

Question Paper Code

MECHANICAL-ME-1101

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Q.No : 1 - Main Subject

Deflection (y) of a cantilever beam carrying uniformly distributed load

- A) $\frac{WL^3}{8EI}$
- B) $\frac{WL^2}{8EI}$
- C) $\frac{WL^4}{8EI}$
- D) $\frac{WL^5}{8EI}$

Answer: C

Q.No : 2 - Main Subject

Radius of gyration for the rectangular section, with respect to horizontal axis. Take rectangle of width 'b' and depth 'd'.

- A) $\frac{d}{2\sqrt{3}}$
- B) $\frac{d}{\sqrt{3}}$
- C) $\frac{d}{4\sqrt{3}}$
- D) $\frac{d}{3}$

Answer: A

Q.No : 3 - Main Subject

A screw is said to be self-locking if

- A) $\phi < \alpha$
- B) $\alpha < \phi$
- C) $\phi = \alpha$
- D) $\phi \leq \alpha$

Answer: **B**

Q.No : 4 - Main Subject

Pressure angle of a cam should be

- A) 20°
- B) $14 \frac{1^\circ}{2}$
- C) greater than 30°
- D) less than 30°

Answer: **D**

Q.No : 5 - Main Subject

A plug gauge is used for measuring

- A) Cylinders
- B) Screw thread
- C) Cylindrical bores
- D) Spherical holes

Answer: **C**

Q.No : 6 - Main Subject

Which G-code is used for Threading-Constant lead

- A) G-31
- B) G-33
- C) G-32
- D) G-35

Answer: **C**

Q.No : 7 - Main Subject

In a planer work, the length of the stroke is 240mm and double stroke per minute is 25. The ratio between return time and cutting time is 1:2. Determine the cutting speed.

- A) 7 minutes
B) 18minutes
C) 9 minutes
D) 6 minutes

Answer: **C**

Q.No : 8 - Main Subject

The critical radius of insulation for optimum heat transfer from pipe is

- A) $r_c = \frac{K}{h_c}$
B) $r_c = \frac{C_p}{h_c}$
C) $r_c = \frac{C_v}{h_c}$
D) $r_c = \frac{h_c}{k}$

Answer: **A**

Q.No : 9 - Main Subject

Drop wise condensation is the liquid condensate collects in

- A) Droplets and does not wet the solid
B) Droplets and wet solid surface
C) Droplets do not wet and spreads out
D) Droplets do not wet and do not spreads out

Answer: **A**

Q.No : 10 - Main Subject

The product of mass and acceleration of the fluid is

- A) Gravity force
B) Viscous force
C) Inertia force
D) Elastic force

Answer: **C**

Q.No : 11 - Main Subject

A substance whose specific volume is constant is called

- A) Incompressible substance
- B) Ideal substance
- C) Pure substance
- D) Actual substance

Answer: **A**

Q.No : 12 - Main Subject

An Ideal expansion of steam in a nozzle is carried out by

- A) Isentropic expansion
- B) Iso enthalpy expansion
- C) Iso baric expansion
- D) Iso thermal expansion

Answer: **A**

Q.No : 13 - Main Subject

The purpose of lowering the pressure at refrigerant in an expansion valve is to

- A) Improve the boiling point
- B) Lower the freezing point
- C) to improve rate of condensation
- D) Lower the rate of evaporation

Answer: **C**

Q.No : 14 - Main Subject

The angle between the lathe centres is

- A) 30°
- B) 45°
- C) 60°
- D) 90°

Answer: **C**

Q.No : 15 - Main Subject

Which of the following relations is true, for co-efficient of performance (COP) ?

- A) (COP) heat pump - (COP) refrigerator = 1
- B) (COP) heat pump - (COP) refrigerator > 1
- C) (COP) heat pump - (COP) refrigerator < 1
- D) (COP) heat pump - (COP) refrigerator = 0

Answer: **A**

Q.No : 16 - Main Subject

A body is subjected to a tensile stress of 1200mpa, on one plane and another tensile stress of 600mpa, on a plane at right angle to the former. It is also subjected to a shear stress of 400mpa, on the same planes. The maximum normal stress will be

- A) 400mpa
- B) 500mpa
- C) 900mpa
- D) 1400mpa

Answer: **D**

Q.No : 17 - Main Subject

Line joining S_{yt} (Yield Strength of the material) on mean stress axis and S_e (endurance limit of the component) on stress amplitude axis is called as ____

- A) Good man line
- B) Soderberg line
- C) Gerber line
- D) Glimn line

Answer: **B**

Q.No : 18 - Main Subject

Free length for helical compression springs having square ends is given as

- A) $P_n + 2d$
- B) $P_n + 3d$
- C) $2(p+d)$
- D) $P_n + 4d$

Answer: **B**

Q.No : 19 - Main Subject

Coefficient of friction for laminar flow is given as, where $Re = \text{Reynold's number}$

- A) $R_e/32$
B) $32/R_e$
C) $R_e/16$
D) $16/R_e$

Answer: **D**

Q.No : 20 - Main Subject

Kaizen is a _____ process, the purpose of which goes beyond simple productivity improvement

- A) weekly
B) daily
C) monthly
D) annual

Answer: **B**

Q.No : 21 - Main Subject

In a ventilated disc brake,

- A) a duct directs air towards the caliper for cooling while the vehicle is moving
B) Caliper is covered with cooling fins
C) disc contains many small holes for optimum cooling performance
D) disc contains radial vanes between its rubbing surfaces for optimum cooling performance

Answer: **D**

Q.No : 22 - Main Subject

The Velocity of Sliding _____ the distance of the point of contact from the Pitch Point.

- A) is directly Proportional to
B) is inversely Proportional to
C) is equal to $\cos\theta$ multiplied by
D) does not depend upon

Answer: **A**

Q.No : 23 - Main Subject

India's first nuclear Power Plant was installed at

- A) Tara Pore
- B) Kota
- C) Kalpakkam
- D) Kudungulam

Answer: **A**

Q.No : 24 - Main Subject

The nuclear radiators Produced in a reactor which must be shielded are

- A) Electrons
- B) α, β and γ rays
- C) Neutrons and gamma rays
- D) Protons decay

Answer: **C**

Q.No : 25 - Aptitude

What is the least number which when divided by 13 and 31 will always have a remainder 11?

- A) 417
- B) 414
- C) 404
- D) 512

Answer: **B**

Q.No : 26 - Aptitude

What are the last two digits of the number 76^{10} ?

- A) 36
- B) 56
- C) 76
- D) 96

Answer: C

Q.No : 27 - Aptitude

The base of the triangle is increased by 40%. What can be the maximum percentage increase in the length of the height so that the increase in area is restricted to a maximum of 60% ?

- A) 14.95%
- B) 14.98%
- C) 14.28%
- D) 14.45%

Answer: C

Q.No : 28 - Aptitude

If the average age of 10 students in a class is 21, what is the difference between their average age 5 years from now and their average age 5 years ago.

- A) 10
- B) 12
- C) 14
- D) 16

Answer: A

Q.No : 29 - Aptitude

The annual sales of a company in the year 2000 were Rs.100 and in the year 2005 was Rs. 249. Find the compounded annual growth rate of sales in the given period of the same company (in %)?

- A) 14.289
- B) 10
- C) 20
- D) None of these

Answer: C

Q.No : 30 - Aptitude

Find the number of terms in the series $\frac{1}{4}, \frac{1}{7}, \frac{1}{10}, \frac{1}{13}, \dots, \frac{1}{91}$.

- A) 35
 B) 28
 C) 30
 D) 36

Answer: C

Q.No : 31 - Aptitude

A cyclist moving on a circular track of radius 100 m completes one revolution in 4 min. What is the average speed of the cyclist (m.min)?

- A) 314
 B) 157
 C) 628
 D) 31.4

Answer: B

Q.No : 32 - Aptitude

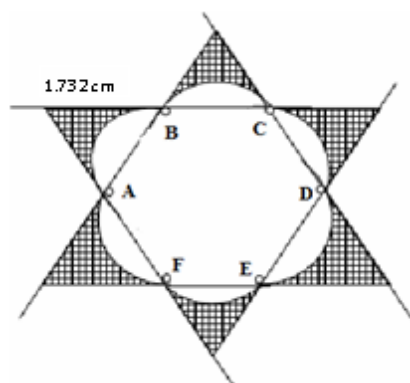
How many integral solutions are possible for the in-equality $|x + 1| + |x - 1| < 1$?

- A) 0
 B) 1
 C) 2
 D) 3

Answer: A

Q.No : 33 - Aptitude

ABCDEF is a regular hexagon. The lines which from the 'outer-star' are tangent to the curves which form the 'inner-flower'. Find the area of the shaded region.



- A) $6\sqrt{3} - 6\pi$

B) $6\sqrt{3} - 2\pi$

C) $9\sqrt{3} - \frac{\pi}{2}$

D) None of theseAnswer: **B****Q.No : 34 - Aptitude**

In how many ways can a group of 25 people be arranged around two circular tables consisting of 12 and 13 chairs?

A) $\frac{25! \times 11!}{13!}$

B) 25

C) $25! 12! 13!$

D) 1024

Answer: **A****Q.No : 35 - Aptitude**

What is the probability that three E's come consecutively in the word BOOKKEEPER?

A) $\frac{8!}{2! 2!}$

B) $\frac{8}{7!}$

C) $\frac{1}{15}$

D) $\frac{1}{8}$

Answer: **C****Q.No : 36 - Aptitude**

A card is drawn at random from a well-shuffled deck of 52 cards. Find the probability of it being a spade or a queen.

A) $\frac{4}{13}$

B) $\frac{17}{52}$

C) $\frac{35}{52}$

D) $\frac{7}{13}$

Answer: **A**

Q.No : 37 - Aptitude

At what time, in minutes, between 6'o clock and 7'o clock, both the needles will coincide with each other?

- A) $15\frac{1}{11}$ past 6
- B) $12\frac{4}{11}$ past 6
- C) $13\frac{4}{11}$ past 6
- D) $32\frac{8}{11}$ past 6

Answer: **D**

Q.No : 38 - Aptitude

The ratio of ages of Akshat, Prateek, Sandeep and Anton is 7 : 9 :10:13. The eldest is 12 years older than the youngest. What is the age of Sandeep 5 years from now?

- A) 30
- B) 35
- C) 25
- D) 20

Answer: **C**

Q.No : 39 - Aptitude

Four geometric means are inserted between $\frac{1}{8}$ and 128. Find the second geometric mean.

- A) 4
- B) 8
- C) 16
- D) 2

Answer: **D**

Q.No : 40 - Reasoning

Ottawa : Canada : : Canberra : ?

- A) Argentina
- B) Switzerland
- C) SriLanka
- D) Australia

Answer: **D**

Q.No : 41 - Reasoning

I : Waters : Thermometer :II

- I. (A) Humidity (B) Rain (C) Pitcher (D) Evaporation
- II. (P) Temperature (Q) Mercury (R) Doctor (S) Fever

- A) AS
- B) CQ
- C) DP
- D) BR

Answer: **B**

Q.No : 42 - Reasoning

Borlaug : Bhartendu : Birla

- A) They are famous scientists
- B) They are great warriors,
- C) They worked in the field of literature
- D) They are linked with awards

Answer: **D**

Q.No : 43 - Reasoning

The following question consists of a pair of numbers that have a certain relationship to each other, followed by four other pairs of numbers given as alternatives. Select the pair in which the numbers are similarly related as in the given pair. 7 : 24

- A) 311 : 100
- B) 23 : 22
- C) 19 : 58

D) 11:43

Answer: **B**

Q.No : 44 - Reasoning

Choose the correct alternative that will continue the same pattern and fill in the spaces.

11,10,(...),100,1001,1000,10001

- A) 101
- B) 110
- C) 111
- D) None of these

Answer: **A**

Q.No : 45 - Reasoning

Choose the missing term out of the given alternatives. __ bbca __ bcca __ ac __ a __ cb

- A) abcba
- B) acbab
- C) bacab
- D) bcaab

Answer: **B**

Q.No : 46 - Reasoning

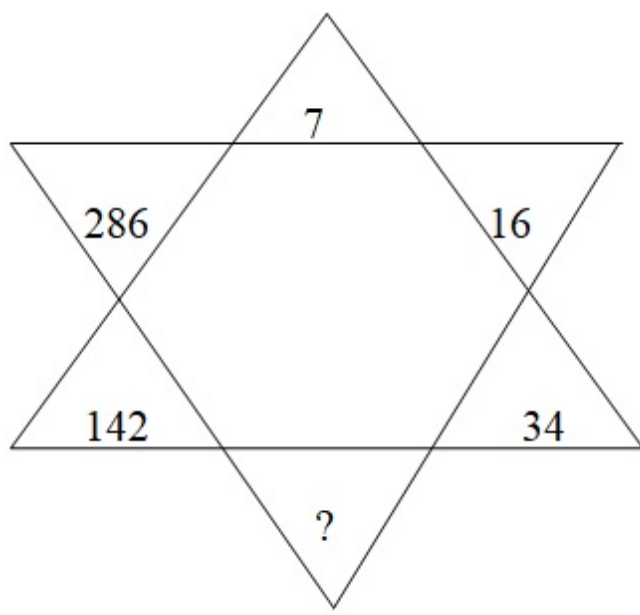
In a certain code, EXPLAINING is written as PXEALNIGNI. How is PRODUCED written in that code?

- A) ORPBUDEC
- B) ROPUDECD
- C) ORPUDECD
- D) DORPDECU

Answer: **C**

Q.No : 47 - Reasoning

Find the missing character



- A) 72
 B) 70
 C) 68
 D) 66

Answer: **B**

Q.No : 48 - Reasoning

In a certain code language, '3a,2b,7c' means 'Truth is Eternal'; '7c,9a,8b,3a' means 'Enmity is not Eternal' and '9a,4d,2b,8b' means 'Truth does not perish'. Which of the following means 'enmity' in that language ?

- A) 3a
 B) 7c
 C) 8b
 D) None of these

Answer: **C**

Q.No : 49 - Reasoning

A girl introduced a boy as the son of the daughter of the father of her uncle. The boy is girl's

- A) Brother
 B) Son
 C) Uncle
 D) Son-in-law

Answer: **A**

Q.No : 50 - Reasoning

Directions of Questions: Read the following information carefully and answer the questions given below it: In a car exhibition, seven cars of seven different companies viz. Cardilac, Ambassador, Fiat, Maruti, Mercedes, Bedford and Fargo were displayed in a row, facing east such that:

1. Cardilac car was to the immediate right of Fargo.
2. Fargo was fourth to the right of Fiat
3. Maruti car was between Ambassador and Bedford.
4. Fiat, which was third to the left of Ambassador car, was at one of the ends.

Which of the following was the correct position of the Mercedes?

- A) Immediate right of Cardilac
- B) Immediate left of Bedford
- C) Between Bedford and Fargo
- D) Fourth to the right of Maruti

Answer: **D**

Q.No : 51 - Reasoning

How many students in Ravirangh Institute of Engineering Studies voted for University elections?

Statements:

- a. 40 % of the 680 female students in the college voted for the university elections and 20% of the 870 male students in the college voted against the university elections.
- b. 80% of the first-and second –year students put together voted for the university elections. 60% of the remaining students voted against the university elections.

Choose from the following:

- A) If (a) alone is sufficient to answer the question.
- B) If (b) alone is sufficient to answer the question.
- C) If (a) and (b) together are necessary to answer the question.
- D) If neither (a) nor (b) is sufficient to answer the question

Answer: **A**

Q.No : 52 - Reasoning

Direction for Question : Among the 450 players,195 are prescribed to team A. One hundred and seventy-five are prescribed to team B and 185 are for team C. Fifty-five are subscribed to team A and B. Forty are for team B and C. Forty-five are prescribed for team A and C. Twenty-five for all the three teams.

How many players could enter team B or C?

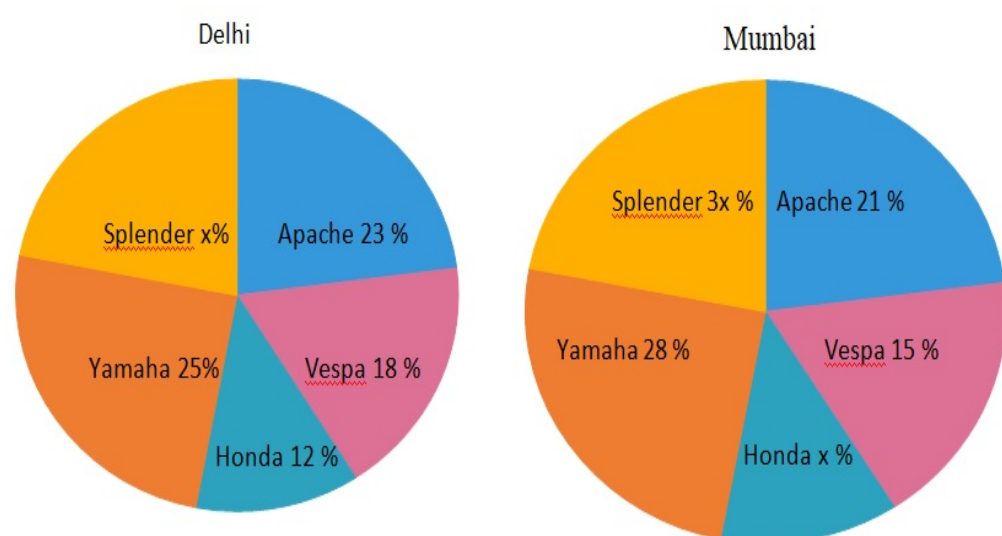
- A) 400
- B) 250
- C) 200

D) 320Answer: **D****Q.No : 53 - Reasoning**

1:81::625:?

A) 2351B) 2401C) 1715D) 1809Answer: **B****Q.No : 54 - Reasoning****Direction for Question :** Study the following graph carefully to answer the given question.

The pie charts show the % of registration of different types of bikes in Mumbai and Delhi. Total no of bikes registered in Mumbai and Delhi is 15,000 and 35,000 respectively.



Which of the following bikes registration has the maximum difference between Delhi and Mumbai?

A) SplendorB) YamahaC) ApacheD) VespaAnswer: **C****Q.No : 55 - General Knowledge**

Choose the correct pair

- A) Selvas: Grasslands of Orinoco basin
- B) Agnhas: Indian Ocean current
- C) Sirocco: Cold winds of the Alps
- D) Oyashio: Hot current of Greenland

Answer: **B**

Q.No : 56 - General Knowledge

The world's largest oil refinery is located at

- A) Lagos
- B) Riyadh
- C) Tabriz
- D) Abadan

Answer: **D**

Q.No : 57 - General Knowledge

Assertion (A): Hardwood trees are found in the tropical regions

Reason (R) : High temperature and high rainfall are the characteristic features of tropical regions.

- A) Both A and R are true and R is the correct explanation of A.
- B) Both A and R are true and R is not a correct explanation of A.
- C) A is true R is false.
- D) R is true but A is false.

Answer: **A**

Q.No : 58 - General Knowledge

War of Roses in European history is associated with

- A) War between England and France
- B) Civil war in England
- C) Anglo-Spanish War
- D) War between Prussia and Austria

Answer: **B**

Q.No : 59 - General Knowledge

The term of office of a judge of the International Court of Justice is

- A) 5 years
- B) 6 years
- C) 9 years
- D) 10 years

Answer: **C**

Q.No : 60 - General Knowledge

Red cross was founded by

- A) J. H. Dunant
- B) Baden Powell
- C) Trygve
- D) Frederick Passey

Answer: **A**

Q.No : 61 - General Knowledge

Who among the following is known as 'Kipper'?

- A) Napoleon Bonaparte
- B) Field Marshal K.M. Cariappa
- C) Gen Erwin Rommel
- D) Younger Pitt

Answer: **B**

Q.No : 62 - General Knowledge

Sun Yat-sen was the

- A) first President of the Chinese republic
- B) first Chairman of Communist Party of China
- C) first Premier of China
- D) None of these

Answer: **A**

Q.No : 63 - General Knowledge

Olympiads of which year are not recognized by the IOC?

- A) 1940, Tokyo Olympics
- B) 1944, London Olympics
- C) 1896, Athens Olympics
- D) 1906, Athens (Greece)

Answer: **D**

Q.No : 64 - General Knowledge

'A Half Nelson' is the term associated with which of the following sports?

- A) Bridge
- B) Wrestling
- C) Golf
- D) Polo

Answer: **B**

Q.No : 65 - General Knowledge

The first Indian to share the Oscar Award was

- A) Hargobind Khorana
- B) Rabindranath Tagore
- C) Bhanu Athaiya
- D) None of these

Answer: **C**

Q.No : 66 - General Knowledge

Which is known as the 'Herring Pond'?

- A) Indian Ocean
- B) Atlantic Ocean
- C) Pacific Ocean
- D) Mediterranean Sea

Answer: **B**

Q.No : 67 - General Knowledge

Altimeter is used to measure

- A) the atmospheric pressure

- B) the approximate height above the ground
C) the strength of an electric current
D) the difference in hearing

Answer: C

Q.No : 68 - General Knowledge

Which of the following pairs of discovery and discoverers is not correctly matched?

- A) Fountain Pen-Lewis E.Waterman
B) Safety Razor -Karl Jansky
C) Incandescent Lamp-Humphery Davy
D) Safety Pin-Walter Hunt

Answer: B

Q.No : 69 - General Knowledge

The temples at Halebid and Belur were built by

- A) Cholas
B) Hoysalas
C) Kakatiyas
D) Pallavas

Answer: B

Q.No : 70 - English

Identify the word with correct spelling.

- A) BURGEON
B) CYANIDE
C) FILIBUSTER
D) FOLLIAGE

Answer: D

Q.No : 71 - English

Choose the word similar in meaning to the given word: **Proffer**

- A) to teach
B) to deceive
C) to offer for acceptance
D) to act skillfully

- A) passer – by
- B) passers – bye
- C) passer – bys
- D) passer - byes

Answer: **B**

Q.No : 76 - English

Choose the correct meaning for the given idiom/phrase: **On the spur of the moment**

- A) At once or without any kind of deliberation
- B) In accordance with the prevailing style
- C) Open to blame
- D) On the side of something undesirable

Answer: **B**

Q.No : 77 - English

Change the following sentence into Passive – Voice

He was offered a good job by the management.

- A) The management offered a good job.
- B) The management offers a good job for him.
- C) Management offeres a good job for him.
- D) The management offered him a good job

Answer: **D**

Q.No : 78 - English

Transform the following Compound sentence into complex sentences.

She is still in teens, but she has the wisdom of a matured woman.

- A) She have the wisdom of a matured women, although she was still in teens.
- B) She has the wisdom of a matured women, although she is still in teens.
- C) She have a wisdom of the mature women, although she is still a teens.
- D) She have the wisdom of a matured womans, although she was still in teens

Answer: **B**

Q.No : 79 - English

Toni was..... of school for bad behaviour

- A) kicked in
- B) kicked out
- C) kicked over
- D) kicked through

Answer: **C**

Q.No : 80 - English

Choose the pair of words which has similar relationship as the given pair:

Intimidate : Wheedle

- A) Resolute : Impetuous
- B) Coordinate : Disinter
- C) Defile : Rebuke
- D) Extol : Disparage

Answer: **D**

Q.No : 81 - English

Find the proper sequence of these four sentences.

- A) It results from a carefully revised plan
- B) Men work together for a cause or purpose.
- C) Team work does not just happen.
- D) It must be clearly known to them.

- A) BCAD
- B) CBDA
- C) BCDA
- D) CABD

Answer: **D**

Q.No : 82 - English

Complete the following by using the correct Question Tags:

Few people know that you are an artist,.....?

- A) do they
- B) didn't they
- C) aren't they
- D) haven't they

Answer: A

Q.No : 83 - English

Change the sentence into indirect narration: "The teacher said to Ganesh, "Why are you not taking the examination?"."

- A) The teacher asked Ganesh why he was not taking the examination.
- B) The teacher ask Ganesh why he is not talking the examination.
- C) The teacher asking to Ganesh why he were not talking the examination.
- D) The teacher asked Ganesh why he were not talk to the examination.

Answer: A

Q.No : 84 - English

Consider the following statement and assumptions

Statement: In case of any difficulty about this case, you may contact our company's lawyers.

Assumptions : **I.** Each company has a lawyer of its own.

II. The company's lawyer is thoroughly briefed about this case.

Now select which of the assumptions is implicit in the statement

- A) If only assumption I is implicit
- B) If only assumption II is implicit
- C) If either I or II is implicit
- D) If both I and II are implicit

Answer: B

Q.No : 85 - Main Subject

The Fuel mostly used in boiler is

- A) Anthracite
- B) Peat
- C) Lignite
- D) Bituminous

Answer: **D**

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