

### Sample Paper

for Students presently in Class VIII

#### Paper 2

**NEET Science, Science (Basic School, NTSE & NEET) & NTSE Mathematics**

Duration : 90 minutes

Maximum Marks : 188

Please read the instructions and guidelines carefully :

**Important Note :** Please ensure to accurately input the details for the Class and Paper No. as indicated at the top of this sheet into the corresponding columns / fields on the OMR sheet before proceeding with the paper. Incorrectly filled information regarding the class or paper may result in inaccurate outcomes or results.

*"This paper has been scientifically designed to evaluate your potential – manifested and hidden for the target examinations mentioned in various sections of the paper. Thus, your adherence to the instructions is critical in the evaluation of the same"*

1. This Question paper consists of 3 sections.
2. Student should devote allotted time for each section. If a section is easy, then it is easy for everyone & was meant to be like that with a goal in mind. Do not switch over to another section if you find the section to be easy. If a section is tough, then it is tough for everyone. You are advised to spend 30 Minutes on Section-I, 30 Minutes on Section-II and 30 Minutes on Section-III. Dedicating the required time to finish each section successfully is essential. Opening the next section before completing the allotted time for the preceding section is not permitted. This adherence is crucial for assessing your true potential, as each section is meticulously crafted to evaluate your potential for the corresponding competitive examinations.
3. Candidate should open the seal of Section-II only after devoting 30 minutes on Section-I and Seal for Section-III is to be opened only after devoting 30 minutes on Section-II.
4. Sheets will be given to each candidate for rough work. Candidate must fill all details on the rough sheet and submit the same to invigilator along with OMR sheet. Candidate must mention the Question No. while doing the rough work in the sheet.
5. Please note candidates are not allowed to bring any prohibited items into the exam hall such as electronic devices, mobile phones, smart watch, earphones, calculators, books, notes, formula sheets, and bags.
6. Marking scheme is given in table below:

Section	Subject	Question no.	Marking Scheme for each question	
			Correct answer	Wrong answer
<b>SECTION – I</b> (NEET-Science) Time Allotted: 30 Minutes	PHYSICS (Part-A)	1 to 8	+4	-1
	CHEMISTRY (Part-B)	9 to 16	+4	-1
	BIOLOGY (Part-C)	17 to 32	+4	-1
<b>SECTION – II</b> Science (Basic School & NTSE) & NEET Time Allotted: 30 Minutes	PHYSICS (Part-A)	33 to 37	+1	0
	CHEMISTRY (Part-B)	38 to 42	+1	0
	BIOLOGY (Part-C)	43 to 47	+1	0
	PHYSICS (Part-D)	48 to 52	+1	0
	CHEMISTRY (Part-E)	53 to 57	+1	0
	BIOLOGY (Part-F)	58 to 62	+1	0
<b>SECTION – III</b> (NTSE-Mathematics) Time Allotted: 30 Minutes	MATHEMATICS (Part-A)	63 to 77	+1	0
	MATHEMATICS (Part-B)	78 to 92	+1	0

# Section - I

Time: 30 Minutes

## PHYSICS - (PART - A)

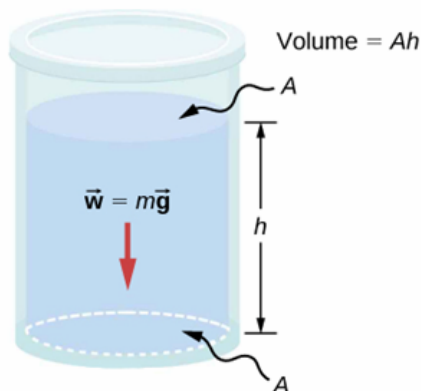
This part contains 8 Multiple Choice Questions number 1 to 8. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

- Which of the following is the correct relationship between force, pressure and area?  
(A) Pressure = Force  $\times$  Area (B) Force = Pressure  $\div$  Area  
(C) Force = Pressure  $\times$  Area (D) None of these are correct
- An object oscillates 10 times in 20 seconds. Its frequency of oscillation is  
(A) 2 Hz (B) 1 Hz  
(C) 200 Hz (D) 0.5 Hz
- You push a box with a horizontal force of 50 newton (N). At the same time, your friend pushes it with a force of 80 newton (N) in opposite direction to your push. The object experiences a resultant force of  
(A) 30 N towards your friend (B) 30 N towards you  
(C) 130 N towards your friend (D) 130 N towards you

### Comprehension: Pressure in a fluid

You have already studied that Pressure is calculated by dividing perpendicular force acting on a surface by the area of the surface. In case of fluids the pressure at a point can act from all directions. A fluid can exert pressure on the base as well as walls of the container.

The pressure at a point inside a fluid can be calculated by dividing weight of the fluid above that point by the area. For example, if we wish to calculate the pressure (P) due to a liquid at the base of the vessel shown below we can divide weight (mg) by base area (A).



So,  $P = \frac{mg}{A} = \frac{(Vd)g}{A}$  (Here V = Volume of liquid) =  $\frac{Ahdg}{A} = dgh$  Or,

**Pressure (P) =  $d \times g \times h$**

Where  $d$  = density of the fluid (Its mass divided by volume)

$g$  = acceleration due to gravity

$h$  = height of the fluid column above the point.

Now answer the question number 4 based on the above learning:

4. The pressure (measured in its SI unit 'pascal') exerted by water of density  $1000 \text{ kg/m}^3$  at a point of depth 0.5 km below the surface of a lake where acceleration due to gravity is  $10 \text{ m/s}^2$  is (without including atmospheric pressure) :
- (A)  $5 \times 10^3$  pascal (B)  $5 \times 10^6$  pascal  
(C) 5 kilopascal (D)  $5 \times 10^6$  kilopascal

5. The friction that exists between the two surfaces in contact when there is no relative motion between them is called static friction. Relative motion means motion of one body with respect to another. Static friction acts on a body to oppose its tendency of relative motion. If there is no relative motion between two bodies, then the static friction is balancing the applied horizontal force. The maximum value of static friction is called limiting friction. Once the object begins to move, the friction that comes into play is sliding friction. Sliding friction is slightly less than static friction. Rolling friction is the friction that acts on objects when they are rolling over a surface.

Match the situation given in **column-I** with the corresponding friction in **column-II**

Column – I		Column –II	
(a)	A man tries to displace a block horizontally but fails to move it	(p)	Static friction
(b)	The minimum horizontal force the man has to apply to move the block	(q)	Sliding friction
(c)	The horizontal force that the man applies when the block moves	(r)	Rolling friction
(d)	The horizontal force that the man has to apply to move the block if it is fitted with wheels	(s)	Limiting friction

- (A) (a – p), (b – s), (c – q), (d – r) (B) (a – s), (b – p), (c – q), (d – r)  
(C) (a – p), (b – s), (c – r), (d – q) (D) (a – s), (b – p), (c – r), (d – q)

6. A block of wood of dimensions 40 cm x 20 cm x 10 cm is kept on a tabletop. As pressure is a measure of force per unit area, the pressure exerted by the wooden block on the tabletop depends on how the block is placed on the table i.e., which side lies on the surface of the table. Match the **Column-I** with **Column-II**.

Column – I		Column –II	
(a)	Block is placed with its 10 cm x 20 cm side on the surface of the table	(p)	Zero pressure
(b)	Block is placed with its 20 cm x 40 cm side on the surface of the table	(q)	Minimum (non-zero) pressure
(c)	Block is placed with its 10 cm x 40 cm side on the surface of the table	(r)	Maximum pressure
(d)	Block is placed with its 10 cm x 40 cm on the surface of the table in a gravity free space	(s)	Pressure neither maximum or minimum (non-zero)

- (A) (a – r), (b – q), (c – p), (d – s) (B) (a – q), (b – r), (c – p), (d – s)  
(C) (a – q), (b – r), (c – s), (d – p) (D) (a – r), (b – q), (c – s), (d – p)

7. **Statement-I:** An unbalanced force can increase or decrease the speed of a body.  
**Statement-II:** An unbalanced force can change the direction of motion of a body.  
**Statement-III:** A balanced force acting on a body can produce a change in velocity (speed and direction of motion) of the body.
- (A) Only statement-III above is correct.  
(B) All the statements I, II and III above are correct.  
(C) Only statements I and II above are correct  
(D) Only statements I and III above are correct.

8. **Statement-I:** A pendulum completes 54 oscillations in one minute. The frequency of the pendulum is 54 Hertz.  
**Statement-II:** When the frequency of vibration is high, the sound produced is loud.  
**Statement-III:** Sound can travel through solids, liquids and gases  
 (A) Only statement-III above is correct.  
 (B) All the statements I, II and III above are correct.  
 (C) Only statements I and II above are correct  
 (D) Only statements I and III above are correct.

## CHEMISTRY - (PART - B)

*This part contains 8 Multiple Choice Questions number 9 to 16. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct.*

9. Identify the gas that is generally produced when coal is burnt in the presence of a lot of air.  
 (A) Carbon monoxide (B) Sulphur dioxide  
 (C) Nitrogen dioxide (D) Carbon dioxide
10. Which of the following is also known as the 'black gold'?  
 (A) CNG (B) Natural gas  
 (C) Coal (D) Petroleum
11. When zinc reacts with dilute sulphuric acid, a salt is formed with the release of a gas. The gas produced during this puts off a burning candle with a pop sound. The gas evolved during this reaction is:  
 (A) Sulphur dioxide (B) Oxygen  
 (C) Hydrogen (D) Hydrogen sulphide

### Comprehension for Q. No. 12

Natural resources are materials from the Earth that are used to support life and meet people's needs. Any natural substance that humans use can be considered a natural resource. Exhaustible natural resources are those resources which are present in limited quantities and can be completely used up by human activities. Inexhaustible natural resource is a natural resource that will never run out. It will not be depleted and will continue to exist forever. Some of the examples of natural resource are: air, coal, natural gas, sunlight, petroleum, minerals, forests, oxygen.

12. Which of the following natural resources is inexhaustible?  
 (A) petroleum (B) minerals  
 (C) sunlight (D) natural gas

13.

COLUMN - I Polymer		COLUMN - II User	
1.	Rayon + Cotton	P.	Socks, ropes and tents
2.	Rayon + Wool	Q.	Dress material
3.	Nylon	S.	Bed sheets
4.	Polyester	R.	Carpets

Which of the following options is a correct match?

- (A) (1 - P), (2 - Q), (3 - R), (4 - S) (B) (1 - R), (2 - S), (3 - P), (4 - Q)  
 (C) (1 - R), (2 - Q), (3 - P), (4 - S) (D) (1 - P), (2 - R), (3 - Q), (4 - S)

14.

COLUMN – I Alloy		COLUMN – II Composition	
1.	Amalgam	P.	Lead + Tin
2.	Brass	Q.	Copper + Tin
3.	Bronze	S.	Sodium + mercury
4.	Solder	R.	Copper + Zinc

Which of the following options is a correct match?

- (A) (1 – P), (2 – Q), (3 – R), (4 – S)                      (B) (1 – Q), (2 – P), (3 – R), (4 – S)  
 (C) (1 – S), (2 – P), (3 – R), (4 – Q)                      (D) (1 – R), (2 – S), (3 – Q), (4 – P)

15. **Statement-1:** Thermoplastic polymers get deformed easily on heating but are difficult to bend.

**Statement-2:** Thermosetting polymers cannot be softened by heating once they are moulded.

Which of the following options is correct about the statements?

- (A) Statement 1 is correct, Statement 2 is incorrect.  
 (B) Statement 2 is correct, Statement 1 is incorrect.  
 (C) Both Statements are correct.  
 (D) Both Statements are incorrect.

16. **Statement – 1:** Coal was formed as a result of dense forests in low lying wetland areas getting buried which expanded as more soil deposited on them and temperature decreased as they sank deeper and deeper.

**Statement- 2:** Absence of air, high temperature and high pressure transformed the dead sea organisms into petroleum and natural gas.

- (A) Statement 1 is correct, Statement 2 is incorrect.  
 (B) Both Statements are correct.  
 (C) Only Statement 2 is correct.  
 (D) None of the statements are correct.

## BIOLOGY – (PART – C)

*This part contains 16 Multiple Choice Questions number 17 to 32. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct.*

17. What are the wild life sanctuaries present in the Pachmarhi Biosphere Reserve.

- (A) Satpura and Bori    (B) Bori and Pachmarhi  
 (C) Satpura and Pachmarhi                                      (D) Bori and Mudumali

18. Malaria is a mosquito-borne infectious disease caused by.

- (A) Prokaryotic Parasite    (B) Eukaryotic parasite  
 (C) Fungi    (D) Virus

19. Find disadvantage of using manure, from the followings.

- (A) It enhances the water holding capacity of the soil.  
 (B) Improve the texture of the soil.  
 (C) Increases the number of friendly microbes.  
 (D) Inconvenient to handle, store and transport

Comprehension for Q. No. 20

Acquired immune deficiency syndrome (AIDS) is a serious and potentially life threatening condition caused by the human immunodeficiency virus(HIV). HIV attacks the immune system, specifically T<sub>Helper</sub> cells which play a crucial role in the body's defence against infections. As the virus progresses, it weakens the immune system. Individual more susceptible to opportunistic infections. While modern antiretroviral treatments have significantly improved outlook for those with HIV.

20. HIV belongs to which of the following group of virus?  
 (A) Rhabdovirus (B) Reovirus  
 (C) Retrovirus (D) Flavivirus

21. Match the followings.

Disease		Causative micro-organism	
a.	Anthrax	i.	<i>Salmonella typhi</i>
b.	Citrus canker	ii.	Varicella-zoster
c.	Tuberculosis	iii.	<i>Mycobacterium tuberculosis</i>
d.	Chicken pox	iv.	<i>Xanthomonas citri</i>
e.	Typhoid	v.	<i>Bacillus anthracis</i>

- (A) (a – v), (b – ii), (c – iii), (d – iv), (e – i) (B) (a – i), (b – iii), (c – ii), (d – v), (e – iv)  
 (C) (a – v), (b – iv), (c – i), (d – ii), (e – iii) (D) (a – v), (b – iv), (c – iii), (d – ii), (e – i)

22. Find the incorrect match from the followings.

- (A) Bharatpur bird sanctuary - Rajasthan  
 (B) Lockchao wild life sanctuary - Manipur  
 (C) Pachmarhi Biodphere Reserve - Tamilnadu  
 (D) Great Nicobar Biosphere Reserve – Andaman and Nicobar

23. Which of the following is not a kharif crop?

- (A) Maize (B) Paddy  
 (C) Groundnut (D) Watermelon

24. Find incorrect statement from the following

- (A) In wildlife sanctuary, where animals are protected from any disturbance and their habitat  
 (B) Endemic species are those species of plants and animals which are found exclusively in a particular area.  
 (C) Deserts and oceans are man-made ecosystems  
 (D) Animals whose numbers are diminishing to a level that they might face extinction are known as endangered animals.

25. In nitrogen cycle, conversion of atmospheric nitrogen into ammonia is done by.

- (A) Nitrosomonas (B) Rhizobium  
 (C) Pseudomonas (D) Azatobactor

Comprehension for Q. No. 26

**Wild mango**

Wild mango species is conserved at field gene bank of ICAR-CIARI and also registered with NBPGR (ICAR- National Bureau of Plant Genetic Resources, New Delhi) with IC No 04060 to receive national identity. The species is characterized by tall trees (9-12 m), spreading tree habit with elliptic oblong leaves and notched apex. The fruit weight ranges from 25 -35 g with total soluble solids in the range of 12-18oB. The raw mangoes of this species are used in pickle making as little sour in taste and the pulp is rich in phytochemicals. No serious pest and disease is reported from this species. This endemic mango (M. andamanica) can be propagated by seeds and grafting. For conservation of gene pool which is rare, planting can be taken up in gene banks, botanical gardens and in-situ conservation in wild.

26. To conserve wild mango species, which is/are the best methods?  
 (A) Gene banks (B) Seed banks  
 (C) In -situ conservation in national parks (D) All of these

27. In **Column - A** disease name given and **Column - B** contain carriers.  
 Find out INCORRECT match.

Column – A		Column – B
(A)	Malaria	Female Anopheles
(B)	Dengue Fever	Female Aedes mosquito
(C)	Amoebiasis	House fly
(D)	Chikungunya	Female Anopheles

28. Find out INCORRECT match

Column – A		Column – B
(A)	Red Data book	Record of endangered animal
(B)	Bori	Wildlife sanctuary
(C)	Bison	Endemic fauna of Pachmarhi
(D)	Black buck	Endangered wild animal in India

29. A species of insect was found to have developed resistance to a commonly used insecticide. Which of the following is the most likely explanation?  
 (A) Insects learned how to avoid the pesticide, and these learned behaviours were passed on subsequent generations.  
 (B) The original gene pool included genes that conferred resistance to the insecticide.  
 (C) The insecticide stimulated development of resistance in certain individuals and this was inherited.  
 (D) The insecticide caused a mutation that increased insect fitness and which was passed on to subsequent generations.
30. Certain vaccines function by introducing a weakened variant of a pathogen into the human body. Which of the following statements is incorrect?  
 (A) Vaccines can be made from a particular segment of a pathogen  
 (B) The immune response to the vaccine will be 'remembered' if the active pathogen is ever encountered  
 (C) The vaccine lacks virulence factors that cause disease  
 (D) Protection similar to vaccination cannot be attained from previous infection
31. An ecosystem includes;  
 1. Plants  
 2. Animals  
 3. Soil  
 4. Microorganism  
 5. Climate

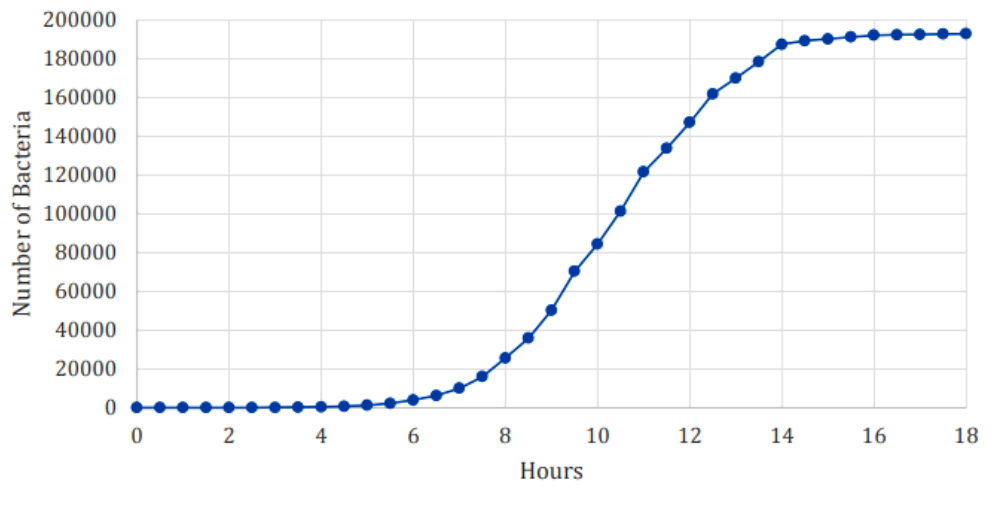
Choose correct options

- (A) Both 1 and 2 only  
 (C) 1, 2, 3, 4 and 5

- (B) 1, 2, 3 and 4 only  
 (D) 1, 2 and 3 only

The following information refers to Questions 32.

Dr Ram is growing bacteria in a liquid nutrient media in his lab. He measures the growth of bacteria over time and graphs it, showing the trend below:



32. Past about 12 hours the growth of the bacteria seems to change. What is a plausible reason for this occurring?
- (A) Antibiotics in the nutrient broth begin to take effect around this time and inhibit growth.  
 (B) Waste products toxic to the bacteria have accumulated and inhibit growth.  
 (C) The bacteria ran out of space.  
 (D) The temperature for growth was now optimal and the bacteria grew faster



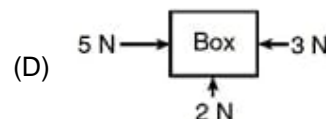
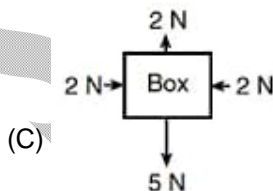
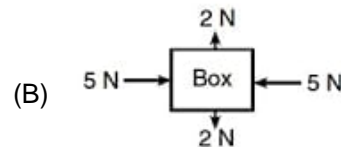
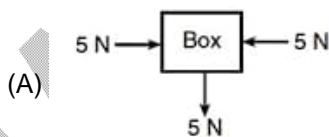
## Section – II

Time: 30 Minutes

### PHYSICS – (PART – A)

This part contains 5 Multiple Choice Questions number 33 to 37. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

33. The device used to detect electric charge  
 (A) Telescope (B) Stethoscope  
 (C) Electroscopes (D) Microscope
34. If a positive charge 'A' is kept as shown, it will \_\_\_\_\_ charge 'B' (charge B is negative)  
 (A) Attract  
 (B) Repel  
 (C) First attract then repel  
 (D) None of these
35. Inertia is the property of a body by virtue of which the body is  
 (A) Unable to change its density  
 (B) Unable to change its colour  
 (C) Unable to change its gravity  
 (D) Unable to change by itself the state of rest and of uniform linear motion
36. Identify the wrong statement. The momentum of a body is  
 (A) The product of mass and velocity of the body  
 (B) The product of force and time  
 (C) The product of force and velocity  
 (D) Measured in kg m/s in S.I. system
37. Which diagram represents a box in equilibrium?



## CHEMISTRY – (PART – B)

*This part contains 5 Multiple Choice Questions number 38 to 42. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct.*

38. Calamine is an ore of  
 (A) aluminium (B) Iron  
 (C) Zinc (D) Copper
39. What should be added to pure iron to make stainless steel?  
 (A) nickel and cobalt (B) cadmium and chromium  
 (C) nickel and cadmium (D) chromium and nickel
40. An amalgam of metal has which other element?  
 (A) C (B) Ag  
 (C) Mg (D) Hg
41. Which one of the following elements is used in petroleum jelly?  
 (A) Sulphur (B) Phosphorus  
 (C) Nitrogen (D) Carbon
42. The percentage of carbon content in Peat is  
 (A) 60 – 80% (B) 90 – 95%  
 (C) < 60% (D) 100%

## BIOLOGY – (PART – C)

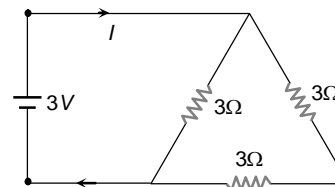
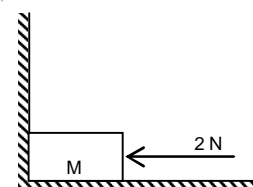
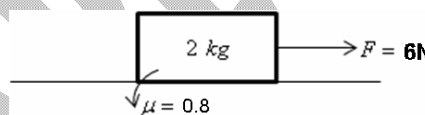
*This part contains 5 Multiple Choice Questions number 43 to 47. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct.*

43. The thread like structures present in the nucleus are  
 (A) Nucleolus (B) Ribosomes  
 (C) Chromosomes (D) ER
44. Which of the following is not a cell?  
 (A) RBCs (B) WBCs  
 (C) Bacteria (D) Virus
45. Deforestation increases the level of \_\_\_\_\_ in atmosphere.  
 (A) Nitrogen (B) CO<sub>2</sub>  
 (C) O<sub>2</sub> (D) Chlorine
46. Who discovered the vaccine for small pox?  
 (A) Alexander Flemming (B) Robert Hook  
 (C) Edward Jenner (D) Charles Darwin
47. The conversion of fertile land into deserts is  
 (A) Deforestation (B) Desertification  
 (C) Defertilisation (D) Desterilisation

## PHYSICS – (PART – D)

This part contains 5 Multiple Choice Questions number 48 to 52. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

48. Weight of the body in air is 100 N and its appeared weight in water is 36 N then Buoyant force acting on it is  
 (A) 100 N (B) 36 N  
 (C) 64 N (D) 136 N
49. A body of mass  $m$  collides against a wall with a velocity  $v$  and rebounds with the same speed. Its change of momentum is  
 (A)  $2mv$  (B)  $3mv$   
 (C)  $mv$  (D) Zero
50. A block of mass 2 kg is placed on a rough surface,  $F = 6$  N is applied on the block as shown, force of friction on the block is  
 (A) 12 N (B) 0 N  
 (C) 10 N (D) 6 N
51. A 2 N force is applied to a mass  $M$  that is adjacent to a wall, as shown. If the mass is 2kg the force that the wall exerts on the mass is equal to  
 (A) 0 N (B) 2 N  
 (C) 15 N (D) 19.6 N
52. A 3volt battery with negligible internal resistance is connected in a circuit as shown in the figure. The current  $I$ , in the circuit will be  
 (A)  $1/3$  A  
 (B) 1 A  
 (C) 1.5 A  
 (D) 2 A



## CHEMISTRY – (PART – E)

This part contains 5 Multiple Choice Questions number 53 to 57. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

53. During electrolytic refining of zinc, it gets :  
 (A) deposited on cathode (B) deposited on anode  
 (C) deposited on cathode as well as anode (D) remains in the solution
54. Which among the following oxides are neutral  
 (A)  $H_2O$  (B) CO  
 (C)  $N_2O$  (D) All of these
55. When iron reacts with steam, the gas produce  
 (A) Can catch fire  
 (B) Cuts off oxygen supply  
 (C) Will produce POP sounds when match stick is lit  
 (D) Both (A) and (C)

56. Al and Zn, react with oxygen to form \_\_\_\_\_ oxides.  
(A) Acidic (B) Neutral  
(C) Amphoteric (D) Basic
57. Nature of products obtained on complete combustion of methane is:  
(A) Acidic neutral (B) Acidic, basic.  
(C) Basic, neutral (D) Neutral, neutral

## BIOLOGY – (PART – F)

*This part contains 5 Multiple Choice Questions number 58 to 62. Each question has 4 choices (A), (B), (C) and (D), out of which ONLY ONE is correct.*

58. Which algae species is used in the preparation of Agar-Agar.  
(A) Green Algae (B) Brown Algae  
(C) Red Algae (D) Grey Algae
59. The place meant for conservation of biodiversity in their natural habitat are:  
(A) Wild life sanctuary (B) Botanical garden  
(C) Zoological garden (D) Seed banks
60. Which nitrogen fixing bacteria lives in root nodules of legume plants?  
(A) Spirogyra (B) Rhizobium  
(C) Cyanobacteria (D) Azotobacter
61. Which of the following is not considered as pesticide?  
(A) DDT (B) BHC  
(C) Sulphur (D) Carbon
62. The soil fertility can be replenished by  
(A) Repeating same crop (B) excessively using chemical fertilizers  
(C) Practising crop rotation (D) All of these

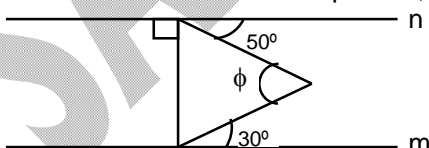
## Section – III

**Time: 30 Minutes**

### MATHEMATICS – (PART – A)

This part contains 15 Multiple Choice Questions number 63 to 77. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

63. If  $pqr = 1$ , the value of the expression  $\frac{1}{1+p+q^{-1}} + \frac{1}{1+q+r^{-1}} + \frac{1}{1+r+p^{-1}}$  is equal to
- (A)  $p + q + r^{-1}$  (B)  $\frac{1}{p+q+r}$   
 (C)  $p + q + r$  (D)  $p^{-1} + q^{-1} + r^{-1}$
64. 12 litres are drawn out from 35 litres of a 5 : 7 milk and water solution. What is the ratio of milk and water in the remaining solution?
- (A) 7 : 5 (B) 25 : 12  
 (C) 12 : 25 (D) 5 : 7
65. What is the value of  $\frac{0.\overline{679} - 0.\overline{072}}{0.4\overline{32} + 0.3\overline{5}}$ ?
- (A)  $\frac{6672}{8659}$  (B)  $\frac{6677}{8658}$   
 (C)  $\frac{6675}{8629}$  (D)  $\frac{6692}{8658}$
66. If  $x = 17^4$  and  $y = 14 \times 16 \times 18 \times 20$ , then \_\_\_\_\_
- (A)  $x > y$  (B)  $x < y$   
 (C)  $x = y$  (D) None of these
67. Find the value of N.
- $$N = \left( \frac{2 \times 8 + 8 \times 32 + 18 \times 72 \dots \text{up to } n \text{ terms}}{1 + 16 + 81 + \dots \text{up to } n \text{ terms}} \right)^{\frac{1}{4}}$$
- (A)  $2n$  (B)  $2^n$   
 (C) 2 (D) None of these
68. Find the value of  $\sqrt{\frac{(12.12)^2 - (8.12)^2}{(0.25)^2 + (0.25)(19.99)}} + \frac{\left(8^{\frac{-3}{4}}\right)^{\frac{8}{15}} \times 16^{\frac{3}{4}}}{\sqrt[3]{\left[\left((128)^{-5}\right)^{\frac{3}{7}}\right]^{\frac{-1}{5}}}}$
- You have to take positive square roots only.
- (A) 0 (B) 1  
 (C)  $\frac{9}{2}$  (D) None of these

69. What is the value of  $\frac{\left(1 + \frac{1}{3}\right)^4 + \left(1 + \frac{1}{3}\right)^{-4} + 1}{\left(1 + \frac{1}{3}\right)^2 + \left(1 + \frac{1}{3}\right)^{-2} + 1}$ ?
- (A)  $\frac{193}{144}$  (B)  $\frac{293}{144}$   
 (C)  $\frac{191}{144}$  (D)  $\frac{291}{144}$
70.  $N = (11111111)^2$ . What is the sum of the digits of N?  
 (A) 72 (B) 62  
 (C) 64 (D) None of these
71. Which of the following is true?  
 (A)  $7^{3^2} = (7^3)^2$  (B)  $7^{3^2} > (7^3)^2$   
 (C)  $7^{3^2} < (7^3)^2$  (D) None of these
72.  $n^3$  is odd. Which of the following statement (s) is (are) true?  
 I. n is odd.  
 II.  $n^2$  is odd.  
 III.  $n^2$  is even  
 (A) I only (B) II only  
 (C) I and II (D) I and III
73. The interior angle of the regular polygon exceeds the exterior angle by  $132^\circ$ . The number of sides in the polygon will be  
 (A) 10 (B) 16  
 (C) 12 (D) 15
74. The angles of a quadrilateral are in ratio 1:2:3:4. Which angle has the largest measure?  
 (A)  $120^\circ$  (B)  $144^\circ$   
 (C)  $98^\circ$  (D)  $36^\circ$
75. In a parallelogram ABCD, angle A and angle B are in the ratio 1:2. Find the angle A.  
 (A)  $30^\circ$  (B)  $45^\circ$   
 (C)  $60^\circ$  (D)  $90^\circ$
76. If the two lines n and m are parallel, then find the value of  $\phi$  in the given figure.
- 
- (A)  $40^\circ$  (B)  $50^\circ$   
 (C)  $80^\circ$  (D)  $130^\circ$
77. The length of a diagonal of a rhombus is  $\frac{4}{5}$ th of the length of the other diagonal. What is the ratio of the area of the rhombus to the square of its larger diagonal?  
 (A) 0.8 : 1 (B) 0.6 : 1  
 (C) 0.4 : 3 (D) 0.4 : 1

## MATHEMATICS – (PART – B)

This part contains 15 Multiple Choice Questions number 78 to 92. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

78. If  $a^2\%$  of  $b$  is equal to  $b^3\%$  of  $c$ , and  $c^4\%$  of  $a$  is equal to  $b\%$  of  $b$ , then the relation between  $a$  and  $b$  is given by  
 (A)  $a = b$  (B)  $a = b^2$   
 (C)  $a^9 = b^{10}$  (D)  $a = b^{10}$
79. The list price of an article was increased by 10%, and then decreased by 10%. If the final price become Rs. 20, then find the initial list price (in Rs.)  
 (A)  $\frac{10 \times 100^2}{100^2 - 20^2}$  (B)  $\frac{20^2 \times 10^2}{100^2 - 10^2}$   
 (C)  $\frac{20 \times 100}{100^2 - 10^2}$  (D)  $20 \times \left( \frac{100^2 - 10^2}{100^2} \right)$
80. If  $3x + \frac{y}{5} = 10$  and  $xy = 5$  then find  $27x^3 + \frac{y^3}{125}$   
 (A) 1090 (B) 910  
 (C) 1001 (D) 9009
81. If  $a + \frac{1}{b} = 1$ ;  $b + \frac{1}{c} = 1$  then  $c + \frac{1}{a} = ?$   
 (A) 1 (B) 2  
 (C) 0 (D) -1
82. If  $ab + bc + ca = 4$  and  $abc = 2$ , then find the value of  $\frac{1}{a} + \frac{1}{b} + \frac{1}{c}$   
 (A) 2 (B) 1  
 (C) 0 (D) -1
83.  $\left( (12^2 - 4^4) \times 2 \right)^{\frac{3}{4}} = ?$   
 (A) 16 (B) 8  
 (C) 64 (D) 32
84. The value of  $x$  for which  $(256)^{-\left(x - \frac{3}{2}\right)} = 2^{-20}$  is  
 (A) 4 (B) 3  
 (C) 2 (D) 1
85. If  $(x^y)^z = x^{yz}$ , where each of  $x$ ,  $y$  and  $z$  is greater than 1, then  $y$  is  
 (A)  $z^{z-1}$  (B)  $z^{\frac{1}{z+1}}$   
 (C)  $z^{\frac{1}{z^z-1}}$  (D)  $z^{z+1}$

86. A certain sum is deposited for 4 years at a rate of 10% per annum on compound interest compounded annually. The difference between the interest at the end of 2 years and that at the end of 4 years is Rs. 5,082 . Find the sum (in Rs.).  
 (A) 20,000 (B) 25,500  
 (C) 50,820 (D) 10,164
87. Shehal can row 28 km downstream and 12 km upstream in 5 hours. He can row 21 km downstream and 10 km upstream in 4 hours. Find the speed of Shenhal in still water.  
 (A) 9 kmph (B) 8 kmph  
 (C) 6 kmph (D) 9 kmph
88. If  $a - \frac{1}{a-5} = 10$ , then the value of  $(a-5)^3 - \frac{1}{(a-5)^3}$  is :  
 (A) 140 (B) 70  
 (C) 100 (D) 120
89. What number must be added to each of the numbers 6, 15, 20, 43 to make four number proportional?  
 (A) 1 (B) 2  
 (C) 3 (D) 4
90. A three-digit number 4a2 is added to the number 276 to get a three-digit number 6b8. Find the value of  $b - a$ .  
 (A) 7 (B) 2  
 (C) 3 (D) 4
91. If  $a + b + c = 6$  and  $a^2 + b^2 + c^2 = 26$ , then find the value of  $ab + bc + ca$ .  
 (A) 2 (B) 5  
 (C) 3 (D) 4
92. If the numbers  $\sqrt[3]{9}, \sqrt[4]{20}, \sqrt[6]{25}$  are arranged in ascending order, then the right arrangement is  
 (A)  $\sqrt[3]{9} < \sqrt[4]{20} < \sqrt[6]{25}$  (B)  $\sqrt[6]{25} < \sqrt[4]{20} < \sqrt[3]{9}$   
 (C)  $\sqrt[6]{25} < \sqrt[3]{9} < \sqrt[4]{20}$  (D)  $\sqrt[4]{20} < \sqrt[6]{25} < \sqrt[3]{9}$



# DRONACHARYA

360° DIAGNOSTIC & SCHOLARSHIP EXAM

## Sample Paper

for Students presently in Class VIII

### Paper 2

NEET Science, Science (Basic School, NTSE & NEET) & NTSE Mathematics

## ANSWER KEY

1.	C	2.	D	3.	B	4.	B
5.	A	6.	D	7.	C	8.	A
9.	D	10.	D	11.	C	12.	C
13.	B	14.	D	15.	B	16.	C
17.	B	18.	B	19.	D	20.	C
21.	D	22.	C	23.	D	24.	C
25.	B	26.	D	27.	D	28.	D
29.	B	30.	D	31.	C	32.	B
33.	C	34.	A	35.	D	36.	C
37.	B	38.	C	39.	D	40.	D
41.	D	42.	C	43.	C	44.	D
45.	B	46.	C	47.	B	48.	C
49.	A	50.	D	51.	B	52.	C
53.	A	54.	D	55.	D	56.	C
57.	A	58.	C	59.	A	60.	B
61.	D	62.	C	63.	C	64.	D
65.	B	66.	A	67.	C	68.	C
69.	A	70.	C	71.	B	72.	C
73.	D	74.	B	75.	C	76.	C
77.	D	78.	C	79.	C	80.	B
81.	A	82.	A	83.	C	84.	A
85.	C	86.	A	87.	D	88.	A
89.	C	90.	A	91.	B	92.	C