



कच्च्या कामासाठी जागा /SPACE FOR ROUGH WORK

1. A family uses 8 kW of power. Direct solar energy is incident on the horizontal surface at an average rate of 200 W per sq. meter. If 40% of it can be converted to useful electric power, how large an area is needed to supply 8 kW ?  
(1) 100 m<sup>2</sup>                      (2) 200 m<sup>2</sup>                      (3) 50 m<sup>2</sup>                      (4) 400 m<sup>2</sup>
- 
2. When you are stung by a red ant, it causes itching and irritation. This is due to sting by red ants containing \_\_\_\_\_.  
(1) ammonium hydroxide                      (2) hydrochloric acid  
(3) sodium hydroxide                      (4) formic acid
- 
3. The energy our planet Earth, receives from the sun per year is :  
(1)  $7 \times 10^{17}$  Mwatt                      (2)  $17 \times 10^7$  kwatt  
(3)  $7 \times 10^{17}$  kwatt                      (4)  $17 \times 10^7$  Mwatt
- 
4. In the superconducting substance, the number of super electrons depends on temperature in which proportion ?  
(1) Direct proportion                      (2) Inverse proportion  
(3) Not in proportion                      (4) None of the above
- 
5. To test a hypothesis one first needs :  
(1) To make a conclusion                      (2) To make a reaction  
(3) To make a prediction                      (4) To make an experiment
- 
6. An electric bulb rated 220 V and power 100 W. When it is operated on 110 V, the power consumed by bulb will be \_\_\_\_\_.  
(1) 50 W                      (2) 100 W                      (3) 25 W                      (4) 75 W
- 
7. The Nobel Laureates of 1984, isolated the period gene, which controls the biological rhythm using \_\_\_\_\_ as a model organism.  
(1) Fruit Flies                      (2) Plant                      (3) Leaves                      (4) None of these
- 
8. Which one word of the following is corelated with 'Ayushman Bharat Yojana' ?  
(1) Nutrition                      (2) Housing                      (3) Employment                      (4) Insurance
- 

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9. Match the following :

- |                                 |                              |
|---------------------------------|------------------------------|
| (a) Stockholm Conference (1972) | (I) Climate change           |
| (b) Earth Summit (2002)         | (II) Ozone layer depletion   |
| (c) Paris Agreement (2015)      | (III) Human Environment      |
| (d) Vienna Conference (1985)    | (IV) Sustainable development |

Answer Options :

- |     |       |       |       |       |
|-----|-------|-------|-------|-------|
|     | (a)   | (b)   | (c)   | (d)   |
| (1) | (III) | (IV)  | (I)   | (II)  |
| (2) | (II)  | (I)   | (IV)  | (III) |
| (3) | (I)   | (II)  | (III) | (IV)  |
| (4) | (IV)  | (III) | (II)  | (I)   |

10. Pick out the odd person from the following :

- |                     |                     |
|---------------------|---------------------|
| (1) C.V. Raman      | (2) I.J. Thomson    |
| (3) Stephen Hawking | (4) Albert Einstein |

11. Consider the following statements about tuberculosis (TB) free India campaign :

- (a) India's target to eradicate tuberculosis from the country is by 2025.  
 (b) A target has been set to end tuberculosis globally by 2030.  
 (c) It will have funding of over ₹ 12,000 crore over next three years.

Which of the statements given above is/are correct ?

- (1) only (a)                      (2) (a), (b)                      (3) (a), (b), (c)                      (4) (b), (c)

12. 'Vishwa Mithak Sarit Sagar' literary criticism written by \_\_\_\_\_ was awarded with Sahitya Academy Award 2017.

- |                        |                   |
|------------------------|-------------------|
| (1) Jagadish Lachchani | (2) Ramesh Kuntal |
| (3) Gayetri Saraf      | (4) Shiv Mehta    |

13. Identify the mismatched pair about 'Oscar Awards - 2018' :

- |                             |   |                    |
|-----------------------------|---|--------------------|
| (1) Best Actor              | - | Gary Oldman        |
| (2) Best Director           | - | Guillermo del Toro |
| (3) Best supporting Actress | - | Frances McDormand  |
| (4) Best supporting Actor   | - | Sam Rockwell       |

14. In SI unit, magnetic field strength is measured in :

- (1) Tesla                      (2) Kelvin                      (3) Candela                      (4) Weber

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15. The Government of India has approved a proposal to amend the Representation of People's Act to enable non-resident Indians to cast their vote. Which of the following statement/s is/are correct with regard to voting by NRI ?
- (a) Currently an NRI has to be registered as a voter in his constituency and has to come to India to cast his vote.
  - (b) If the act is amended to include proxy voting an NRI can appoint only a person already enrolled in the same constituency in which the overseas elector is enrolled as proxy.
  - (c) The proxy so appointed can vote for the NRI for all elections till the proxy is revoked by the NRI.
  - (d) The proxy appointed would be proxy only for a single election.

**Answer Options :**

- (1) All the above
  - (2) (a), (b), (d)
  - (3) (b) and (d)
  - (4) (d) only
- 

16. Recently Andhra Pradesh claiming for special category status state. Which among the following features is/are considered for granting the special category status to a state ?
- (a) Hilly and difficult terrain
  - (b) Low population density
  - (c) Presence of sizeable tribal population
  - (d) Strategic location along international borders
  - (e) Economic and infrastructural backwardness
  - (f) Non viable nature of state finances

**Answer Options :**

- (1) only (a)
  - (2) (a), (c), (d)
  - (3) (a), (c), (d), (e)
  - (4) all of the above
- 

17. What is 'Gagan Shakti 2018' ?

- (1) Powerfull air to air ballistic missiles display.
  - (2) Biggest ever combat exercise by Indian Air Force.
  - (3) Joint military exercise by Indian and Chinese Armies and Air Forces.
  - (4) Space research competition to be held by ISRO in 2018.
- 

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18. 'Pradhan Mantri Adarsh Gram Yojana' is being implemented by Government of India for :

- (1) achieving no child marriages, child labour and liquor free village.
- (2) achieving 100% sanitation and access to potable water and toilets.
- (3) integrated development of schedule castes (SCs) majority villages having SC population more than 50%.
- (4) integrated development of Schedule Castes and schedule tribes majority villages.

19. Which one of the following statements about 'Shakti Sthala Solar Park' is **NOT** correct ?

- (1) It is to be world's largest Solar Park.
- (2) It has a capacity of 2000 MW and spread over across 13000 acres and five villages.
- (3) It has been executed within a record time of two years with zero land acquisition.
- (4) It is located in Nandurbar district of Maharashtra.

20. Which one of the following statements are **correct** ?

- (a) Capital of Jordan is Amman.
- (b) De facto Capital of Palestine is city of Ramallah.
- (c) India has not recognised the Palestine as State.
- (d) India at the UN in December 2017 voted against the decision to recognise Jerusalem as the capital of Israel.

**Answer Options :**

- (1) (a), (b), (c), (d)    (2) (a), (b), (d)    (3) (a), (c), (d)    (4) (a), (b)

21. As per Economic Survey of India 2017-18, Forex reserve is \_\_\_\_\_ US \$ billion in 2017-18.

- (1) 300                      (2) 409.4                      (3) 500                      (4) 200

22. As per RBI Annual Report 2016-17 Table IV.I, \_\_\_\_\_ is Adjusted Net Bank Credit (ANBC) given to Priority Sector by Public Sector Banks in 2016.

- (1) 29.4%                      (2) 39.3%                      (3) 44.2%                      (4) 45%

23. Government formed a Survey Committee for 'Rural Credit Supply' in 1951-52 under the Chairmanship of :

- (a) Dr. Dhananjayrao Gadgil                      (b) Vaikunthbhai Mehata  
(c) A.D. Gorwala                      (d) Sahkar Maharshi Bhausaheb Hire

Which of the statement above given is **correct** ?

- (1) (a), (b) only                      (2) (a), (b), (c) only  
(3) (c) only                      (4) (d) only

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24. As per Economic Survey of India, inflation i.e. (CPI = Consumer Price Index) average declined to \_\_\_\_\_ in 2017-18.

- (1) 3.3%                      (2) 4%                      (3) 3.8%                      (4) 5.2%
- 

25. As per Annual Report 2016-17 published by Government of India, Ministry of Commerce and IDC, during the period 2016-17 (April-Oct) (P), the share of Asia accounted for \_\_\_\_\_ India's total export.

- (1) 20%                      (2) 30%                      (3) 48.32%                      (4) 52.46%
- 

26. "Credit Authorization Scheme" commenced by Reserve Bank in :

- (a) Year - 1932                      (b) Year - 1991  
(c) Year - 1935                      (d) Year - 1965

Which of the option is correct ?

- (1) (d) only                      (2) (b) and (c) only  
(3) (d), (c) and (b)                      (4) (a), (b) and (d)
- 

27. By which Articles of the Constitution Finance Commission is formed after every Five Year ?

- (a) Article 288                      (b) Article 280  
(c) Article 161                      (d) Article 16

Which of the above option given is correct ?

- (1) (a), (b) and (c)                      (2) (a), (b) and (d)  
(3) (a), (d), (b)                      (4) (b) only
- 

28. Economic Survey of India 2017-18 predicts \_\_\_\_\_ growth rate of GDP in 2018-19.

- (1) 8 to 10%                      (2) 9 to 10%                      (3) 7 to 7.5%                      (4) 6 to 6.5%
- 

29. Which of the following strategy was adopted in 3<sup>rd</sup> Five Year Plan ?

- (a) Imbalance Growth                      (b) Conclusive Balance  
(c) Balanced Growth                      (d) Balanced Economic Growth

Which of the statement given above is/are correct ?

- (1) (b) and (c) only                      (2) (c) only  
(3) (a), (b) and (c) only                      (4) (d), (c), (b)
- 

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30. "Cash Credit Loans" means :

- (a) Specific amount can be taken for stipulated period.
- (b) Company shares, promissory notes, are accepted as loan securities.
- (c) Loan issued to customer on cash.
- (d) Cash transferred to customer account.

Which of the statement is above given correct ?

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

31. There are two examination rooms A & B. If 20 students are sent from A to B then the number of students in each room is same. If 40 students are sent from B to A, then the number of students in A is double the number of students in B. What is the number of students in room A ?

- (1) 80
- (2) 200
- (3) 100
- (4) 120

32. Given here are 2 true statements followed by conclusions (a) and (b). Select the logical conclusion/s with respect to statements.

**Statements :** Some golds are red. All reds which are golds are yellow.

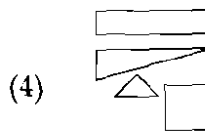
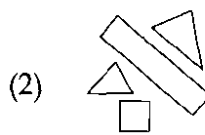
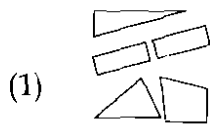
**Conclusions :**

- (a) Some golds are yellow.
- (b) Some yellows are golds.

**Answer Options :**

- (1) Both (a) and (b) follows.
- (2) None follows.
- (3) Only (b) follows.
- (4) Only (a) follows.

33. Which set of paper pieces can be arranged to get a rectangle ?



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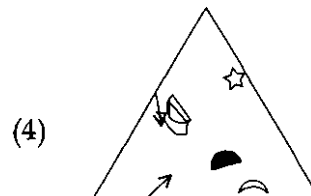
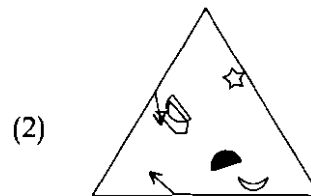
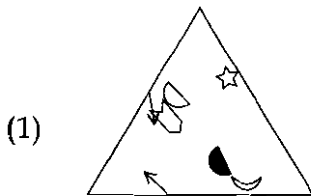
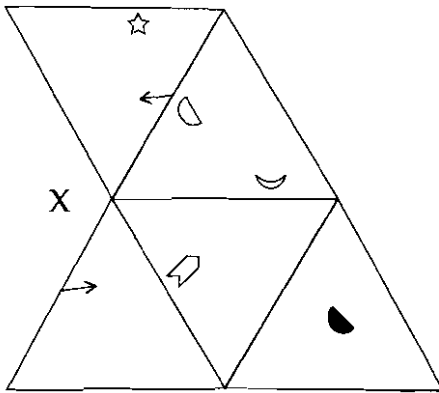


34. Select the option for blanks (i) and (ii) respectively in the way that best completes the text.

Some argue that profiting from terrible suffering by publishing photographic books about natural disasters is shameless \_\_ (i) \_\_, but perhaps the practice has the \_\_ (ii) \_\_ effect of helping us to appreciate the humanity of people living far away.

- (1) presumptuous, sedulous.                      (2) profiteering, salutary.  
 (3) idolatrous, spacious.                        (4) presumptuous, salutary.

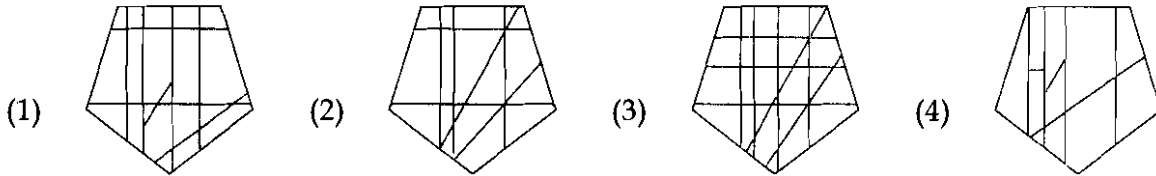
35. Study accompanying transparent sheet of paper X and select the fold that is made by using it.



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36. Select the option in which figure T is embedded ?



37. Read the statements carefully and answer the question.

- Ramesh goes on Monday for Music class.
- He goes on Wednesday to Mathematics class.
- He goes to History class, which is immediate next day of Mathematics class.
- On Friday, there will be no Literature class.
- On Tuesday, he goes to Sports class.

If everyday he goes to only one class, and Sunday is free for him. Then on which day he is free, other than Sunday ?

- Monday
- Thursday
- Saturday
- Friday

38. Study statements given below and select most appropriate description of these.

- Women are calling out their abusers, gathering strength from each other and this has cataclysmic effect - studio bosses, editors, senators, chefs, men once thought to be masters of the universe, have been toppled.
- Time magazine declared 2017 the year of "silence-breakers".
- Sexual harassment is not only about sex, it is about inequality at work, about erasing women's worth, her mind, her competencies and reducing her to a body.

**Answer Options :**

- (a) and (c) are both true reasons and because of these declaration (b) is valid.
- (a) is the only true reasons for true assertion (b) and because of the reason the assertion is true.
- (b) is the only true reason for only true assertion (a) and because of the reason the assertion is true.
- Though all the three statements (a), (b) and (c) are true but they cannot be categorized as assertions and reasons.

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44. Four friends A, B, C and D are having 58 story books in all. One of them has 13 books, another one has 14 books, third one has 15 books and fourth one has 16 books not necessarily in order of their names. If number of books owned by B is less than C then select the statement that is not necessarily true.

**Answer Options :**

- (1) A and B together have at least 27 books.
- (2) B and D together have at least 27 books.
- (3) C and D together have at least 28 books.
- (4) A and C together have at least 28 books.

45. Shama visited the ice cream parlour that offered discount on four ice cream flavours : saffron, litchi, chiku and almond. Shama wants to have a cone with two scoops of different flavours. Parlour owner gave her the list of following rule that she should use while deciding a pair of flavours.

- You can have saffron only if you have litchi.
- You can have either litchi or almond, but not both.
- If you didn't have chiku then you would have almond.
- You would not have almond if and only if you had saffron.
- You would have either saffron or chiku.

Select the pair/s that she can choose.

- |                         |                        |
|-------------------------|------------------------|
| (a) Saffron and chiku.  | (b) Litchi and almond. |
| (c) Saffron and litchi. | (d) Litchi and chiku.  |

**Answer Options :**

- |                      |                      |
|----------------------|----------------------|
| (1) Only (a) and (b) | (2) Only (b) and (c) |
| (3) Only (c) and (d) | (4) Only (d) and (a) |

46. Prediction is problematic in earth sciences. Most geological events are complex and hard to repeat exactly. Unlike experimental science, such as physics and chemistry, the issues scientists deal with cannot be tested under controlled laboratory conditions. All science is an observational science. It is not possible to go back in time. It is necessary to look at the present through the past, by studying great earthquakes of the past, to learn from them.

Select the conclusion that is **not** correct on the basis of above information.

- (1) Physical and chemical events are comparatively simple and therefore can be repeated.
- (2) Scientist can predict causes in case of sciences other than geology as it is possible for them to test predictions in controlled laboratory conditions.
- (3) Events like earthquakes are difficult to study as these cannot be repeated in controlled conditions.
- (4) It is not possible to observe earthquake like events by going back in time and therefore they cannot be studied.

47. Ani saw 16 webs on one bush. There were 5 more flies than as many webs and some spiders on these webs. If total numbers of legs counted on all these webs are 182 then select the option that indicates total number of insects present there.

(1) 30                      (2) 22                      (3) 26                      (4) 28

48. Between 6.50 a.m. to 10.50 a.m., how many times, minute hand will cross hour hand ?

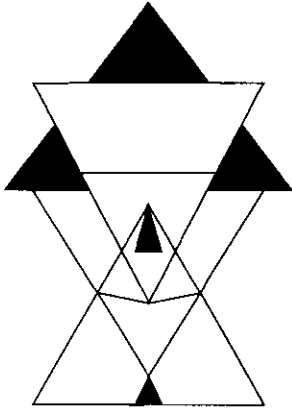
(1) 4                      (2) 5                      (3) 3                      (4) 2

49. It is paradoxical that despite having low income percentage of people having vitamin D deficiency is negligible than that of people having high income.

Select most appropriate explanation with respect to the above paradox.

- (1) People with low income can afford kind of food that is rich in particular vitamin.  
 (2) People with high income don't get enough time for eating food as they are busy.  
 (3) People with low income have to work hard and this helps them to remain fit.  
 (4) Main culprit related to vitamin deficiency is the life style of the persons.

50. How many overlapping triangles are visible in the following image ?



(1) 13                      (2) 14                      (3) 15                      (4) 16

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51. Match the following regarding the Maharashtra Motor Vehicles Rules, 1989.

Section	Provision
(a) 81	(i) Carriage of luggage in private service vehicles.
(b) 82	(ii) Carriage of animals in goods vehicles.
(c) 83	(iii) Carriage of personal luggage in stage carriages.
(d) 84	(iv) Carriage of certain goods in stage or contract carriage prohibited.

**Answer Options :**

	(a)	(b)	(c)	(d)
(1)	(i)	(ii)	(iii)	(iv)
(2)	(ii)	(iii)	(iv)	(i)
(3)	(iv)	(iii)	(ii)	(i)
(4)	(iii)	(ii)	(i)	(iv)

52. Whether using vehicle in unsafe condition is an offence under Motor Vehicles Act, 1988 ?

- (1) No.                      (2) Not sure                      (3) Certainly not                      (4) Yes

53. Which one of the following statements is/are correct ?

- (a) National Highway Authority can do survey, develop and Manage Highways.  
 (b) National Highway Authority can establish Hotels and Motels near the highways.  
 (c) National Highway Authority may invest its Fund in securities of Central Government.

**Answer Options :**

- (1) Only (a) and (c) are correct                      (2) All (a), (b), (c) are correct  
 (3) Only (a) is correct                      (4) Only (a) and (b) are correct

54. Which one of the following statements is/are correct ?

- (a) If the accident can be connected with the use of vehicle, its enough to impose No Fault Liability.  
 (b) The Term "Third Party" also covers the Pillion riders of a Motor Vehicle.  
 (c) An order passed by the Claim Tribunal under section 140 of the Motor Vehicle Act, 1988 is an award.

**Answer Options :**

- (1) All (a), (b) and (c) are correct                      (2) Only (b) and (c) are correct  
 (3) Only (a) and (c) are correct                      (4) Only (a) is correct

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55. Find oddman out regarding Motor Vehicles Act, 1988.
- (1) Laying down of standards for the components and parts of motor vehicles.
  - (2) Standards for anti-pollution control devices.
  - (3) Construction of Road and its standards.
  - (4) Constitution of Road Safety Councils.
- 
56. Which Rule of Central Motor Vehicle Rules, 1989 deals with 'Driving Schools and establishment' ?
- (1) Rule 22
  - (2) Rule 23
  - (3) Rule 24
  - (4) Rule 25
- 
57. 'Factory' is defined under which clause of section 2 of Factories Act, 1948 ?
- (1) Clause j
  - (2) Clause k
  - (3) Clause l
  - (4) Clause m
- 
58. Which section of the Motor Vehicle Act, 1988, made a provision for grant of driving licence ?
- (1) Section 6
  - (2) Section 9
  - (3) Section 10
  - (4) Section 12
- 
59. Match the following regarding class labels under Rule 137 of the Central Motor Vehicles Rules, 1989.
- | Types of class label     | Background colour of class label |
|--------------------------|----------------------------------|
| (a) Explosive            | (i) Red                          |
| (b) Inflammable gases    | (ii) Orange                      |
| (c) Poison (toxic) gases | (iii) Yellow                     |
| (d) Organic peroxides    | (iv) White                       |
- Answer Options :**
- | (a)      | (b)   | (c)   | (d)   |
|----------|-------|-------|-------|
| (1) (i)  | (ii)  | (iii) | (iv)  |
| (2) (ii) | (iii) | (iv)  | (i)   |
| (3) (ii) | (i)   | (iv)  | (iii) |
| (4) (i)  | (iii) | (ii)  | (iv)  |
- 
60. The Central Government may specify the life of motor vehicle by notification in the official Gazette having regard to \_\_\_\_\_.
- (1) Public Safety
  - (2) Convenience and objectives of the Motor Vehicles Act, 1988
  - (3) Date of Manufacturing of Motor Vehicle
  - (4) All of the Above
- 

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61. Match the following regarding Annexures to the Central Motor Vehicles Rules, 1989.

Annexure	Title
(a) IV	(i) Limit values of exhaust gas capacity applicable for diesel driven vehicles
(b) IV - H	(ii) Liquefied Petroleum Gas (LPG)
(c) IV - L	(iii) Specification of reference fuel for CNG
(d) IV - N	(iv) Specification of commercial gasoline fuel

**Answer Options :**

	(a)	(b)	(c)	(d)
(1)	(i)	(iii)	(ii)	(iv)
(2)	(ii)	(i)	(iv)	(iii)
(3)	(i)	(ii)	(iii)	(iv)
(4)	(iv)	(i)	(iii)	(ii)

62. Which one of the following drugs does not criminalise the driving of Motor Vehicle under "No drink and drive" Provisions ?

- |                |                       |
|----------------|-----------------------|
| (1) Cocaine    | (2) Chloral Hydrate   |
| (3) Nitrazepam | (4) None of the above |

63. The work done in a free expansion process is :

- |          |             |             |              |
|----------|-------------|-------------|--------------|
| (1) Zero | (2) Minimum | (3) Maximum | (4) Negative |
|----------|-------------|-------------|--------------|

64. In heat conduction, the direction of heat flow will always be normal to a surface of constant temperature called an \_\_\_\_\_ surface.

- |               |              |                |               |
|---------------|--------------|----------------|---------------|
| (1) adiabatic | (2) isobaric | (3) isothermal | (4) isometric |
|---------------|--------------|----------------|---------------|

65. High damping reduces the transmissibility if the non-dimensional frequency ratio  $\omega/\omega_n$  ( $\omega$  = forcing freq,  $\omega_n$  = natural freq.) is :

- |                                    |                                       |
|------------------------------------|---------------------------------------|
| (1) less than $\sqrt{2}$           | (2) greater than $\sqrt{2}$           |
| (3) less than $\frac{1}{\sqrt{2}}$ | (4) greater than $\frac{1}{\sqrt{2}}$ |

66. A system comprising a single phase is called a :

- |                     |                        |
|---------------------|------------------------|
| (1) closed system   | (2) open system        |
| (3) isolated system | (4) homogeneous system |

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67. Failure theory used for brittle materials is :
- (1) maximum normal stress (2) maximum shear stress  
(3) maximum strain energy (4) maximum distortion energy
- 
68. Ratio of heat conduction rate to the rate of thermal energy storage in a solid is called as \_\_\_\_\_.
- (1) Biot Number (2) Eckert Number  
(3) Bond Number (4) Fourier Number
- 
69. The relation between elastic modulus (E), shear modulus (G) and Poisson's ration ( $\gamma$ ) is given by :
- (1)  $\frac{E}{2G} = \gamma$  (2)  $\frac{E}{2G} = 1 - \gamma$  (3)  $\frac{E}{2G} = 1 + \gamma$  (4)  $\frac{G}{2E} = 1 - \gamma$
- 
70. Gear strength is improved by :
- (1) Increasing pressure angle (2) Decreasing pressure angle  
(3) Constant pressure angle (4) None of the above
- 
71. If number of members 'm' and number of joints are 'j' then for redundant frame :
- (1)  $m > 2j - 3$  (2)  $m = 2j - 3$  (3)  $m < 2j - 3$  (4)  $m > 2j$
- 
72. The Stanton number may also be defined as the ratio of :
- (1) Nusselt number and Reynold's number  
(2) Nusselt number and the product of Reynold's number and Prandtl number  
(3) Nusselt number and Prandtl number  
(4) Product of Reynold's number and Prandtl number and Nusselt number
- 
73. If a body is in equilibrium under the action of only three forces then each force is proportional to the \_\_\_\_\_ of the angle between other two forces.
- (1) sin (2) cos (3) tan (4) sec
- 
74. A simply supported beam of length 'L' carrying a load whose intensity varies uniformly from zero at each end and 'W' per unit run at its mid span, the Maximum bending moment in the beam is equal to :
- (1)  $\frac{WL^2}{8}$  (2)  $\frac{WL^2}{12}$  (3)  $\frac{WL^2}{24}$  (4)  $WL^2$
- 

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75. Violation of second law of thermodynamics is easily detected with help of a property called \_\_\_\_\_.
- (1) enthalpy            (2) quality            (3) entropy            (4) quantity
- 
76. The failure of the power system, the system is always so designed that :
- (1) The driver is not able to steer the vehicle with effort.  
(2) The driver is able to steer the vehicle manually with increased effort.  
(3) The driver is able to steer the vehicle manually with decreased effort.  
(4) None of the above.
- 
77. In modern automotive practice, the front wheels are usually provided with zero or a small camber angle of upto  $1^\circ$  positive for :
- (1) to pulls the vehicle on side  
(2) the tendency of a camber wheel to roll in a direction towards which it is leaning  
(3) to reduce rolling resistance  
(4) the tendency of camber wheel to return in straight position after turn
- 
78. The objective of streamlining is to shape the vehicle body in a way that will smooth out the flow of air and thereby reduce the :
- (1) weight of vehicle            (2) lift coefficient  
(3) drag coefficient            (4) space for passenger accommodation
- 
79. The amount of fuel delivered by the injector depends upon the :
- (1) size of injector nozzle  
(2) pressure pushing fuel through the injector  
(3) length of time the injector is open  
(4) all the above factors
- 
80. The venturi in the carburettor causes the :
- (1) increase of air velocity            (2) decrease of air velocity  
(3) decrease of fuel flow            (4) none of these
- 
81. Commonly used antifreeze solution in automobile coolant is :
- (1) Carbon disulphide            (2) Glycol  
(3) Ammonium chloride            (4) Freon 12
- 

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82. The component of the torque converter that drives the oil is the :

- (1) turbine                      (2) impeller                      (3) free wheel                      (4) stator
- 

83. Self protection for the occupants of passenger car which of the following criteria apply to all types of impact ?

- (a) efficient conversion of K.E. into work of deformation  
(b) low occupant deceleration  
(c) high occupant deceleration  
(d) maintenance of survival compartment

**Answer Options :**

- (1) (a) only    (2) (a) and (b) only  
(3) (a), (b) and (c) only    (4) (a), (b) and (d) only
- 

84. The cross members of the frame must stand against rocking movements of sprung axles :

- (1) Vertical bending deflection  
(2) Torsional deflection  
(3) Horizontal bending deflection  
(4) Only front frame deflection
- 

85. The need of power assisted steering system for vehicle is to :

- (1) minimizes drive fatigue by lightening the action of the steering.  
(2) increase the required number of steering wheel turns from lock to lock.  
(3) reduce the production cost of vehicle.  
(4) provide directional stability to the vehicle on straight roads.
- 

86. Due to which of the following reasons the petrol engines are usually not supercharged ?

- (1) Drop in volumetric efficiency  
(2) Increased knocking  
(3) Increased specific fuel consumption  
(4) Power loss
- 

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87. Among the following which benefits from Variable Valve Timing (VVT) concept :

- (a) optimize engine performance on all running speeds
- (b) improve fuel economy
- (c) reduce harmful exhaust emission
- (d) increase oil consumption

**Answer Options :**

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

88. Which of the following should be advantageous to integral body construction ?

- (a) stiffer structure for the same weight
- (b) improved passenger accommodation
- (c) safer in collision
- (d) economical to manufacture

**Answer Options :**

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

89. The principle of hydride storage is based on the propensity of certain materials to assimilate hydrogen under :

- (1) Non-pressure to form a hydrogen compound
  - (2) Pressure to form a hydrogen compound
  - (3) Non-cryogenic system
  - (4) Heating system to form a hydrogen compound
- 

90. During turn, centrifugal force acts on the wheels, resulting in oversteering condition when :

- (1) the slip angles of the front wheels are greater than those of the rear wheels.
  - (2) the slip angles of the both front and rear wheels are same.
  - (3) the slip angles of the both front and rear wheels are zero.
  - (4) the slip angles of the front wheels are less than those of the rear wheels.
- 

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91. Match the following :

- |                    |   |
|--------------------|---|
| (a) Profile drag   | (i) Induced by projected components in the air stream |
| (b) Induced drag   | (ii) Cooling and ventilation system                   |
| (c) Parasitic drag | (iii) Function of shape                               |
| (d) Internal flow  | (iv) Significance of lifting force                    |

**Answer Options :**

- |           |       |       |       |
|-----------|-------|-------|-------|
| (a)       | (b)   | (c)   | (d)   |
| (1) (iii) | (iv)  | (i)   | (ii)  |
| (2) (iv)  | (i)   | (ii)  | (iii) |
| (3) (i)   | (ii)  | (iii) | (iv)  |
| (4) (ii)  | (iii) | (iv)  | (i)   |

92. Independent suspension which ultimately reduces the tyre scrub and increases tyre life due to :

- (a) low unsprung mass
- (b) steering geometry is altered
- (c) low sprung mass
- (d) high unsprung mass

**Answer Options :**

- |                           |                           |
|---------------------------|---------------------------|
| (1) (a) only              | (2) (a) and (b) only      |
| (3) (a), (b) and (c) only | (4) (b), (c) and (d) only |

93. The engine ability to adjust the compression ratio according to operating condition results in :

- (a) The engine run with leaner mixture.
- (b) Improve the engine thermal efficiency.
- (c) Not lead to over heating and knocking at higher engine loads.
- (d) More fuel efficient engine of greater output.

**Answer Options :**

- |                           |                           |
|---------------------------|---------------------------|
| (1) (a) only              | (2) (a) and (b) only      |
| (3) (a), (b) and (c) only | (4) (a), (b) and (d) only |

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94. The roll centre height of the front and rear suspension linkage lie somewhere :

- (1) between the ground level and the height of the wheel hubs
  - (2) below the ground level
  - (3) above the height of the wheel hubs
  - (4) ahead or behind the wheel hubs
- 

95. For the same maximum pressure and temperature of Otto, Diesel and Dual cycles :

- (1) The compression ratio will be same
  - (2) The heat supplied will be same
  - (3) Air standard  $\eta$  will be the same
  - (4) The heat rejected will be same
- 

96. Among the following which benefits are achieved from the pressurized engine cooling system ?

- (a) It allows the coolant to circulate at higher temperatures.
- (b) It allows the checking the coolant level of a hot engine.
- (c) It compensates from the reduction in atmospheric pressure when motoring in high altitude mountainous region.
- (d) This system allows the radiator to be reduced in size.

**Answer Options :**

- |                           |                           |
|---------------------------|---------------------------|
| (1) (a) only              | (2) (a) and (b) only      |
| (3) (a), (b) and (c) only | (4) (a), (c) and (d) only |
- 

97. The greater protection of passenger offered by an integral construction body is achieved mainly by designing the structure under :

- |                             |                         |
|-----------------------------|-------------------------|
| (1) ABS - Anti Break System | (2) Passive safety      |
| (3) Active safety           | (4) Front bumper system |
- 

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98. Tapered leaf spring becoming increasingly popular compared to conventional leaf spring :

- (a) Light weight
- (b) Absence of squeaking
- (c) The stresses are lower and more uniform
- (d) Occupy more space

**Answer Options :**

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

99. Match the following :

- |   |  |
|---|--|
| (a) Fully automatic transmission variable           | (i) Providing a higher ratio than that by the final drive.     |
| (b) Continuously variable transmission system (CVT) | (ii) To minimize passenger's comfort and reduce shock loading. |
| (c) Over drive gears                                | (iii) It minimizes driver's fatigue                            |
| (d) Torsional spring drive                          | (iv) The expanding pulley and belt system.                     |

**Answer Options :**

- |     | (a)   | (b)   | (c)   | (d)   |
|-----|-------|-------|-------|-------|
| (1) | (iii) | (iv)  | (i)   | (ii)  |
| (2) | (i)   | (iii) | (ii)  | (iv)  |
| (3) | (iv)  | (ii)  | (iii) | (i)   |
| (4) | (i)   | (ii)  | (iv)  | (iii) |

100. Location of the ventilating air flow over car body must be at :

- (1) low pressure zone over the car body
- (2) high pressure zone over the car body
- (3) high velocity zone over the car body
- (4) low pressure zone under the car body

- o o o -

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### सूचना — ( पृष्ठ 1 वरून पुढे.... )

- (8) प्रश्नपुस्तिकेमध्ये विहित केलेल्या विशिष्ट जागीच कच्चे काम (रफ वर्क) करावे. प्रश्नपुस्तिकेव्यतिरिक्त उत्तरपत्रिकेवर वा इतर कागदावर कच्चे काम केल्यास ते काँपी करण्याच्या उद्देशाने केले आहे, असे मानले जाईल व त्यानुसार उमेदवारावर शासनाने जारी केलेल्या “परीक्षांमध्ये होणाऱ्या गैरप्रकारांना प्रतिबंध करण्याबाबतचे अधिनियम-82” यातील तरतुदीनुसार कारवाई करण्यात येईल व दोषी व्यक्ती कमाल एक वर्षांच्या कारावासाच्या आणि/किंवा रुपये एक हजार रकमेच्या दंडाच्या शिक्षेस पात्र होईल.
- (9) सदर प्रश्नपत्रिकेसाठी आयोगाने विहित केलेली वेळ संपल्यानंतर उमेदवाराला ही प्रश्नपुस्तिका स्वतःबरोबर परीक्षाकक्षाबाहेर घेऊन जाण्यास परवानगी आहे. मात्र परीक्षाकक्षाबाहेर जाण्यापूर्वी उमेदवाराने आपल्या उत्तरपत्रिकेचा भाग-1 समवेक्षकाकडे न विसरता परत करणे आवश्यक आहे.

### नमुना प्रश्न

Pick out the correct word to fill in the blank :

Q.No. 201. I congratulate you \_\_\_\_\_ your grand success.

- (1) for (2) at  
(3) on (4) about

ह्या प्रश्नाचे योग्य उत्तर “(3) on” असे आहे. त्यामुळे या प्रश्नाचे उत्तर “(3)” होईल. यास्तव खालीलप्रमाणे प्रश्न क्र. 201 समोरील उत्तर-क्रमांक “③” हे वर्तुळ पूर्णपणे छायांकित करून दाखविणे आवश्यक आहे.

प्र. क्र. 201. ① ② ● ④

अशा पद्धतीने प्रस्तुत प्रश्नपुस्तिकेतील प्रत्येक प्रश्नाचा तुमचा उत्तरक्रमांक हा तुम्हाला स्वतंत्ररीत्या पुरविलेल्या उत्तरपत्रिकेवरील त्या त्या प्रश्नक्रमांकासमोरील संबंधित वर्तुळ पूर्णपणे छायांकित करून दाखवावा. ह्याकरिता फक्त काळ्या शाईचे बॉलपेन वापरावे, पेन्सिल वा शाईचे पेन वापरू नये.

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