

NDA/NA

National Defence Academy/Naval Academy

SOLVED PAPER 2018 (I)

PAPER II English Language and General Studies

Part A (English Language)

Directions (Q. Nos. 1-10) *Each item in this section consists of a sentence with an underlined word/words followed by four words. Select the option that is nearest in meaning to the underlined word/words and mark your response in your answer sheet accordingly.*

1. I do not want you to lead a life of sycophancy as you did during the foreign rule.

- (a) admiration (b) love
(c) appreciation (d) flattery

⊗ (d) A sycophant is one who praises people in authority in a way that is not sincere, usually in order to get some advantage of them. So, 'flattery' is the nearest in meaning to sycophancy.

2. In India, it has become easy to attack cultural artefacts these days.

- (a) beckon (b) assault
(c) belch (d) appreciate

⊗ (b) assault is the correct synonym of attack. Other synonyms are beat, strike at, knock down, etc.

3. A local court granted bail to the criminal on Thursday.

- (a) confessed (b) donated
(c) allowed (d) yielded

⊗ (c) is the correct answer as allowed is the synonym of granted.

4. The judge told that he would analyse the evidence and then deliver the verdict.

- (a) liberate (b) surrender
(c) transfer (d) pronounce

⊗ (d) pronounce is the correct synonym of deliver.

Some other synonyms are accepted, acknowledged, assumed, etc.

5. The growth and development of the peasant movement was indissolubly linked with the national struggle for freedom.

- (a) firmly (b) vaguely
(c) individually (d) steadily

⊗ (a) In the given sentence, indissolubly means incapable of being broken. So, 'firmly' is the nearest in meaning to it.

6. Weather conditions have been improving over the past few days.

- (a) mending (b) amending
(c) becoming better (d) advancing

⊗ (c) becoming better is the perfect synonym of improving. Some other synonyms are correcting, elaborating, fixing, etc.

7. The confusion on the interlocutor's face was gratifying.

- (a) government officer (b) party worker
(c) dialogist (d) revolutionary

⊗ (c) dialogist is the correct answer. An interlocutor is the person who engages himself in dialogues. Some other synonyms are interviewer, speaker, etc.

8. He spends his money lavishly.

- (a) hesitatingly
(b) generously
(c) foolishly
(d) carefully

⊗ (b) generously is the correct answer. Other options do not match here. Lavishly may also mean to spend money extravagantly.

9. The government's new policies will come into force from the next fiscal year.

- (a) calendar (b) academic
(c) financial (d) leap

⊗ Fiscal means relating to money and finances. So, option (c) financial is nearest in meaning to it.

10. Abundant food was available for the soldiers in the mess.

- (a) little
(b) plentiful
(c) delicious
(d) wholesome

⊗ (b) plentiful is the correct answer for the word abundant which means in large quantity. Some other synonyms are plenty, profuse, bounteous, etc.

Directions (Q. Nos. 11-20) *Each item in this section consists of a sentence with an underlined word / words followed by four words. Select the option that is **opposite in meaning** to the underlined word / words and mark your response in your Answer Sheet accordingly.*

11. The country's economy must be geared to wartime requirements.
 (a) subordinated to
 (b) related to
 (c) adjusted to
 (d) unlinked to
- ⊗ (d) unlinked to is correct antonym of word geared which means to adjust or adapt.
12. Why does fire attract insects?
 (a) discharge (b) destroy
 (c) repel (d) remove
- ⊗ (c) repel is opposite in meaning to attract as it means to force something or someone to move away or stop attacking you.
13. The party was excellent, and I would like to thank all the people concerned.
 (a) cared (b) attentive
 (c) dependable (d) uninvolved
- ⊗ (d) uninvolved is correct antonym of concerned which means interested or involved.
14. He is very serious by temperament.
 (a) grave (b) trivial
 (c) sober (d) stupid
- ⊗ (b) trivial is the only correct antonym from the given options. Grave and sober are synonyms of serious. Stupid does not match. Trivial means of small value or unserious matter.
15. There are a few miscellaneous items to discuss in this meeting.
 (a) pure (b) mixed
 (c) homogenous (d) discordant
- ⊗ (c) homogenous is correct antonym of miscellaneous. Miscellaneous means of mixed type whereas homogenous means of the same kind.
16. Due to the postal strike, the outgoing mail got delayed.
 (a) urgent (b) incoming
 (c) ordinary (d) speedy
- ⊗ (b) incoming is the correct antonym of outgoing. In and out are perfect antonyms.
17. He had a fine ear for music.
 (a) small (b) close
 (c) coarse (d) smooth

⊗ (c) coarse, from the given options is correct. Other antonyms could be unsatisfactory, ill, etc.

18. There is no likeness between him and his brother.
 (a) unlikeliness (b) unlikelihood
 (c) dissimilarity (d) disaffinity

⊗ (c) dissimilarity is the correct antonym as likeness means resemblance and dissimilarity means when there is nothing similar or resembling with the other.

19. Cultural diversity in the working place is good for business.
 (a) uniformity (b) conformity
 (c) identity (d) similarity

⊗ (a) diversity means the condition of having or being composed of different types of people or things. So, its opposite will be uniformity.

20. The company was liquidated within five years.
 (a) bankrupt (b) closed down
 (c) flourishing (d) privatised

⊗ (c) liquidate means to cause a business to close, so that its assets can be sold to pay its debts. So, its opposite would be 'flourishing'.

Directions (Q. Nos. 21-25) *Each item in this section has a sentence with three underlined parts labelled (a), (b) and (c). Read each sentence to find out whether there is any error in any underlined part and indicate your response in the Answer Sheet against the corresponding letter i.e., (a) or (b) or (c). If you find no error, your response should be indicated as (d).*

21. The politician lost face in his constituency (a)/when he broke the pre-election promises (b)/he made to his people. (c)/No error. (d)

⊗ (c) has error. As sentence is in simple past tense, here we must use past perfect tense 'he had made to the people' should be used here.

22. At the request of the Defence Attorney, (a)/the jury were called (b)/and their individual verdicts were recorded. (c)/No error. (d)

⊗ (b) has error of correct use of verb with jury which is taken as singular noun, verb 'was' will be used here.

23. Frank Lloyd Wright has been acclaimed (a)/by colleagues (b)/as the greater of all modern architects. (c)/ No error. (d)

⊗ (c) has error of correct degree of adjective. Here, we will use superlative degree of greater i.e. 'greatest' as we are comparing one with many people.

24. In my younger days (a)/I could run four miles (b)/at a stretch. (c)/No error. (d)

⊗ (a) has error of correct syntax 'When I was young' is better construction.

25. The owner (a)/as well as his servants (b)/is honest. (c)/No error. (d)

⊗ (d) The sentence is correct.

Directions (Q. Nos. 26-30) *Given below are some idioms / phrases followed by four alternative meanings to each. Choose the response (a), (b), (c) or (d) which is the most appropriate expression.*

26. Cry over spilt milk

- (a) Complaining about a loss in the past
 (b) Too much inquisitive about something
 (c) When something is done badly to save money
 (d) Dealing with a problem only in an emergency situation

⊗ (a) Complaining about a loss in the past is the correct meaning of the idiom 'Cry over spilt milk.'

27. Cut the mustard

- (a) Prepare spices out of mustard seeds
 (b) To come up to expectations
 (c) Making absurd expectations
 (d) Very enthusiastic

⊗ (b) To come up to the expectations is the correct meaning of the idiom 'cut the mustard'.

28. Devil's advocate

- (a) A dangerous person
 (b) To present a counter argument
 (c) Very argumentative person
 (d) Creating an unpleasant situation

⊗ (c) A devil's advocate is a person who expresses an unpopular opinion in order to provoke debate. So, out of the given options 'very argumentative person' best expresses its meaning.

29. Don't count your chickens before the eggs have hatched

- (a) If you are not good at something, better to avoid that
 (b) Don't make plans for something that might not happen
 (c) Not to come up to expectations
 (d) Don't put all your resources in one possibility

⊗ (b) This idiom means to not make plans for something that might not happen.

- 30.** Give the benefit of doubt
- To be partial to someone
 - To be judgemental
 - Regard someone as innocent until proven otherwise
 - Say something exactly right
- ⊗ (c) Benefit of doubt means to regard someone as innocent until proven otherwise.

Directions (Q. Nos. 31-35) *In this section each item consists of six sentences of a passage. The first and sixth sentences are given in the beginning as S1 and S6. The middle four sentences in each have been jumbled up and labelled P, Q, R and S. You are required to find the proper sequence of the four sentences and mark your response accordingly on the Answer Sheet.*

- 31.** S1 : The Subsidiary Alliance system was extremely advantageous to the British.

S6 : They controlled the defence and the foreign relations of the protected ally.

P : They could now maintain a large army at the cost of Indian states.

Q : if many war occurred in the territories

R : either of the British ally or of the Britishers

S : This enabled them to fight wars far away from their own territories

The proper sequence should be

- P Q R S
- P S Q R
- Q R P S
- S R P Q

- ⊗ (b) PSQR is the correct sequence.

- 32.** S1 : In reality, by signing a Subsidiary Alliance, an Indian state virtually signed away its independence.

S6 : In fact, the Indian ruler lost all vestiges of sovereignty in external matters.

P : of maintaining diplomatic relations

Q : It lost the right of self defence

R : with its neighbours

S : and of settling its disputes

The proper sequence should be

- P Q R S
- R S P Q
- Q P S R
- Q S R P

- ⊗ (c) QPSR is the correct sequence.

- 33.** S1 : A mighty popular Revolt broke out in Northern and Central India in 1857.

S6 : Millions of peasants, artisans and soldiers fought heroically and wrote a glorious chapter.

P : Sepoys, or the Indian soldiers of the Company's army

Q : but soon engulfed wide regions and involved the masses

R : and nearly swept away the British rule

S : It began with a mutiny of the

The proper sequence should be

- R S P Q
- P Q R S
- S R P Q
- Q R P S

- ⊗ (a) RSPQ is the correct sequence.

- 34.** S1: The Indian Civil Service gradually developed into one of the most efficient and powerful civil services in the world.

S6 : though these qualities obviously served. British, and not Indian interests.

P : and often participated in the making of policy

Q : independence, integrity and hard work

R : They developed certain traditions of

S : Its members exercised vast power

The proper sequence should be

- P Q R S
- Q R S P
- R S Q P
- S P R Q

- ⊗ (d) SPRQ is the correct sequence.

- 35.** S1 : The ruin of India handicrafts was reflected in the ruin of the towns and cities which were famous for their manufactures.

S6 : Centres were developed and laid waste.

P : Dacca, Surat, Murshidabad and many other rising industrial

Q : ravages of war and plunder, failed to

R : survive British conquest

S : Cities which had withstood the

The proper sequence should be

- P Q R S
- S Q R P
- S R P Q
- Q R S P

- ⊗ (b) SQRP is the correct sequence.

Directions (Q. Nos. 36-40) *In this section you have few short passages. After each passage, you will find some items based on the passage. First, read a passage and answer the items based on it. You are required to select your answers based on the contents of the passage and opinion of the author only.*

Passage 1

The rule of the road means that in order that the liberties of all may be preserved, the liberties of everybody must be curtailed. When the policeman, say, at a road-crossing steps into the middle of the road and puts out his hand, he is the symbol not of tyranny but of liberty. You have submitted to a curtailment of private liberty in order that you may enjoy a social order which makes your liberty a reality. We have both liberties to preserve — our Individual liberty and our social liberty. That is, we must have a judicious mixture of both. I shall not permit any authority to say that my child must go to this school or that, shall specialise in science or arts. These things are personal. But if I say that my child shall have no education at all, then society will firmly tell me that my child must have education whether I like it or not.

- 36.** According to the author, the “rule of the road” implies

- the rule regulating the traffic on the road
- the principle on which a road is constructed to ensure safe traffic
- unrestricted freedom for all to lead a happy life
- restricted individual freedom to ensure freedom for all

- ⊗ (d) Rule of the road according to the passage means restricted individual freedom to ensure freedom for all.

- 37.** The author thinks that when a policeman signals you to stop on a road-crossing, he is

- behaving in a whimsical manner
- interfering with your freedom to use the road
- protecting the liberty of all to use the road
- mischievously creating hurdles in your way from some personal motive

- ⊗ (c) The policeman is protecting the liberty of all to use the road.

- 38.** The author is of the view that we should

- have absolute individual liberty without any restrictions imposed by the society
- have everything, controlled by the society without any kind of individual liberty

- (c) try to strike a sensible balance between our individual liberty and our social liberty
- (d) have more of social liberty than individual liberty
- ⊗ (c) The author is of the view that we should try to strike a sensible balance between our individual liberty and our social liberty.

39. The author holds that

- (a) educating or not educating his child is a matter of personal liberty
- (b) educating or not educating his child is also a matter of social liberty
- (c) choosing the school for his child is a matter of social liberty
- (d) choosing the subject of study for his child is a matter of social liberty
- ⊗ (b) The author is of the opinion that educating or not educating his child is also a matter of social liberty.

40. The most suitable title of the passage would be

- (a) The Policeman at a Road Crossing
- (b) The Laws of the Road
- (c) Importance of Liberty
- (d) Education of Children
- ⊗ The most suitable title of the passage would be option (c). 'Importance of Liberty'.

Passage 2

My most interesting visitor comes at night, when the lights are still burning — a tiny bat who prefers to fly in through the open door, and will use the window only if there is no alternative. His object in entering the house is to snap up the moths that cluster around the lamps. All the bats I have seen fly fairly high, keeping near the ceiling; but this particular bat flies in low, like a dive-bomber, zooming in and out of chair legs and under tables. Once, he passed straight between my legs. Has his radar gone wrong, I wondered, or is he just plain crazy?

41. Consider the following statements

1. The tiny bat flew in low like a dive bomber.

2. The tiny bat like all bats keeps near the ceiling.
3. It has lost direction because its radar has gone wrong.
4. It wants to entertain the author with its skill in flying.

Which of the above statements may be assumed to be true from the information given in the passage?

- (a) 1 only
- (b) 1 and 3
- (c) 2 and 4
- (d) 3 and 4
- ⊗ (b) From the given information statements 1 and 3 are true.

42. The bat entered the room

- (a) because there was no alternative
- (b) to eat the moths round the lamps
- (c) as it had gone mad
- (d) as it preferred to fly in through the open door
- ⊗ (b) The bat entered the room to eat the moths round the lamps.

43. After comparing the habits of the tiny bat with those of other bats, the author was

- (a) sure that this bat had lost its direction
- (b) not sure of its preferences
- (c) surprised to find that it was an expert flier
- (d) unable to give the correct explanation for its behaviour
- ⊗ (d) The author was confused and hence was unable to give the correct explanation for the behaviour of the bat.

44. The author calls the tiny bat an “interesting visitor”. This means

- (a) the bat visits him at night
- (b) the bat is interested in the moths
- (c) this bat has peculiar qualities
- (d) this bat surprises him by zooming in and out like a dive-bomber
- ⊗ (c) The tiny bat is called an interesting visitor by the author as it has peculiar qualities.

45. What, according to you, can be the most suitable title for the passage?

- (a) Someone visits me
- (b) Night of Mysteries
- (c) My Nocturnal Visitor
- (d) A Funny Visitor

- ⊗ (c) My Nocturnal Visitor is the most suitable title of the passage from the given options.

Directions (Q. Nos. 46-50) *Each of the following sentences in this section has a blank space and four words or group of words given after the sentence. Select the word or group of words you consider most appropriate for the blank space and indicate your response on the Answer Sheet accordingly.*

46. The tired traveller on in the hope of finding some resting place.

- (a) strolled
- (b) scurried
- (c) paraded
- (d) plodded

- ⊗ (d) The word 'plodded' means to walk with slow heavy steps. So, from the given options it is most suitable to fill the given blank.

47. The car was damaged beyond repair in the accident.

- (a) outrageous
- (b) ghastly
- (c) nasty
- (d) heinous

- ⊗ (b) Ghastly means unpleasant and shocking. So, it should be used to fill the given blank.

48. They gave a dinner to celebrate the occasion, which impressed every guest.

- (a) austere
- (b) public
- (c) sumptuous
- (d) summary

- ⊗ (c) Sumptuous means of high quality and often expensive. So, from the given options it is the most suitable word to fill the given blank.

49. Once the manuscript is received by the publishers, it is typed in double space.

- (a) total
- (b) full
- (c) complete
- (d) filled

- ⊗ (c) complete is the correct answer.

50. I am used to in queues.

- (a) stand
- (b) standing
- (c) stand up
- (d) standing still

- ⊗ (b) standing is the correct answer.

Part B (General Studies)

51. Which one of the following statements is correct?

- (a) Any energy transfer that does not involve temperature difference in some way is not heat.
 - (b) Any energy transfer always requires a temperature difference
 - (c) On heating the length and volume of the object remain exactly the same
 - (d) Whenever there is a temperature difference, heat is the only way of energy transfer
- ⊙ (a) Practically, all the bodies around us either release or absorb energy often in the form of heat. The form of energy which is exchanged among various bodies or system on account of temperature difference is defined as heat. On heating the matter, the energy of atoms increases and hence the average distance between them increases. This results in thermal expansion. Solids can expand in one dimension, two dimensions and three dimensions while liquid and gases usually expand in volume.

52. If T is the time period of an oscillating pendulum, which one of the following statements is NOT correct?

- (a) The motion repeats after time T only once
 - (b) T is the least time after which motion repeats itself
 - (c) The motion repeats itself after nT , where n is a positive integer
 - (d) T remains the same only for small angular displacements
- ⊙ (a) Time-period (T) is the time taken by the particle to complete one oscillation. Time-period of the simple pendulum is given by

$$T = 2\pi \sqrt{\frac{l}{g}}$$

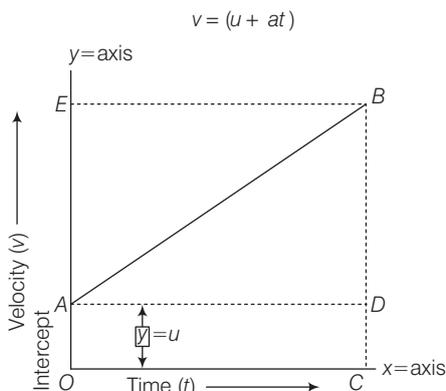
It is clear that the time period is independent of the mass of the pendulum. This formula is valid only when radius of point mass of pendulum is negligible compared to length of pendulum. Here, motion of pendulum repeats itself after a fixed interval i.e it remains same only for small angular displacements (θ). Hence, it is incorrect to say that this motion repeats after time T only once.

53. If an object moves with constant velocity then which one of the following statements is NOT correct?

- (a) Its motion is along a straight line
 - (b) Its speed changes with time
 - (c) Its acceleration is zero
 - (d) Its displacement increases linearly with time
- ⊙ (d) Whenever an object moves with constant velocity, the motion is always in form of straight line, which is parallel to the x-axis. As velocity remains same, hence acceleration of the object is zero. Also the speed of the object changes due to change in displacement so than in distance. Hence, option (d) is incorrect because it is not necessary displacement increases linearly. It decreases linearly for constant velocity.

54. An object is moving, with uniform acceleration a . Its initial velocity is u and after time t its velocity is v . The equation of its motion is $v = u + at$. The velocity (along y-axis) time (along x-axis) graph shall be a straight line

- (a) passing through origin
 - (b) with x-intercept u
 - (c) with y-intercept u
 - (d) with slope u
- ⊙ (c) From the graph for the equation of its motion.



The object has an initial velocity u at point A and then its velocity changes at a uniform rate from A to B in time t . In other words, there is a uniform acceleration ' a ' from A to B and after time t its final velocity becomes ' v ' equal to B in the graph. Hence, the slope of a velocity-time graph is equal to acceleration. Thus, we can say that the velocity time graph for the equation, $v = u + at$ will be straight line having slope equal to acceleration a with y intercept u .

∴ Option (c) is correct.

55. What is the net force experienced by a bar magnet placed in a uniform magnetic field?

- (a) Zero
 - (b) Depends upon length of the magnet
 - (c) Never zero
 - (d) Depends upon temperature
- ⊙ (a) The net force experienced by a bar magnet placed in a uniform magnetic field is zero. A magnetic field is said to be uniform over a region if its magnetic field induction (\vec{B}) has the same magnitude and direction at all point in the region. Thus, net force experienced by a bar magnet in a uniform magnetic field is zero.

56. Which one of the following has maximum inertia ?

- (a) An atom
 - (b) A molecule
 - (c) A one-rupee coin
 - (d) A cricket ball
- ⊙ (d) Inertia means resistance or opposition offered by the body to change its state. Mass of a body is the measurement of its inertia. A body with greater mass shows greater inertia, i.e., it is more difficult to change its state of rest or uniform motion as compared to that of a body having small mass. Hence, in the given option a cricket ball has maximum mass, so it has maximum inertia.

57. Which one of the following is the value of 1 kWh of energy converted into joules?

- (a) 1.8×10^6 J
 - (b) 3.6×10^6 J
 - (c) 6.0×10^6 J
 - (d) 7.2×10^6 J
- ⊙ (b) 1 kilowatt hour is the unit of electrical power.
- 1 kilowatt hour = 1000 watt \times 3600s
= 3.6×10^6 Joule
(∵ 1 Joule = 1 watt \times 1 sec)

58. Which one of the following statements about gravitational force is NOT correct?

- (a) It is experienced by all bodies in the universe
 - (b) It is a dominant force between celestial bodies
 - (c) It is a negligible force for atoms
 - (d) It is same for all pairs of bodies in our universe
- ⊙ (d) Gravitational force is defined as a non-contact force of attraction between any two bodies in universe (no matter how far the bodies are). It is experienced by all bodies in the universe. The celestial bodies experienced these forces, but it is not same for all pairs of bodies in our universe.

59. Whether an object will float or sink in a liquid, depends on

- (a) mass of the object only
- (b) mass of the object and density of liquid only
- (c) difference in the densities of the object and liquid
- (d) mass and shape of the object only

⊙ (c) When an object is floating then

$$\frac{\text{Volume of sinking part of the object}}{\text{Total volume of the body}} = \frac{\text{Density of the object}}{\text{Density of the liquid}}$$

$$\text{Volume of sinking part of the body} = \frac{\text{Mass of object}}{\text{Density of liquid}}$$

In case of sinking, if the buoyant force or upthrust exerted by the liquid is less than the weight of the object, the object will sink in liquid. Therefore, it is clear that whether an object will float or sink in a liquid depends on difference in the densities of the object and liquid.

60. Which one of the, following devices is non-ohmic?

- (a) Conducting copper coil
 - (b) Electric heating coil
 - (c) Semi conductor diode
 - (d) Rheostat
- ⊙ (c) According to Ohm's law, the electric current flowing through a conductor is directly proportional to the potential difference applied across its ends, provided the physical condition (such as temperature) remain unchanged. Hence, the device which follows Ohm's law for all voltage across it is called as an ohmic device.

For example, a wire rheostat conducting copper coil, electric heating coil, etc. The device that does not follow Ohm's law is known as non-ohmic device.

For example, Semi conductor diode.

61. Which one of the following is the natural phenomenon based on which a simple periscope works?

- (a) Reflection of light
 - (b) Refraction of light
 - (c) Dispersion of light
 - (d) Total internal reflection of light
- ⊙ (a) Periscope is an optical instrument which is based on the phenomenon of reflection of light. Light is reflected from the first mirror into the second one at 45° angle which is then reflected to the eye of the viewer.

62. Which one of the following frequency range is sensitive to human ears?

- (a) 0– 200 Hz
 - (b) 20 – 20,000 Hz
 - (c) 200 – 20,000 Hz only
 - (d) 2,000 – 20,000 Hz only
- ⊙ (b) 20-20,000 Hz, human ear can respond to minute pressure variations in air. The audible frequency range to which ears can respond is 20-20,000 Hz. The sound frequency beyond this limit may damage ear drums and cause hearing disabilities in humans.

63. The accidental touch of Nettle leaves creates a burning sensation, which is due to inject of

- (a) Hydrochloric acid (b) Methanoic acid
 - (c) Citric acid
 - (d) Sulphuric acid
- ⊙ (b) The accidental touch of Nettle Leaves create a burning sensation. This is due to the methanoic acid secreted by them. It is a Herbaceous plant that grows in the wild. The leaf of the dock plant, which often grows beside the nettle, is the traditional remedy for it.

64. Which of the following properties is true for a tooth paste?

- (a) It is acidic (b) It is neutral
 - (c) It is basic
 - (d) It is made up of Calcium phosphate, the material of tooth enamel
- ⊙ (c) Tooth pastes are derived from different variety of components namely abrasives, flouride and detergents. Abrasives includes particles of calcium hydrogen phosphates, aluminium hydroxide, etc. Tooth pastes are basic in nature and prevents tooth decay by neutralising the excess of acid. They can neither be acidic nor normal.

65. Which one of the following gives the highest amount of hydrogen ions (H⁺) ?

- (a) Sodium hydroxide solution
 - (b) Milk of magnesia
 - (c) Lemon juice
 - (d) Gastric juice
- ⊙ (d) The amount of H⁺ ions produced depends upon the strength of an acid which further depends on the corresponding pH values. Relation between pH and concentration of H⁺ ions is given by

$$\text{pH} = -\log [\text{H}^+] = \log \frac{1}{[\text{H}^+]}$$

As the pH increases, the acidic nature decreases and thus the amount of H⁺ ions. The order of pH values for the above given options are as follows:

Gastric Juice (1.3 – 3.0) < Lemon Juice (2.2-2.4) < Milk of Magnesia (10.5) < Sodium hydroxide (≈ 14)

Thus, Gastric juice gives the highest amount of H⁺ ions.

66. Brine is an aqueous solution of

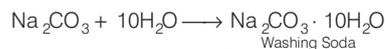
- (a) NaCl (b) NaOH
- (c) NaHCO₃ (d) Na₂CO₃

- ⊙ (a) Brine is an aqueous solution of sodium chloride (NaCl). Electrolysis of brine produces Sodium Hydroxide (NaOH), Chlorine (Cl₂) and Hydrogen (H₂). This forms the basis of the chlor-alkali industry.

67. Which one of the following is the chemical formula of Washing Soda ?

- (a) NaHCO₃ (b) Na₂CO₃ · 10H₂O
- (c) Na₂CO₃ · 5H₂O (d) NaOH

- ⊙ (b) 2NaCl(aq) + 2H₂OCl → 2NaOH(aq) + Cl₂(g) + H₂(g) chemically washing soda is sodium carbonate decahydrate with formula Na₂CO₃ · 10H₂O. Its anhydrous form, i.e. Na₂CO₃ is called soda ash.



68. Which one of the following is NOT true for bleaching powder?

- (a) It is used as a reducing agent in chemical industries
 - (b) It is used for bleaching wood pulp in paper factories
 - (c) It is used for disinfecting drinking water
 - (d) It is used for bleaching linen in textile industry
- ⊙ (a) Bleaching powder (CaOCl₂) is produced by the action of chlorine on dry slaked lime [Ca(OH)₂]. The following are the uses of bleaching powder:
- (i) It is used for bleaching purposes in textile industries, paper industry and in laundry.
 - (ii) It is also used as a disinfectant for water to make it free of germs.
 - (iii) It is used as an oxidising agent in many chemical industries.

Thus among the given, option (a) is incorrect.

69. AIDS is caused by a virus whose genetic material is

- (a) single stranded circular DNA
- (b) double stranded DNA
- (c) single stranded RNA
- (d) double stranded RNA

- ⊙ (c) AIDS is caused by Human Immunodeficiency Virus (HIV). It belongs to family retroviridae and genus lentivirus. HIV genome consists of two identical copies of the SSRNA genome, reverse transcriptase enzyme and other proteins to code for viral proteins that are essential during its replication. All these components are: enclosed within the core of viral particle.

70. Which one of the following organelle is NOT found in prokaryotic cells?

- (a) Cell wall (b) Mitochondria
(c) Plasma membrane (d) Ribosome

⊙ (b) Prokaryotic cells are simple and primitive type of cells e.g. bacteria, methanogens, blue-green algae, etc. These cell do not contain membrane bound nucleus and other cellular organelles like other than mitochondria, prokaryotes also lack. Mitochondria is a double membraned organelle, which is responsible for the production of ATP molecules. It is only found in eukaryotic cells.

71. Which one of the following parts of body does NOT take part in the process of breathing?

- (a) Bronchi
(b) Bowman's capsule
(c) Diaphragm
(d) Trachea

⊙ (b) Bowman's capsule is a part of human excretory system. It is closed cup-shaped and double-walled structure of Malpighian body of a kidney.

The human respiratory system includes nose, larynx, trachea, bronchi and bronchioles, alveoli and lungs.

Diaphragm is a dome-shaped sheet that separate the thoracic cavity from abdominal cavity. It also serves major role during breathing.

Trachea or wind pipe conduct air to lungs and bronchi are the branches of wind pipe inside lungs.

72. Which one of the following statements about classification of plants is correct?

- (a) Thallophytes have well differentiated body design
(b) Funaria is a fungus
(c) All Pteridophytes are Phanerogams
(d) Vascular system is not found among Bryophytes

⊙ (d) Bryophytes are very small, photosynthetic and first terrestrial plants. These are non-vascular plants too.

Thylophyta is a group of thaloid plants in which body is not differentiated into true roots, stems and leaves. e.g. Algae.

Funaria (Moss) is a genus of approximately 2010 species of class Bryopsida of Bryophyta.

Pteridophytes have hidden reproductive organs, so, these are called cryptogams. While all gymnosperms and angiosperms are phanerogams.

73. Which one of the following is the correct sequence of levels of hierarchy of classification of organisms from higher to lower?

- (a) Phylum - Class - Order - Family - Genus
(b) Phylum - Class - Family - Order - Genus
(c) Family - Order - Class - Species - Genus
(d) Class - Family - Order - Species - Genus

⊙ (a) A hierarchical system is used for taxonomic classification of organisms. Each level in this classification includes organisms with similar characteristics. According to Linnean hierarchy, proposed by Carlous Linnaeus (Father of systematic Botany), the hierarchy involves seven obligate categories as shown below

Kingdom → Phylum (in Animals)/Division (in plants) → Class → Order → Family → Genus → Species

74. Which one of the following statements about meristematic tissues in plants is correct ?

- (a) These are dead tissues and form wood
(b) They provide flexibility to plant due to their thickened walls
(c) These are present in the bark of a tree only
(d) Growth occurs in plants due to division of cells of these tissues

⊙ (d) Growth occurs in plants due to the division of meristematic cells. Meristematic tissues are a group of undifferentiated immature cells that are either preparing to divide or are in continuous state of division. These tissues contribute towards the growth of the plants as they are present in the actively growing regions of plants.

Due to meristematic tissues, a plant body retains the capacity of unlimited growth throughout their life.

75. Which one of the following Union Territories has the highest female literacy rate?

- (a) Chandigarh
(b) Lakshadweep
(c) Andaman and Nicobar Islands
(d) Puducherry

⊙ (b) Lakshadweep has a sex ratio of 946 females for every 1000 males and a literacy rate of 92.28%. The female literacy of lakshwadweep is 87.95 percent which the highest among all the union territories in India. Daman and Diu comes next with 79.59% in female literacy.

76. Consider the following statements about Roaring Forties

1. They are strong Westerly winds found in the oceans of Southern Hemisphere.
2. The strong east to west air currents are caused by the combination of air being displaced from the Equator towards the South Pole and the earth's rotation and abundance of landmasses to serve as wind breaks.

Which of the statements given above is/ are correct?

- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

⊙ (c) The Roaring Forties are strong westerly winds found in the Southern Hemisphere, generally between the latitudes of 40 and 50 degrees. The strong west-to-east air currents are caused by the combination of air being displaced from the Equator towards the South Pole and the Earth's rotation, and there are few landmasses to serve as windbreaks. Hence, both the given statements are correct.

77. Consider the following statements

1. The doldrums is a low pressure area around Equator where the prevailing winds are calm.
2. Chinook is a hot and dry wind that blows in winter and therefore raises the temperature in a short time.

Which of the statements given above is/ are correct?

- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2

⊙ (c) Doldrums, (also called equatorial calms) are equatorial regions of light ocean currents and winds within the Inter Tropical Convergence Zone (ITCZ), a belt of converging winds and rising air encircling Earth near the Equator. It is a low pressure area around the equator where the prevailing winds are calm with no movement.

Chinook are local winds that blow over the Rocky mountains in USA. They are essentially hot and dry wind that blow in the winter season and raises the temperature in a short time thus removing the frost from the crops.

78. Which one of the following is the driest desert of the world ?

- (a) Atacama (b) Gobi
(c) Sahara (d) Kalahari

⊗ (a) Atacama desert located in the Andes mountain is the driest desert in the world, as well as the only true desert to receive less precipitation than the polar deserts. Officially, it the driest place on Earth. It receives almost no rainfall. This is due to the fact that the desert lies on the leeward side of the Andes that blocks any winds from reaching here.

79. Which of the following statements about latent heat for a given substance is/are correct?

1. It is fixed at a given temperature.
2. It depends upon the temperature and volume.
3. It is independent of temperature and volume.
4. It depends on the temperature but independent of volume.

Select the correct 'answer using the codes given below

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

⊗ (b) The amount of heat per unit mass transferred during change of state of the substance is called Latent heat of the substance. It is always fixed at a given temperature and does not changes with temperature and volume of the substance. e.g. latent heat of ice is $3.34 \times 10^5 \text{J}$.

80. Which one of the following statements about the mass of a body is correct?

- (a) It changes from one place to another
- (b) It is same everywhere
- (c) It depends on its shape
- (d) It does not depend on its temperature

⊗ (b) Mass is a quantity of matter present inside the body which measures the inertia of a body. The mass of the body cannot be zero. Irrespective of the position of body in the universe, mass of the body always remains constant everywhere, which is independent on its temperature.

81. A ball balanced on a vertical rod is an example of

- (a) stable equilibrium
- (b) unstable equilibrium
- (c) neutral equilibrium
- (d) perfect equilibrium

⊗ (b) When the centre of gravity of a body lies below point of suspension or support, the body is said to be in stable equilibrium. When the centre of gravity of a body lies above the point of suspension or support, the body is said to be in unstable equilibrium. A balanced ball on a vertical rod is an example of unstable equilibrium because when the rod is

slightly disturbed its centre of gravity is lowered. The line of action of its weight lies outside the base of the rod. Then the torque due to weight of the toppled it down.

When the centre of gravity of a body lies at the point of suspension, the body is said to be in ventral equilibrium.

82. Which of the following statements about a fluid at rest in a cup is/are correct?

1. Pressure is same-at all the points in the fluid.
2. Pressure is exerted on the walls.
3. Pressure exists everywhere in the fluid.

Select the correct answer 'using the codes given below

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

⊗ (d) When a fluid is at rest in a cup then pressure is same at all the points in the fluid, pressure is exerted on the walls and pressure exists everywhere in the fluid. The pressure at a point within a volume of fluid means that the point to be surrounded by a small container by the area of the container.

83. Which one of the following devices is used to measure atmospheric pressure?

- (a) Ammeter (b) Barometer
- (c) Potentiometer (d) Lactometer

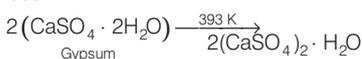
⊗ (b) Barometer is used to measure the atmospheric pressure. The function of a barometer is to know whether or not atmospheric pressure is rising or falling. Ammeter is a device which is used to measure electric current in amperes. Potentiometer is used to measure the emf of a cell and. Lactometer is used to measure the purity of milk.

84. Which one of the following is the number of water molecules that share with two formula unit CaSO_4 in Plaster of Paris?

- (a) One (b) Two
- (c) Five (d) Ten

⊗ (a) Plaster of Paris is chemically known as calcium sulphate hemihydrate $\left(\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}\right)$. Thus, with two formula unit of CaSO_4 , one molecule of water is shared.

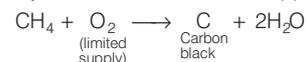
It is prepared by heating gypsum at 393 K.



85. How is carbon black obtained?

- (a) By heating wood at high temperature in absence of air
- (b) By heating coal at high temperature in absence of air
- (c) By burning hydrocarbons in a limited supply of air
- (d) By heating coal at high temperature in presence of air

⊗ (c) Carbon black is obtained by burning hydrocarbons in a limited supply of air.



It is used as a black pigment in black ink and as filler in automobile tyres. Which charcoal and coke are obtained by heating wood or coal respectively at high temperature.

86. Which one of the following properties is NOT true for graphite?

- (a) Hybridisation of each carbon atom is sp^3
- (b) Hybridisation of each carbon atom is sp^2
- (c) Electrons are delocalised over the whole sheet of atoms
- (d) Each layer is composed of hexagonal rings

⊗ (a) A graphite crystal consists of layers of carbon atoms or sheets of carbon atoms. Each carbon atom in a graphite layer is joined to other three carbon atoms by strong covalent bonds to form flat hexagonal rings. In this case, only 3 of the 4 valence electrons of C participate in bonding. Thus, hybridisation is sp^2 having covalent bonds with other 3 C-atoms in same plane.

The electrons are delocalised over the whole sheet of atoms which makes it good conductor of electricity. Thus, among the given options, option 'a' is incorrect.

87. Which one of the following is the purest form of Carbon?

- (a) Charcoal
- (b) Coke
- (c) Fullerene
- (d) Carbon black

⊗ (d) Carbon black (lamp black) is the most purest form of carbon. It contains about 98-99% of carbon. It is used for making printer ink, black paint, varnishes and carbon papers.

Charcoal is the impure form of carbon because of its porous structure and large surface area.

Coke contains 80-85% carbon. It is used as a fuel and as a reducing agent in metallurgy.

88. The Poisonous nature of Carbon monoxide (CO) is due to its

- (a) insolubility in water
- (b) ability to form a complex with haemoglobin
- (c) ability to reduce some metal oxides
- (d) property of having one sigma bond

⊗ **(b)** Carbon monoxide (CO) is highly poisonous to living beings because it has an ability to form more stable carboxyhaemoglobin. It is 300 times more stable than oxygen-haemoglobin complex. In blood, when the concentration of carboxyhaemoglobin reaches about 3-4 per cent. The oxygen carrying capacity of blood is greatly reduced. The oxygen deficiency results into headache, weak eyesight, nervousness, etc.

89. Which one of the following elements is needed in the human body to transfer electrical signals by nerve cells?

- (a) Lithium
- (b) Sodium
- (c) Rubidium
- (d) Caesium

⊗ **(b)** Sodium in the form of ions are found in large proportions in biological fluids. It plays an important role in the transmission of nerve signals. It also regulates the flow of water across cell membranes and in transport of sugars and amino acids into the cells.

90. Who among the following first discovered cell ?

- (a) Robert Brown
- (b) Robert Hooke
- (c) Leeuwenhoek
- (d) Rudolf Virchow

⊗ **(b)** Robert Hooke was the first who studied and discovered cell from a thin section of dead cork. He observed small honeycomb-like structures and named them as cells.

Robert Brown reported the discovery of nucleus. Leeuwenhoek was the first person to observe living cells under microscope. Rudolf Virchow proposed that all cells arise from pre-existing cells.

91. Which one of the following group of organisms forms a food chain?

- (a) Grass, human and fish
- (b) Grass, goat and human
- (c) Tree, tree cutter and tiger
- (d) Goat, cow and human

⊗ **(b)** The series of organisms in which one organism is being eaten by other is called food chain. The organisms given in the option (b) form the following food chain: Grass (Producers) → Goat (Primary Consumer) → Human (Secondary Consumer)

92. Which one of the following types of tissues will have contractile proteins?

- (a) Nervous tissue
- (b) Muscle tissue
- (c) Bone tissue
- (d) Blood tissue

⊗ **(b)** Contractile proteins are found in muscles. These proteins are actin and myosin and they are, the main components of thin and thick filaments respectively. Muscle contraction occurs when these filaments slide over one another in a series of repetitive events.

93. If by an unknown accident the acid secreting cells of the stomach wall of an individual are damaged. Digestion of which one of the following biomolecule will be affected to a greater extent?

- (a) Protein only
- (b) Lipid
- (c) Carbohydrate only
- (d) Protein and Carbohydrate

⊗ **(a)** Pepsinogen is an inactive form of pepsin which is secreted by oxyntic cells. It is converted into active form called Pepsin in the presence of HCl. Pepsin converts protein molecules into proteases, peptones and ultimately into amino acids. Hence, proteins will not be digested if acid secreting cells of stomach wall of an individual get damaged.

94. In which one of the following places, Headquarters of a Railway Zone is located?

- (a) Kanpur
- (b) Lucknow
- (c) Hajipur
- (d) New Jalpaiguri

⊗ **(c)** The East Central Railway (ECR) is one of the 17 railway zones in India. It is headquartered at Hajipur (Bihar) and comprises Sonpur, Samastipur, Danapur, Mughalsarai and Dhanbad divisions.

95. Which of the following statements about Indian Academy of Highway Engineers is/ are correct?

1. It is a registered society.
2. It is a collaborative body of both Central Government and State Governments.

Select the correct answer using the codes given below

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

⊗ **(d)** Indian Academy of Highway Engineers is the apex training institute set-up to address the training needs of Highway and Bridge Engineers in the country. It was set-up as an Institute in the year 1983 with the primary objective to

fulfill the need for training of highway engineers at the entry level and during the service. It is neither a registered society nor is a collaboration between the central and the State Governments.

96. Which one of the following is NOT a tributary of Indus River?

- (a) Beas
- (b) Ravi
- (c) Chenab
- (d) Tawi

⊗ **(d)** The Tributaries of Indus include Beas, Chenab, Gar, Gilgit, Gomal, Hunza, Jhelum, Kabul, Kunar, Kurram, Panjnad, Ravi, Shyok, Soan, Suru, Satluj, Swat, Zanskar, Zhob. Tawi is not one of the tributaries of Indus river. It is one of the left bank tributary of the Chenab River.

97. Which one among the following is the largest tiger reserve of India in terms of area of the core/critical tiger habitat?

- (a) Manas
- (b) Pakke
- (c) Nagarjunasagar Srisailem
- (d) Periyar

⊗ **(c)** Nagarjunsagar-Srisailem Tiger Reserve is the largest tiger reserve in India in terms of area of core and critical habitat. The reserve spreads over five districts, Kurnool district, Prakasam district, Guntur district, Nalgonda district and Mahbubnagar district. The total area of the tiger reserve is 3,568 km² (1,378 sq mi).

98. Which one of the, following is NOT a coastal depositional feature ?

- (a) Tombolo
- (b) Sand bar
- (c) Stack
- (d) Spit

⊗ **(c)** A stack or sea stack is a geological landform consisting of a steep and often vertical column or columns of rock in the sea near a coast, formed by wave erosion. Stacks are formed over time by wind and water, processes of coastal geomorphology. All the other options are forms of coastal depositional landform.

99. Which of the following is/are coastal erosional feature(s) ?

1. Notch
2. Sea Arch
3. Cliff
4. Hook

Select the correct answer using the codes given below

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

⊗ **(a)** A notch or small hollow is an indentation or a concave cut into a surface or edge (as in a coastline). It is not an erosional feature Sea Arch and Cliff are examples of Coastline erosional features. A sea arch is a natural opening eroded out of a cliff face by marine processes.

Some arches appear to have developed from surge channels, which are created by wave refraction causing the focussing of wave fronts on the side of a headland. A cliff is a high area of rock with a very steep side, often on a coast.

100. Chemical weathering of rocks is much greater in a place with

- (a) cold and dry climate
- (b) hot and humid climate
- (c) hot and dry climate
- (d) cold and humid climate

⊗ (b) Chemical Weathering results from chemical reactions between minerals in rocks and external agents like air or water. Oxygen oxidizes minerals to alteration products whereas water can convert minerals to clays or dissolve minerals completely. It occurs majorly in areas with hot and humid climate.

101. Which of the following statements about specific heat of a body is/are correct?

1. It depends upon mass and shape of the body
2. It is independent of mass and shape of the body
3. It depends only upon the temperature of the body

Select the correct answer using the codes given below

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

⊗ (a) Every substance has a unique value for the amount of heat absorbed or rejected to change the temperature of unit mass of it by one unit. This quantity is referred as the specific heat capacity of a body. It depends on the nature as well as mass of the substance and its change in temperature. Hence, option (a) is correct.

102. Which one of the, following is an example of the force of gravity of the earth acting on a vibrating pendulum bob?

- (a) Applied force
- (b) Frictional force
- (c) Restoring force
- (d) Virtual force

⊗ (c) An object that is vibrating is acted upon by a restoring force. The restoring force causes the vibrating object to slow down as it moves away from the equilibrium position and to speed up as it approaches the equilibrium position. There is the force of gravity that acts downward upon the bob. And the tension force results from string pulling upon the bob of the pendulum.

103. Which one of the following statements about the refractive index of a material medium with respect to air is correct?

- (a) It can be either positive or negative
- (b) It can have zero value
- (c) It is unity for all materials
- (d) It is always greater than one

⊗ (d) Refractive index of a material is given by the ratio of speed of light in vacuum to the speed of light in any medium. Refractive index is always greater than one because by the definition of refractive index, n of a medium (e.g. glass) is the ratio of the speed of light in a vacuum C , to the speed in the medium v and speed of light is maximum in vacuum, which gives the value of n greater than one.

104. Which one of the following statements about magnetic field lines is NOT correct?

- (a) They can emanate from a point
- (b) They do not cross each other
- (c) Field lines between two poles cannot be precisely straight lines at the ends
- (d) There are no field lines within a bar magnet

⊗ (c) The magnetic field lines is defined as the path along which the compass needles are aligned. They cannot intersect i.e., do not cross each other. Tangent drawn at any point gives the direction of magnetic field. Outside a magnet, they are directed from north to south pole and inside a magnet they are directed from south to north. These lines are always normal to the surface, which are precisely straight at the ends. Hence, statement (c) is not correct.

105. Two convex lenses with power 2 dioptre are kept in contact with each other. The focal length of the combined lens system is

- (a) 0.10 m
- (b) 2m
- (c) 4m
- (d) 0.25m

⊗ (d) Here, $P_1 = P_2 = 2 \therefore$ dioptre (D)
Using the formula total power, $P = P_1 + P_2$
 $= 2 + 2 = 4D, f = \frac{1}{P} = \frac{1}{4m} = 0.25m$

106. Which one of the following alkali metals has lowest melting point?

- (a) Sodium
- (b) Potassium
- (c) Rubidium
- (d) Caesium

⊗ (d) The melting point of alkali metals decreases on moving down the group due to decrease in the extent of metallic bonding. Thus, the sequence of melting point among the given options is

$$Na > K > Rb > Cs$$

Therefore, Caesium (Cs) have the least melting point.

107. Which one of the following metals is alloyed with sodium to transfer heat in a nuclear reactor?

- (a) Potassium
- (b) Calcium
- (c) Magnesium
- (d) Strontium

⊗ (a) Sodium-potassium alloy (NaK) is an alloy of two alkali metals sodium and potassium. It is used as a heat-transfer. Coolant in fast-breeder nuclear reactors and experimentally in gas-turbine power plants.

108. Which one of the following metals is used in the filaments of photo-electric cells that convert light energy into electric energy?

- (a) Tungsten
- (b) Copper
- (c) Rubidium
- (d) Aluminium

⊗ (a) Photo electric cells is a device which convert light-energy directly into electric energy. Main type of these cells are photo voltaic cell, photo emissive cell, photo conductive cell. The filament of photo electric cells are made up of tungsten. Electrons are obtained from the filament by thermionic emission and are accelerated to the anode by a potential difference (~ 100 kV).

109. Which of the following statements about Ring of Fire is/are correct?

1. It is a zone of convergence plate boundaries
2. It is an active seismic and volcanic zone
3. It is associated with deep trench

Select the correct answer using the codes given below

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

⊗ (d) The Ring of Fire is a ring of volcanoes around the Pacific Ocean that result from subduction of oceanic plates beneath lighter continental plates. This is also where the Earth's deep ocean trenches are and where the Earth's deep earthquakes are. The trenches form because the downgoing plate is bent downward as it subducts. It is the zone of convergence plate boundaries.

110. Which one of the following Himalayan vegetation species is found between the altitudes of 1800 to 2600 metres?

- (a) Saal
- (b) Chir
- (c) Spruce
- (d) Deodar

⊗ (d) Deodar tree is also known as Himalayan Cedar. These evergreen coniferous trees are native of Pakistan and Himalayas as they thrive at altitudes of 1,500-3,200 meters above sea level.

Deodar grows to a height of 40–60 meters (131–164 feet) with a trunk diameter of 3 meters (10 feet). The timber of Deodar tree is used as construction material for its durability.

111. Which one of the following rivers is NOT a tributary of river Cauvery?

- (a) Hemavati (b) Arkavati
(c) Indravati (d) Amravati

⊗ (c) The tributaries of Kaveri include Amaravati, Arkavathy, Bhavani, Chinnar, Hemavati, Honnuhole, Kabini, Kannika, Kollidam, Lakshmana Tirtha, Lokapavani, Noyyal, Pambar, Shimsha, Sujyothi. Indravati River is a stream of the river Godavari and is its tributary.

112. Which of the following conditions is/are essential for tea cultivation?

1. Tropical and sub-tropical climate
2. Heavy rainfall ranging from 150 cm to 250 cm
3. Soil should contain good amount of lime.

Select the correct answer using the codes given below

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

⊗ (b) Tea is an evergreen plant. It grows both in tropical and subtropical regions. The tea plant grows well in hot and humid climate. Actually, there is an intimate relationship between climate, yield per hectare and the quality of tea.

(i) The ideal temperature for growing tea is between 20 °C and 30 °C.

(ii) It needs heavy rainfall between 150 and 250 cm. It should be well-distributed throughout the year and should be in the form of frequent showers.

However it does not require soils with lime for its cultivation.

113. Bharatmala Project is related to

- (a) Improving road connectivity
(b) Interlinking ports and railways
(c) Interlinking of rivers
(d) Interlinking major cities with gas pipelines

⊗ (a) Bharatmala project is the second largest highways construction project in the country. It aims to build 50,000 km of highway roads targeted across the country. Bharatmala will look to improve connectivity particularly on economic corridors, border areas and far flung areas with an aim of quicker movement of cargo and boosting exports.

114. Which one of the following is a local wind that blows out from Siberia ?

- (a) Bora (b) Purga
(c) Mistral (d) Blizzard

⊗ (d) Blizzards are the local winds of Siberia which blows out from the Siberian region to parts of south Asia. Blizzards are dangerous winter storms that are a combination of blowing snow and wind resulting in very low visibilities.

115. Which one of the following centres is NOT known for iron and steel industry ?

- (a) Bhadravati (b) Salem
(c) Vishakhapatnam (d) Renukoot

⊗ (d) Mysore Iron and Steel Company (MISCO) is located at Bhadravati on the banks of river Bhadravati in Shimoga district of Karnataka. Salem steel plant is located in the Salem district of Tamil Nadu. The plant has the advantage of rich iron ore and limestone, which is readily available in the adjoining areas. It also enjoys the facilities of cheap power, charcoal and vast market. Hindalco's plant is located in Renukoot which is involved in the smelting of Aluminium.

116. Which of the following are essential prerequisites for establishment of a thermal power station?

1. Availability of fossil fuels
2. Proximity to a river, lake or sea
3. Good transport network
4. Proximity to an urban centre

Select the correct answer using the codes given below

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

⊗ (a) The essential prerequisites of a thermal power plant include that it must be in proximity to the fossil fuel and proximity to a water source like river, lake or sea. It should also have a good transport network for the transportation of raw materials and the finished products. However proximity to an urban centre is not one of the essential conditions for establishment of a power plant.

117. Which of the following statements about 'Aadi Mahotsav' held recently in New Delhi is/are correct?

1. The theme of the festival was 'A Celebration of the Spirit of Tribal Culture, Cuisine and Commerce'
2. The festival was organised by the Ministry of Tourism, Government of India

Select the correct answer using the codes given below

- (a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

⊗ (a) The Aadi Mahotsav, a celebration of the spirit of Tribal Culture, Craft, Cuisine and Commerce was held at Dilli Haat, New Delhi, on the of 30th November, 2017. The theme of this festival was 'A Celebration of the Spirit of Tribal Culture, Cuisine and Commerce'. It was organised by the Tribal secretary and not ministry of tourism.

118. Light year is a unit for measurement of

- (a) age of universe
(b) very large distance
(c) very small time intervals
(d) very high temperature

⊗ (b) Light year is a unit of measure of distance travelled by light in one year. It is used for measuring very large distance. 1 light year = 9.46×10^{15} m.

119. Which of the following statements about electromagnetic waves, sound waves and water waves is/are correct?

1. They exhibit reflection
2. They carry energy
3. They exert pressure
4. They can travel in vacuum

Select the correct answer using the codes given below

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

⊗ (a) Electromagnetic waves, sound waves and water waves exhibit reflection, carry energy (EM waves), exert pressure (water waves), but sound waves cannot travel in vacuum.

120. Thermal capacity of a body depends on the

- (a) mass of the body only
(b) mass and shape of the body only
(c) density, of the body
(d) mass, shape and temperature of the body

⊗ (d) Thermal capacity of a body can be defined as the amount of heat required to change the temperature of an object by a certain degree. It depends upon the mass, shape and temperature of the body.

121. Who among the following first used the term 'Industrial Revolution' in English to describe, the changes that occurred in British industrial development between 1760 and 1820?

- (a) Karl Marx (b) Georges Michelet
(c) Arnold Toynbee (d) Friedrich Engels

⊗ (c) The term Industrial Revolution was first popularised by the English economic historian Arnold Toynbee to describe Britain's economic development from 1760 to 1820.

122. Which one of the following statements about the Olympe de Gouges (1748- 1793) is correct?

- (a) She declared that although citizens should have equal rights, they are not entitled to the same honours by the State
 - (b) She was a supporter of the Jacobin government
 - (c) She was jailed for treason by the National Assembly
 - (d) She declared that the nation is the union of woman and man
- ⊗ (a) Only the first statement (a) is correct. She declared that although citizens should have equal rights they are not entitled to the same honours by the state.

123. Who among the following built a model steam engine in 1698 called “Miner’s Friend” to drain mines?

- (a) Thomas Savery
 - (b) Thomas Newcomen
 - (c) James Watt
 - (d) Richard Arkwright
- ⊗ (a) Thomas Savery was an English inventor and engineer, born in England. He invented the first commercially used steam powered device in 1698, a steam pump which is often referred to as an ‘engine’. Savery’s ‘engine’ was a revolutionary method of pumping water, which solved the problem of mine drainage and made widespread public water supply practical.

124. Which one of the following statements about Renaissance Humanist culture is NOT true?

- (a) It slackened the control of religion over human life
 - (b) It believed that human nature was many-sided
 - (c) It was concerned with good manners
 - (d) It criticised material wealth, power and glory
- ⊗ (c) The term Renaissance Humanist was derived from the program of studies called the ‘Studia Humanitatis’. However, the idea of calling this ‘Humanism’ only really arose in the nineteenth century. It majorly advocated that human outlook should be based on a modern plan and not blindly follow a religious plan. It never spoke about good manners.

125. Who gifted the *Badshah Nama* to King George in 1799?

- (a) Abul Fazl
 - (b) Abdul Hamid Lahori
 - (c) Nawab of Awadh
 - (d) William Jones
- ⊗ (c) In 1799, the Nawab (provincial governor) of Awadh in northern India sent the Padshahnama, to King George III of

England. Badshahnama is a genre of works written as the official visual history of Mughal emperor, Shah Jahan’s reign.

126. What is the name of the award given to meritorious men in the Mughal Court in the form of a robe of honour that was once worn by the Emperor?

- (a) Sarapa
 - (b) Patka
 - (c) Padma murassa
 - (d) Khilat
- ⊗ (c) *Padma murassa* i.e., a lotus blossom set with jewel was considered a special gift. It was gifted by the emperor only in exceptional circumstances. The emperor would receive several gifts from the courtiers. The courtiers would not go to emperor empty-handed.

127. Who among the following social reformer started a society for the encouragement of widow remarriage in 1866 in Maharashtra ?

- (a) Bal Gangadhar Tilak
 - (b) Jyotirao Phule
 - (c) Vishnushastri Pandit
 - (d) Pandita Ramabai
- ⊗ (b) Jyotirao Govindrao Phule was an Indian social activist, a thinker and anti-caste social reformer from Maharashtra. He worked for widow remarriage and started a home for pregnant Brahmin widows to give birth in a safe and secure place in 1863.

128. Name the first major voluntary association representing primarily Indian landlord interests that was set up in Calcutta in 1851 ?

- (a) British Indian Association
 - (b) Landholder’s Society
 - (c) Madras Native Association
 - (d) Bombay Association
- ⊗ (a) British Indian Association was created after amalgamating the “Landholders Society” and “British India Society” on 31 October 1851. This was the first political organisation that brought the Indian landlords together. The President of the first committee of this organisation was Raja Radhakanta Deb.

129. Who among the following introduced the Permanent Settlement of Bengal in 1793 ?

- (a) Lord Cornwallis
 - (b) Lord Ripon
 - (c) Robert Clive
 - (d) John Adam
- ⊗ (a) The Permanent Settlement was introduced by Lord Cornwallis in 1793. It was an agreement between the British East India Company and the Landlords of Bengal to settle the Land Revenue to be raised. In this agreement it was agreed

that the landlords would have perpetual and hereditary rights over the land, so long as they pay the fixed revenue to the British Government.

130. Name the rebel who fought against the British in the battle of Chinhat in the course of the 1857 Revolt?

- (a) Ahmadullah Shah
 - (b) Shah Mal
 - (c) Mangal Pandey
 - (d) Kunwar Singh
- ⊗ (*) The Battle of Chinhat between the British forces and Indian rebels, at Ismailganj, near Chinhat. The British were led by The Chief Commissioner of Oude, Sir Henry Lawrence. The insurgent force, which consisted of mutineers from the East India Company’s army and retainers of local landowners was led by Barkat Ahmad, a mutineer officer of the Company’s army.

131. Who among the following are the two civil servants who assisted the Constituent Assembly in framing the Constitution of India ?

- (a) B. N. Rau and K. M. Munshi
 - (b) S. N. Mukherjee and Alladi Krishnaswamy Aiyar
 - (c) B. N. Rau and S. N. Mukherjee
 - (d) K. M. Munshi and Alladi Krishnaswamy Aiyar
- ⊗ (c) Sir Benegal Narsing Rao was an Indian civil servant, jurist, diplomat and statesman known for his key role in drafting the Constitution of India. S.N Mukherjee was another civil servant who assisted in the framing of the Constitution of India.

132. Which member of ‘the Constituent Assembly proposed the resolution that the National Flag of India be a “horizontal tricolour of saffron, white and dark green in equal proportion”, with a wheel in navy, blue at the centre?

- (a) Jawaharlal Nehru
 - (b) B. R. Ambedkar
 - (c) Rajendra.Prasad
 - (d) Sardar Vallabhbhai Patel
- ⊗ (c) In 1947, when India gained freedom from the British, a committee headed by Dr. Rajendra Prasad decided to adopt the flag of the Congress as the national flag of India with a few modifications. With this in mind, the flag of 1931 was adopted as the national flag of India, but the charkha in the middle was replaced with the Ashoka Chakra. Thus, the Indian national flag was born. The saffron colour on top represents sacrifice, white represents peace and purity and green signifies the law of dharma (righteousness).

133. Which of the following is/are NOT historical biography/biographies?

1. Dipavamsa
2. Harshacharita
3. Vikramankadevacharita
4. Prithvirajavijaya

Select the correct answer from the codes given below

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

- ⊗ (a) Dipavamsa is one of the most important works in Pali Literature. It details the tooth relic and Bodhi Tree's arrival in Sri Lanka. It also deals with the arrival of Buddha's teaching and preachers in Sri Lanka. It mentions that Buddha visited Kelaniya and Dighavapi in Sri Lanka. All the other options are biographies about kings.

134. Which of the following pairs are correctly matched ?

Traveller	Country from
1. Marco Polo	Italy
2. Ibn Battuta	Morocco
3. Nikitin	Russia
4. Seydi Ali Reis	Turkey

Select the correct answer using the codes given below

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

- ⊗ (c) Marco Polo was an Italian merchant, explorer and writer, born in the Republic of Venice. Ibn Battuta was a Moroccan scholar who widely travelled the medieval world. Afanasy Nikitin was a Russian merchant of Tver and one of the first Europeans to travel and to document his visit to India. Seydi Ali Reis was an Ottoman admiral and navigator from Turkey. He commanded the left wing of the Ottoman fleet at the naval Battle of Preveza in 1538. So all the given options are correct.

135. Which of the following clans are included in the Agnikula Rajputs ?

1. Pratiharas
2. Chaulukyas
3. Paramaras
4. Chahamanas

Select the correct answer from the codes given below

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

- ⊗ (c) The four Rajput clans from Agnikunda were Chauhans, Chalukyas, Parmaras and Pratiharas. This theory comes from the Prithvirajraso of Chandarbardai. The Rajputs descended from Agni and this theory is based upon the Agnikula Legend of Bhavishyapurana .

136. Who among the following was the author of Humayun Nama?

- (a) Roshanara Begum
- (b) Ruquaiya Sultan Begum
- (c) Gulbadan Begum
- (d) Gauhara Begum

- ⊗ (c) Gulbadan begum is best known as the author of Humayun-Nama, the account of the life of her half-brother, Emperor Humayun, which she wrote on the request of her nephew, Emperor Akbar.

137. Which one of the following about the Parliament of India is NOT correct?

- (a) The Parliament consists of the President, the Lok Sabha and the Rajya Sabha
- (b) There are no nominated members in the Lok Sabha
- (c) The Rajya Sabha cannot be dissolved
- (d) Some members of the Rajya Sabha are nominated by the President

- ⊗ (c) Anglo-Indians are the only community that has its own representatives nominated to the Lok Sabha (Lower House) in India's Parliament. It is done only if the President of India feels that the Anglo Indian community has not been adequately represented in the Lok Sabha.

138. Which one of the following statements with regard to the Comptroller and Auditor General (CAG) of India is NOT correct?

- (a) He is appointed by the President of India
- (b) He can be removed from office in the same way as the judge of the Supreme Court of India
- (c) The CAG is eligible for further office under the Government of India after he has ceased to hold his office
- (d) The salary of the CAG is charged upon the Consolidated Fund of India

- ⊗ (c) The CAG is not eligible for further office either under the Government of India or under the Government of any State after he has ceased to hold his office. These provisions are in order to ensure the independence of CAG. All the other provisions mentioned are correct.

139. The Superintendence, direction and control of elections in India is vested in

- (a) The Supreme Court of India
- (b) The Parliament of India
- (c) The Election Commission of India
- (d) The Chief Election Commissioner

- ⊗ (c) According to Article 324 of the Constitution of India the superintendence, direction and control of the preparation of the electoral rolls for,

and the conduct of, all elections shall be vested in the Election Commission. Therefore it is the sole authority in India that takes charge of elections in India.

140. Which of the following provision(s) of the Constitution of India became effective from 26th November, 1949?

1. Elections
2. Citizenship
3. Emergency provisions
4. Appointment of the Judges

Select the correct answer using the codes given below

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

- ⊗ (b) The provisions of elections and citizenship became effective from 26th November 1949. Rest of the provisions including the Emergency provisions and the appointment of the judges were added later in the Constitution.

141. Which of the following statements regarding construction of Rohtang tunnel is NOT correct?

- (a) It is located at an altitude of 5,000 feet
- (b) It will provide all-year connectivity to Lahaul and Spiti Valley
- (c) The tunnel is being built by the Border Roads Organisation
- (d) It will reduce the length of the Leh-Manali highway by approximately 50 km

- ⊗ (a) The Rohtang tunnel is located at 3,100 metres (10,171 ft). It is being built by the Border Roads organisation to provide all year connectivity to Lahaul and Spiti valley. It also aims at reducing the distance of Manali Leh Highway by Approx 50 km.

142. Who among the following recently became the first woman pilot in Indian Navy?

- (a) Astha Segal
- (b) Roopa A
- (c) Sakthi Maya S
- (d) Shubhangi Swaroop

- ⊗ (d) Shubhangi Swaroop has made history by becoming the first woman to be inducted into the Indian Navy as a pilot.

143. Who among the following Indians did NOT hold the title of Miss World ?

- (a) Reita Faria
- (b) Sushmita Sen
- (c) Diana Hayden
- (d) Yukta Mookhey

- ⊗ (b) Sushmita Sen is the winner of the Miss Universe pageant of 1994. Sen was the first Indian woman to win the crown. All the other options are former Miss World.

144. Which one of the following countries has failed to qualify for the first time in 60 years for the FIFA World Cup to be held in Russia in the year 2018 ?

- (a) Mexico (b) Iran
(c) Saudi Arabia (d) Italy

⊙ (d) Italy has failed to qualify for first World Cup in 60 years after play-off defeat to Sweden.

145. The Defence Technology and Trade Initiative (DTTI) is a forum for dialogue on defence partnership between India and

- (a) Russia
(b) United States of America
(c) Israel
(d) France

⊙ (b) Defence Technology and Trade Initiative (DTTI) originally called the 'Carter Initiative' after the name of U.S. Deputy Secretary of Defence Ashton Carter. Its main objective is to strengthen defence cooperation by facilitating the Indian companies to collaborate with US partners in defense co-production, where the US provides technology and guidance for building modern weapon systems.

146. As per the policy applicable in 2017, how much Foreign Direct Investment (FDI) is permitted in the defence sector in India?

- (a) 49 per cent through the automatic route
(b) 26 per cent through the government route
(c) 26 per cent through the automatic route and beyond that up to 49 per cent through the government route
(d) 75 per cent through the automatic route

⊙ (a) In the defence sector foreign investment up to 49% is permitted under the automatic route, foreign investment beyond 49% and upto 100% is permitted through Government approval, wherever

it is likely to result in access to modern technology or for other reasons to be recorded.

147. Which one of the following countries did NOT participate in the 21st edition of Exercise Malabar?

- (a) United States of America
(b) Japan
(c) India
(d) Australia

⊙ (d) The 2017 Malabar exercise was the 21st edition of the exercise and conducted from 10 to 17 July 2017. This edition involved navies from India, USA and Japan. The exercise included a harbor phase at Chennai. Australia was not a participant in this exercise.

148. Justice Dalveer Bhandari of India was recently re-elected to the International Court of Justice after Christopher Greenwood pulled out before 12th round of voting. Christopher Greenwood was a nominee of

- (a) Canada (b) Russia
(c) Britain (d) USA

⊙ (c) Sir Christopher John Greenwood is a British judge at the International Court of Justice, to which he was elected on 6th November 2008. He recently pulled out before the 12th round of voting.

149. In order to review the Income Tax Act, 1961 and to draft a new Direct Tax Law in consonance with economic needs of the country, the Government of India in November 2017 has constituted a Task Force. Who among the following is made the convenor of it ?

- (a) Shri Arvind Subramanian
(b) Shri Arbind Modi
(c) Shri Amitabh Kant
(d) Dr. Bibek Debroy

⊙ (b) The Union Government has constituted a task force to review the Income Tax Act 1961 and draft a new

direct tax law in consonance with current economic needs. Central Board of Direct Taxes (CBDT) member Arbind Modi will be the convenor of task force while Chief Economic Adviser Dr. Arvind Subramanian will be a permanent Special Invitee. The task force will draft an appropriate direct tax legislation keeping in view the direct tax system in various countries, international best practices and economic needs of the country. It will submit its report within six months.

150. The 5th Global Conference on Cyber Space (GCCS) was held in New Delhi in November, 2017. Which of the following statements about GCCS is/are correct?

1. The 4th version of GCCS was held in London.
2. The main theme of GCCS 2017 is 'Cyber4All : A Secure and Inclusive Cyberspace for Sustainable Development'.
3. 'Bindu' is the logo of GCCS 2017.

Select the correct answer using the codes given below

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

⊙ (b) The Global Conference on CyberSpace (GCCS) was started in 2011 in London, second GCCS was held in 2012 in Budapest with focus on relationship between internet rights and internet security. The third edition of GCCS was held in 2013 in Seoul . The fourth version GCCS 2015 was held on April 16-17, 2015 in The Hague, Netherlands, which saw participation from 97 countries. Hence the 1st statement is incorrect. Bindu is not the logo for this conference hence the third statement is also incorrect.