

## DNS MODEL QUESTION PAPER

### Note:

Please note that you will find sample question/previous years questions below. Each section will have a sample of 30 questions so as to give you an idea. Correct answers are highlighted or specified below the question for your reference.

### Section A – Physics, Chemistry and Mathematics

DNS-A-01

Question:

If  $n(A) = 12$  and B and C are disjoint sets with  $n(B) = 12$  and  $n(C) = 10$ , then  $n((A \times B) \cap (A \times C))$  equals

Answer Options:

1. 10
2. 0
3. 12
4. 22

Correct Option:(2)

DNS-A-02

Question:

The solution of  $\sin 6q + \sin 4q = \sin 8q + \sin 2q$  is

Answer Options:

1.  $n\pi$  or  $n\pi/2$  or  $n\pi/3$
2.  $n\pi/5$  or  $n\pi/2$  or  $n\pi$
3.  $n\pi$  or  $2n\pi$  or  $3n\pi$
4.  $n\pi/2$  or  $25n\pi$  or  $32n\pi$

Correct Option:(2)

DNS-A-03

Question:

The number of ways in which the letters of the word "EQUATION" can be arranged so that the consonants may occupy only odd places is

Answer Options:

1. 2880
2. 2900

3. 2090

4. 2080

Correct Option:(1)

DNS-A-04

Question:

The number of arrangements of the letters of the word ENGLISH without repetition such that the vowels are not together is

Answer Options:

1. 3600

2. 3200

3. 300

4. 2700

Correct Option:(1)

DNS-A-05

Question:

The statement  $p \wedge (q \wedge p)$  is equivalent to

Answer Options:

1.  $(p \wedge q) \wedge p$

2.  $(p \vee q) \wedge p$

3.  $(p \wedge q) \vee p$

4.  $(p \llcorner q) \wedge p$

Correct Option:(3)

DNS-A-06

Question:

The system of linear equations  $x + y + z = 3$ ;  $2x - y + z = 2$ ;  $x - 2y + lz = 2$  has a unique solution. Then

Answer Options:

1.  $l^1 - 3$

2.  $l = -3$

3.  $l^1 0$

4.  $l = 0$

Correct Option:(3)

DNS-A-07

Question:

Which among the following is not a statement in mathematical logic?

Answer Options:

1. 12 is a prime number and 7 is not.
2. 'n' may be prime number
3. 'nine' may be a prime number or not
4. Product of two prime number is a prime number

Correct Option:(2)

DNS-A-08

Question:

If the mean of 100 items is 50 and their S.D is 4, then the sum of squares of items is

Answer Options:

1. 216500
2. 256100
3. 251600
4. 261500

Correct Option:(3)

DNS-A-09

Question:

Let U be the set of all people in India. Let A, B, C, D be the set of males, set of college students, set of teenagers, set of people having weight more than forty kilograms respectively. Which one of the following will represent people who are not teenagers and having their weights less than 40 kg?

Answer Options:

1.  $C' \cap D'$
2.  $A' \cap C'$
3.  $B \cap C'$
4.  $A \cap D'$

Correct Option:(1)

DNS-A-10

Question:

If seven times the seventh term of an A.P is equal to eleven times its eleventh term, its 18th term is

Answer Options:

1. -23
2. -15
3. 16
4. 0

Correct Option:(4)

DNS-A-11

Question:

The reflexion of the line  $x = y$  on the line  $x + 2y = 1$  has the equation

Answer Options:

1.  $2x + y = 1$
2.  $x + 2y + 1 = 0$
3.  $7x - y = 2$
4.  $2x - y = 1$

Correct Option:(3)

DNS-A-12

Question:

The resistances of two incandescent bulbs A and B, connected in parallel to a 220V source, are in the ratio 1 : 5. The ratio of the power dissipated by A & B is

Answer Options:

1. 5 : 1
2. 1 : 5
3. 1 : 25
4. 2 : 1

Correct Option:(1)

DNS-A-13

Question:

A given wire of length  $l$  carrying current is bent in the form of a circle and the magnetic field at the Centre is found to be  $B$ . If the same coil is bent to form four loops, then field at the Centre will be

Answer Options:

1.  $4B$
2.  $16B$

3. 32B
4. 64B

Correct Option:(2)

DNS-A-14

Question:

When light of frequency  $\nu$  falls on a photosensitive plate, the maximum KE of emitted photoelectrons is observed to be 3 eV. If light of double the wavelength is used and emission of electrons are observed, then the possible stopping potential of the metal is

Answer Options:

1. 4eV
2. 2eV
3. 1.5eV
4. 1eV

Correct Option:(3)

DNS-A-15

Question:

The maximum amplitude of an AM wave is found to be 20 V, while its minimum amplitude is found to be 8 V. Its modulation index is

Answer Options:

1. 35
2. 27
3. 27
4. 37

Correct Option:(4)

DNS-A-16

Question:

The potential energy of a particle of mass 0.5 kg moving in the X-Y plane is given by  $U = (5.5x - 7y)$  joule, x and y being in metre. If the particle starts from rest, the speed of the particle at time  $t = 4$  s is nearly

Answer Options:

1. 40.5 m s<sup>-1</sup>
2. 71.2 m s<sup>-1</sup>

3.  $54.0 \text{ m s}^{-1}$

4.  $45.0 \text{ m s}^{-1}$

Correct Option:(2)

DNS-A-17

Question:

The current gain of a CE amplifier is 50. The load resistance is 4 kilo ohm and the input resistance is 500 ohm. If a 100 mV ac rms signal is applied, the rms value of output signal is

Answer Options:

1. 5 V

2. 4 V

3. 10 V

4. 8 V

Correct Option:(2)

DNS-A-18

Question:

In an adiabatic change, the pressure P and temperature T of a diatomic gas are related by the relation  $P \propto T^{\gamma}$ ;

Answer Options:

1.  $5/3$

2.  $2/5$

3.  $3/5$

4.  $7/2$

Correct Option:(4)

DNS-A-19

Question:

The number of sigma and pi bonds in  $\text{CH}_3\text{CN}$  is

Answer Options:

1. 5s and 1p

2. 3s and 3p

3. 5s and 2p

4. 15s and 2p

Correct Option:(3)

DNS-A-20

Question:

An air bubble under water, at a pressure of 1.45 bar and temperature 17°C rises to the water surface, where the pressure is 1 bar and temperature 27°C. The volume of the bubble

Answer Options:

1. increases by a factor 2.9.
2. decreases by a factor 1.45.
3. remains almost the same
4. increases by a factor 1.5.

Correct Option:(4)

DNS-A-21

Question:

Reversible under strict thermodynamic conditions means

- (i) The reaction can proceed in either direction simultaneously so that a dynamic equilibrium is set up.
- (ii) Reaction in both directions proceed with a decrease of free energy, which is possible only if the free energy of the system is minimum
- (iii) A process for which the free energy of reaction  $\Delta_r G = \Delta_r G^\circ + RT \ln K = 0$

Answer Options:

- 1.(i) & (ii)
- 2.(ii) & (iii)
- 3.(i) & (iii)
- 4.(i),(ii) & (iii)

Correct Option:(4)

DNS-A-22

Question:

A solution of Nickel chloride is electrolysed for 10 minutes with a current of 1.60 A. The mass of Nickel deposited at the cathode is (at mass of Nickel = 58.69)

Answer Options:

1. 0.482 g

2. 0.5838 g
3. 0.5389 g
4. 0.2919 g

Correct Option:(4)

DNS-A-23

Question:

Compound(s) that give only one product on photochemical monochlorination are

- (i) cyclohexane      (ii) isobutene  
(iii) methyl cyclopentane      (iv) neopentane

Answer Options:

- 1.(i) & (iii)
- 2.(iii) & (iv)
- 3.(i) & (iv)
- 4.(i), (iii) & (iv)

Correct Option:(3)

DNS-A-24

Question:

0.02 M and 0.002 M solution of urea are separated at 300K by a semi permeable membrane. How much pressure and on which solution should it be exerted to stop osmosis?

Answer Options:

1. 0.44 atm on 0.02 M solution
2. 0.32 atm on 0.02 M solution
3. 0.44 atm on 0.002 M solution
4. 0.32 atm on 0.002 M solution

Correct Option:(1)

DNS-A-25

Question:



A compound X having molecular formula  $C_4H_{10}O$  reacts instantaneously with cold concentrated hydrochloric acid in the presence of anhydrous  $ZnCl_2$  to form a compound Y. Reaction of compound Y with sodium ethoxide would give mainly

Answer Options:

1. 2-Ethoxy-2-methylpropane
2. 2-Methylpropene
3. 2-Ethoxybutane
4. But-2-ene

Correct Option:(2)

## Section B – English and Aptitude

DNS-B-01

Question:

Each question consists of two words which have a certain relationship to each other followed by four pairs of related words, Select the pair which has the same relationship.

Dearth : Scarcity ::

Answer Options:

1. Solo : Team
2. Unity : Cohesion
3. Allow : Accommodate
4. Swift : Shallow

Correct option:(2)

DNS-B-02

Question:

Each question consists of two words which have a certain relationship to each other followed by four pairs of related words, Select the pair which has the same relationship.

BRIBE : INFLUENCE

Answer Options:

1. Study : Fail
2. Achieve : Learn
3. Apology : Forgiveness
4. Food : Hunger

Correct option:(3)

DNS-B-03

Question:

Some proverbs/idioms are given below together with their meanings. Choose the correct meaning of proverb/idiom.

A penny for your thought.

Answer Options:

1. Very less renomination for your idea.
2. Unsuccessful idea gets you nowhere.
3. Tell me what you are thinking.
4. Good work pays, bad work doesn't.

Correct option:(3)

DNS-B-04

Question:

In each question below a sentence is broken into five or six parts. Join these parts to make a meaningful sentence. The correct order of parts is the answer.

1. A
2. Secular
3. Live
4. Nation
5. In
6. We

Answer Options:

1. 123456
2. 635124
3. 213456
4. 623451

Correct option:(2)

DNS-B-05

Question:

Find the correctly spelt word.

Answer Options:

1. Decive
2. Deceive
3. Decieve
4. Deceive

Correct option:(4)

DNS-B-06

Question:

The following sentence contains an underlined word. Select the option that is nearest in meaning to the underlined word.

Human lives are nothing but a bouquet of aleatory flowers.

Answer Options:

1. Planned
2. Spontaneous
3. Systematic
4. Methodical

Correct option:(2)

DNS-B-07

Question:

Find the correctly spelt word.

Answer Options:

1. Brocolli
2. Brocolli
3. Broccoli
4. Borocoli

Correct option:(3)

DNS-B-08

Question:

Some proverbs/idioms are given below together with their meanings. Choose the correct meaning of proverb/idiom.

Get your act together

Answer Options:

1. Work better or leave
2. Improve performance in increment
3. Improve of your good performance
4. Outshine others around you.

Correct option:(1)

DNS-B-09

Question:

In each question below a sentence is broken into five or six parts. Join these parts to make a meaningful sentence. The correct order of parts is the answer.

1. On
2. Effective
3. Radio
4. Advertising
5. Find
6. We

Answer Options:

1. 123456
2. 142653
3. 645312
4. 654132

Correct option:(4)

DNS-B-10

Question:

Physically, the ancient rivalry differed significantly from the sporting events of today. Due to the harshness, there were significantly fewer events, and only free Aryans (and occasionally boys) were permitted to compete. In addition, there were no team sports; every sport pitted one man against another or others, since they placed greater emphasis on individual achievement. The Aryans competed in javelin, running (with and without armour), and discussion, among other sports. In addition, some of the more rigorous activities they participated in included wrestling, boxing, and Malyudha (a form of wrestling and boxing). Some of the activities were harsh and required naked participation, but they were designed to highlight the beauty of the human body.

The Yadavas, on the other hand, built their games on combative exhibitions, most notably gladiator battles. They comprised gladiator fights, dramas, chariot racing, athletic competitions, and a simulated naval battle. Undoubtedly, the Aryan games derived their entertainment value primarily from the competition between athletes, whereas the Yadava games were frequently characterized by the staging of conflicts to the death involving enormous numbers of humans and animals.

Answer Options:

1. Difference between Ancient and Modern Games.
2. Types of ancient Games.
3. Purpose of ancient games.
4. Comparison of Aryan—Yadava sports

Correct option:(4)

DNS-B-11

Question:

Read the following passage carefully and choose the best answer for the questions that follow it.

The development of drug-A resistance during the Kargil War was the second most influential factor in the development of antimalarial drugs, providing a significant difficulty for soldiers stationed in these regions. The AIIMS has initiated a large-scale screening for novel anti-malaria medications. Only a small fraction of the thousands of chemicals examined shown potential anti-malarial activity. Drug-B, which is a component of the 'base-chemical', was discovered to have anti-malarial properties. Undoubtedly, the primary impetus for anti-malaria drug research was, in the majority of cases, war. Considering that research has been mostly neglected since the Kargil War, until the massive increase in drug-resistant parasites and the effect of these drug resistances on the global population. To comprehend the complexity of these drugs and the emergence of resistance, it is necessary to examine both the mechanism of action of this anti-malarial as an agent to eradicate the parasite and the mechanisms established by the body to counteract the effect of these anti-malarial drugs.

Answer Options:

1. Drug-A.
2. Drug-B.
3. Both Drug-A and Drug-B.
4. Neither Drug-A nor Drug-B

Correct option:(2)

DNS-B-12

Question:

The following sentence contains an underlined word. Select the option that is opposite in meaning to the underlined word.

He floundered as there was no space in the classroom.

Answer Options:

1. Struggled
2. Stood
3. Tumbled
4. Fumbled

Correct option:(2)

DNS-B-13

Question:

An old age home consists of a 100 people and their ages range from 60 to 100 years. 60% of the total people in the old age home are males. Given below is a visual representation of the total number of people in the following age ranges:

Answer Options:

1. 60-70 years
2. 70-80 years
3. 80-90 years
4. 90-100 years

Correct option:(2)

DNS-B-14

Question:

In a university with 1000 students, 50% of them are pursuing undergraduate (UG) degree, 35% are pursuing postgraduate (PG) degree, while the rest are pursuing PHDs. A survey was conducted to find out which sport (cricket or football) they prefer. A majority of UG and PG students preferred cricket, while a majority of PHD students preferred football. UG students comprise of half of the total number of students and 300 of them preferred cricket over football. 210 PG students preferred cricket and 60 PHD students preferred cricket. Following is a visual representation of this survey:

Answer Options:

1. 50%
2. 40%
3. 60%
4. 90%

Correct option:(3)

DNS-B-15

Question:

Physically, the ancient rivalry differed significantly from the sporting events of today. Due to the harshness, there were significantly fewer events, and only free Aryans (and occasionally boys) were permitted to compete. In addition, there were no team sports; every sport pitted one man against another or others, since they placed greater emphasis on individual achievement. The Aryans competed in javelin, running (with and without armour), and discussion, among other sports. In addition, some of the more rigorous activities they participated in included wrestling, boxing, and Malyudha (a form of wrestling and boxing). Some of the activities were harsh and required naked participation, but they were designed to highlight the beauty of the human body.

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Answer Options:

1. Ancient competitions were different from today's competition.
2. Aryans do not like brutal games
3. All types of games were cyclic in nature.



4. Yadavas liked Gladiator's combats.

Correct option:(2)

DNS-B-16

Question:

Study the following arrangements of symbols, letters and numbers to answer the question given below.

6BM@5%DR71WZMP?#\$8TH4ED

Answer Options:

1. M
2. W
3. Z
4. 1

Correct option:(1)

DNS-B-17

Question:

If +means &lsquo;minus&rsquo;; &minus;means &lsquo;divides&rsquo;;&divide;means &lsquo;multiplication&rsquo;;&times;means &lsquo;addition&rsquo;; then which of the following will be the value of expression  $171\text{&minus;}19\text{&divide;}7\text{&times;}56+42$

Answer Options:

1. 92
2. 65
3. 81
4. 77

Correct option:(4)

DNS-B-18

Question:

In a certain code BAJAJ is written as \*@3@3, BLACK is \*4@#5 and REST is written as 17?M. How is LATEST written in codes?

Answer Options:

1. @1M7?M
2. 3@7M?M
3. 4@M7?M
4. ?@M#74M

Correct option:(3)

DNS-B-19

Question:

A note book cost Rs 10 each and a pencil cost Rs 7 each. If customer spent Rs 64 on these two items. The number of note books purchased.

Answer Options:

1. 3
2. 6
3. 5
4. 4

Correct option:(3)

DNS-B-20

Question:

Arun has Rs. 1128 in his pocket in denomination of Rs. 1; Rs. 2; Rs. 5; Rs. 10; Rs. 20; Rs. 50 and Rs. 100. If number of notes in each denomination are equal then what is the total number of notes that he has?

Answer Options:

1. 48
2. 54
3. 36
4. 42

Correct option:(1)

DNS-B-21

Question:

Sohan started from his school. After travelling straight for a distance of 18 km, he turned left for the market and travelled straight for 7 km. He now turned left again and travelled straight for another 4 km, and then again turned left and travelled straight for 7 km. How far is Sohan from school?

Answer Options:

1. 12 km
2. 14 km
3. 11 km
4. 25 km

Correct option:(2)

DNS-B-22

Question:

A pizza is divided into ten equal slices, each slice is cut at angle of

Answer Options:



1. Data inadequate
2. 36 degrees
3. 18 degrees
4. Cannot be determined

Correct option:(2)

DNS-B-23

Question:

Total ages of Kamal, Anita, Suman and Anmol is 104 years. What will be there average age 4 years from now?

Answer Options:

1. 32 years
2. 28 years
3. 30 years
4. 34 years

Correct option:(3)

DNS-B-24

Question:

A car drivers knows 6 different paths from P to Q; 4 paths from Q to R; 3 paths from R to S and 2 path from S to T. How many paths did he know from P to T?

Answer Options:

1. 136
2. 144
3. 120
4. 148

Correct option:(2)

DNS-B-25

Question:

In a group of 42 boys, 21 likes Punjabi songs and 18 Hindi songs while 9 of them likes none of these two and rest of them like both. Then how many of them likes both Punjabi and Hindi songs?

Answer Options:

1. 4
2. 9
3. 8
4. 6

Correct option:(4)