
 - b) 1/6
 - c) 1/5
 - d) 1/4







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