

PRE-NURTURE DIVISION

SESSION: 2021-22

NSEJS

MOCK TEST-02

Medium: English

IMPORTANT INSTRUCTIONS

Do not open this test Booklet until you are asked to do so

1. The students must occupy allotted seat in the specified room.
2. Duration of Test is 2 hours and question paper contains 80 Questions [Physics (Q.1 to Q.20), Chemistry (Q.21 to Q.40), Biology (Q.41 to Q.60), Mathematics (Q.61 to Q.80)]. The Maximum Marks are 240.
3. Each Questions Carries 3 marks each.
4. Answers are to be given on a separate OMR sheet.
5. There is negative marking (-1).
6. Mark you answer for question 1 to 80 on the OMR Sheet by darkening the circles.
7. Please follow the instruction given on the OMR sheet for marking the answers.
8. Before attempting the question paper, ensure, that is contains all the pages and not question is missing.
8. Students must not use log tables and calculator, Cell phones or any other material in the examination hall.
9. Rough work can be done anywhere in the booklet but not on the OMR sheet/loose paper.

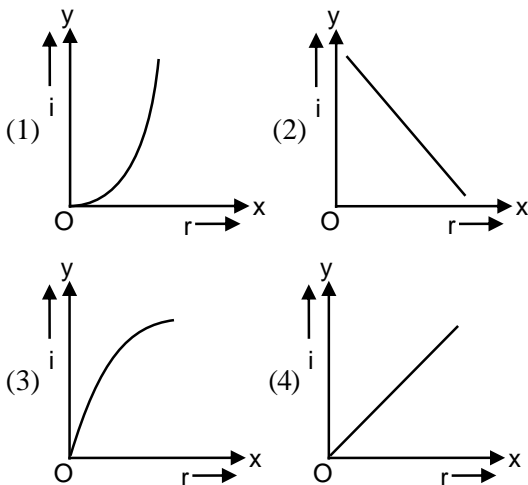
PHYSICS

Q.1 Plane mirror are arranged parallel to each other to get :
 (1) A single image
 (2) Two images
 (3) A large number of reflected images
 (4) No image

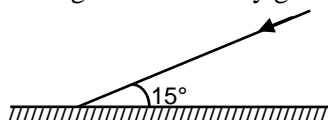
Q.2 If the angle of incidence is 50° , then calculate the angle between the incident ray and the reflected ray :
 (1) 50° (2) 100° (3) 130° (4) 80°

Q.3 If we want to see our full image then the minimum size of the plane mirror :
 (1) should be twice of our height
 (2) should be of our height
 (3) should be half of our height
 (4) depends upon our distance from mirror

Q.4 Which of the following correctly represents graphical relation between angle of incidence (i) and angle of reflection (r) ?

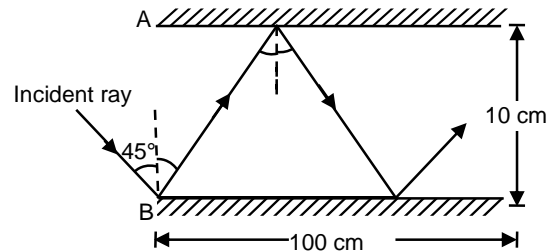


Q.5 When a ray of light strikes a plane mirror at an angle of 15° with the mirror, what will be the angle through which the ray gets deviated



- (1) 15° (2) 30°
 (3) 75° (4) none of these

Q.6 Two parallel plane mirrors A and B are placed at a separation 10 cm as shown in figure. A ray incident on the corner of mirror B at an angle of incidence 45° . Find the number of times this rays is reflected from mirror A:

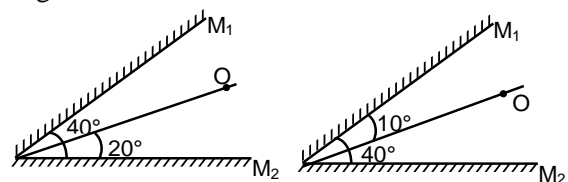


- (1) 4 (2) 10 (3) 6 (4) 7

Q.7 An object A is placed at a distance d in front of a plane mirror. If one stands directly behind the object at distance S from the mirror, then the distance of the image of A from the individual is :
 (1) 2 S (2) 2 d (3) S + d (4) S + 2d

Q.8 Two mirrors are inclined at an angle 60° , an object is placed between them. Then number of images formed will be :
 (1) 6 (2) 5 (3) 7 (4) 9

Q.9 Find number of images formed according to given case :



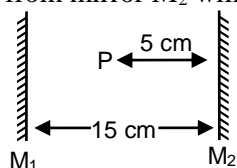
- (1) 8, 9 (2) 9, 8 (3) 9, 9 (4) 8, 8

Q.10 To get 9 multiple images the angle between the plane mirrors should be :
 (1) 60° (2) 36° (3) 50° (4) 90°

Q.11 A light ray falls on a mirror and deviates by 60° , then the angle of reflection will be :
 (1) 30° (2) 60° (3) 90° (4) 180°

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Q.12 Between two plane parallel mirrors an object P is placed as shown. Distance of first three images from mirror M_2 will be (in cm) :



- (1) 5, 10, 15 (2) 5, 15, 30
(3) 5, 15, 25 (4) 5, 25, 30

Q.13 If an object is placed between two parallel plane mirror, how many images will be formed :

- (1) Only one (2) Two
(3) Infinite (4) None of these

Q.14 A person is standing 4 m away from plane mirror. Distance between mirror and image is :

- (1) 4 metre (2) 8 metre
(3) 2 metre (4) 6 metre

Q.15 Wavelength of violet colour is :

- (1) 7900 Å (2) 6000 Å
(3) 5800 Å (4) 4000 Å

Q.16 A plane mirror can form a real image if

- (1) the incident beam is convergent
(2) the incident beam is divergent
(3) the incident beam is parallel
(4) none of these

Q.17 If the light ray is incident parallel to mirror M_2 and the reflected ray is parallel to mirror M_1 then the angle of inclination between the two mirrors will be

- (1) 60° (2) 40° (3) 90° (4) 180°

Q.18 If incident angle of a ray of light is 30° , then find the angle between the incident ray and the reflected ray.

- (1) 30° (2) 60° (3) 90° (4) 0°

Q.19 An object moves away from a stationary mirror with a speed of 10 m s^{-1} . What will be the relative velocity of the image with respect to the object ?

- (1) 40 m/s (2) 20 m/s (3) 30 m/s (4) 10 m/s

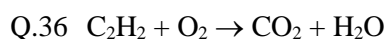
Q.20 What would be the angle between two plane mirrors to obtain 5 images of an object placed between them at angle bisector ?

- (1) 30° (2) 20° (3) 40° (4) 60°

CHEMISTRY

- Q.21 7.5 g of a gas occupy 5.6 litres of volume at STP. The gas is :-
(1) NO (2) N₂O (3) CO (4) CO₂
- Q.22 1 amu is equal to :
(1) $\frac{1}{12}$ of C – 12 mass
(2) $\frac{1}{14}$ of O – 16 mass
(3) 1 g of H₂
(4) 1.66×10^{-24} kg
- Q.23 1.5 moles of O₂ combine with Mg to form oxide MgO. The mass of Mg (At. mass 24) that has combined is :
(1) 72 g (2) 36 g (3) 24 g (4) 94 g
- Q.24 What quantity of lime stone on heating will give 56 kg of CaO ?
(1) 1000 kg (2) 56 kg
(3) 44 kg (4) 100 kg
- Q.25 12 litre of H₂ and 11.2 litre of Cl₂ are mixed and exploded. The composition by volume of mixture is :
(1) 24 L of HCl
(2) 0.8 L Cl₂ and 20.8 L HCl
(3) 0.8 L H₂ and 22.4 L HCl
(4) 22.4L HCl and 11.2 L Cl₂
- Q.26 9 gms of Al will react, with
 $2\text{Al} + \frac{3}{2}\text{O}_2 \rightarrow \text{Al}_2\text{O}_3$.
(1) 6 gms O₂ (2) 8 gms O₂
(3) 9 gms O₂ (4) 4 gms O₂
- Q.27 The number of gram molecules of oxygen in 6.02×10^{24} CO molecules is -
(1) 10 gm molecules (2) 5 gm molecules
(3) 1 gm molecules (4) 0.5 gm molecules
- Q.28 22.4 litre of water vapour at NTP, When condensed to water occupies an approximate volume of -
(1) 18 litre (2) 1 litre
(3) 1 ml (4) 18 ml
- Q.29 Out of 1.0 g dioxygen, 1.0 g (atomic) oxygen and 1.0 g of ozone, then maximum number of oxygen atoms are contained in -
(1) 1.0 g of atomic oxygen
(2) 1.0 g of ozone
(3) 1.0 g of oxygen gas
(4) All contain same number of atoms
- Q.30 84g of iron (Fe) is reacted with sufficient amount of steam to produce 45.4 L, H₂ gas at S.T.P. according the following reaction, a Fe + b H₂O → c Fe₃O₄ + d H₂. The stoichiometric coefficients of the reaction is (At. wt, Fe = 56, O = 16, H = 1) :
(1) 4, 3, 1, 4 (2) 3, 4, 1, 4
(3) 1, 4, 2, 3 (4) None of these
- Q.31 Two flask A & B of equal capacity of volume contain SO₃ and PH₃ gas respectively under similar conditions which flask has more number of moles of molecules :-
(1) A
(2) B
(3) Both have same moles
(4) None
- Q.32 11 grams of gas occupy 5.6 litres of volume at STP. The gas is :-
(1) NO (2) N₂O₄ (3) CO (4) CO₂
- Q.33 2 moles of H₂ at NTP occupy a volume of
(1) 11.2 litre (2) 44.8 litre
(3) 2 litre (4) 22.4 litre
- Q.34 Calculate the amount of lime (CaO) that can be produced by heating 100 g of 90% pure limestone (CaCO₃)
(1) 50.4 g (2) 0.98 mol
(3) 0.9 mol (4) 56 gs
- Q.35 Two moles of Sodium Phosphate completely reacts with calcium chloride to form calcium phosphate Ca₃(PO₄)₂. How many moles of calcium phosphate will be formed ?
(1) 2 (2) 1 (3) 3 (4) 4

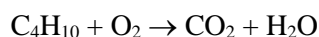
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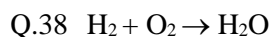
Find out the number of moles of CO_2 formed when 5 moles of ethyne was burned.

- (1) 8 moles (2) 6 moles
(3) 2 moles (4) 10 moles

Q.37 Number of Moles of oxygen gas required for the combustion of 580 gs of butane are :



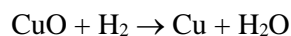
- (1) 6.5 moles (2) 130 moles
(3) 13 moles (4) 65 moles



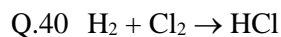
Calculate the number of moles of water formed when 4 moles of H_2 was used

- (1) 4 moles (2) 2.5 moles
(3) 2 moles (4) None

Q.39 The amount of hydrogen required to reduce 7.95 g copper oxide (CuO , Mol. mass 79.5) will be :



- (1) 2g (2) 4g
(3) 2240 ml at STP (4) 22400 mL at NTP



How many moles of Hydrogen Chloride will be formed when we use 5 moles of H_2 gas :

- (1) 5 moles (2) 2.5 moles
(3) 3.5 moles (4) 10 moles

BIOLOGY

- Q.41 In angiosperm plants, companion cell is associated with which one of the following elements ?
 (1) Sieve tube (2) Tracheids
 (3) Vessels (4) Xylem fibre
- Q.42 In pregnant women, foetus's' physiological functions like nourishment, respiration and excretion are taken up by
 (1) Stomach of mother
 (2) Placenta
 (3) Umbilical cord
 (4) Uterus
- Q.43 Podocytes are exclusively located in
 (1) liver (2) heart
 (3) kidney (4) spleen
- Q.44 Urea is the principle excretory waste in larval as well as adult phases of :
 (1) Cockroach (2) Frog
 (3) Crab (4) Starfish
- Q.45 The various parts of the human respiratory system are given below :
 (i) Nasal passage
 (ii) Pharynx
 (iii) Wind pipe
 (iv) Bronchus
 (v) Bronchioles
 (vi) Alveoli
 Identify the right sequence of air passage during exhalation.
 (1) vi, v, ii, iv, iii, i (2) vi, iv, v, iii, ii, i
 (3) vi, v, iv, iii, ii, i (4) vi, v, ii, iii, iv, i
- Q.46 During gaseous exchange in the alveoli, what happens to nitrogen ?
 (1) There is no net nitrogen exchange, as nitrogen is filtered out by the alveoli.
 (2) The nitrogen is absorbed by the alveolus to form amino acids.
 (3) The nitrogen is filtered out by the alveolus, as the nitrogen molecules is too large to cross the gaps in the capillaries
 (4) There is not net nitrogen exchange, as the blood is saturated with nitrogen
- Q.47 What is the mechanism used by the kidneys to remove waste products from the body ?
 (1) Nephrons convert nitrogenous waste to uric acid and pass it out a urine
 (2) Nephrons actively transport uric acid and other nitrogenous waste into the proximal and distal convoluted tubules, from where it is collected to form urine.
 (3) The blood is filtered to retain cells and large proteins within the blood, the remaining filtrate passes through the proximal and distal convoluted tubules, where needed substances are reabsorbed by active transport.
 (4) Nephrons filter out the nitrogenous waste which is passed through the proximal and distal convoluted tubules and collected by the collecting duct as urine.
- Q.48 Ravi mixed two substances **A** and **B** in a vessel and left it as it is. After few hours he detected an alcoholic smell emanating from the vessel. Identify what **A** and **B** are :
 (1) Salt solution and Lactobacillus
 (2) Fruit juice and Saccharomyces
 (3) Fruit juice and Lactobacillus
 (4) Salt solution and Saccharomyces
- Q.49 A plant may not exchange CO₂ or O₂ with air at :
 (1) twilight
 (2) mid - night
 (3) late hours in the morning
 (4) noon
- Q.50 If the cell is using less oxygen molecules than the molecules of carbon dioxide evolve in respiration, the substrate for respiration has to be :
 (1) simple sugars (2) organic acids
 (3) fatty acids (4) cholesterol
- Q.51 The epithelium best adapted for a body surface subject to abrasion is
 (1) simple squamous
 (2) simple cuboidal
 (3) stratified columnar
 (4) stratified squamous

- Q.52 Which of the following respiratory systems is not closely associated with a blood supply ?
 (1) the lungs of a vertebrate
 (2) the gills of a fish
 (3) the tracheal system of an insect
 (4) the parapodia of a polychaete worm
- Q.53 In negative pressure breathing, inhalation results from
 (1) forcing air from the throat down into the lungs
 (2) contracting the diaphragm
 (3) relaxing the muscles of the rib cage
 (4) using muscles of the lungs to expand the alveoli
- Q.54 When you hold your breath, which of the following blood gas changes first leads to the urge to breathe ?
 (1) rising O₂
 (2) falling CO₂
 (3) falling O₂
 (4) rising CO₂ and falling O₂
- Q.55 Unlike an earthworm's metanephridia, a mammalian nephron
 (1) is intimately associated with a capillary network
 (2) forms urine by changing fluid composition inside a tubule.
 (3) function in both osmoregulation and excretion.
 (4) receives filtrate from blood instead of coelomic fluid
- Q.56 Which of the following is not a normal response to increased blood osmolarity in humans ?
 (1) increased permeability of the collecting duct to water
 (2) production of more dilute urine
 (3) release of ADH by the pituitary gland
 (4) reduced urine production
- Q.57 Natural selection should favor the highest proportion of juxta-medullary nephrons in which of the following species ?
 (1) a river otter
 (2) a mouse species living in a tropical rain forest
 (3) a mouse species living in a desert
 (4) a beaver
- Q.58 Which process in the nephron is least selective ?
 (1) filtration (2) reabsorption
 (3) active transport (4) secretion
- Q.59 Which of the following animals generally has the lowest volume of urine production ?
 (1) a marine shark
 (2) a salmon in freshwater
 (3) a marine bony fish
 (4) a shark inhabiting freshwater Lake Nicaragua
- Q.60 African lungfish, which are often found in small stagnant pools of fresh water, produce urea as a nitrogenous waste. What is the advantage of this adaptation ?
 (1) Urea takes less energy to synthesize than ammonia
 (2) Small stagnant pools do not provide enough water to dilute the toxic ammonia
 (3) The highly toxic urea makes the pool uninhabitable to potential competitors
 (4) Urea forms an insoluble precipitate

MATHEMATICS

- Q.61 $4^{61} + 4^{62} + 4^{63} + 4^{64}$ is divisible by :
(1) 3 (2) 10 (3) 11 (4) 13
- Q.62 The least number by which 294 must be multiplied to make it a perfect square is :
(1) 2 (2) 3 (3) 6 (4) 24
- Q.63 The number of prime factors of $(3 \times 5)^{12} (2 \times 7)^{10} (10)^{25}$ is :
(1) 47 (2) 60 (3) 72 (4) 94
- Q.64 The sum of the digit of a number $10^n - 1$ is 3798. The value of n is :
(1) 422 (2) 431 (3) 501 (4) 673
- Q.65 What is the largest power of 12 that would divided 49! ?
(1) 22 (2) 23 (3) 24 (4) 20
- Q.66 The highest power of 3 which is a factor of the product of all the integers from 1 to 200 is-
(1) 100 (2) 97
(3) 102 (4) None of these
- Q.67 How many zero's are there in the end of the multiplication $4!^{4!} \times 8!^{8!} \times 16!^{16!}$
(1) $8! + 16!$ (2) $8! + 2 \cdot 16!$
(3) $8! + 3 \cdot 16!$ (4) $8! \cdot 3 \cdot 16!$
- Q.68 The digit in the unit place in the expansion of 4^{27} is :
(1) 2 (2) 4 (3) 6 (4) 8
- Q.69 The unit digit in the expression $(36^{234}) (33^{512}) - (54^{29}) (25^{123})$ will be :
(1) 6 (2) 8 (3) 0 (4) 5
- Q.70 What is remainder when 7^{84} is divided by 2402 ?
(1) 1 (2) 6
(3) 2401 (4) None of these
- Q.71 What is the remainder when 30^{40} is divided by 17 ?
(1) 1 (2) 16 (3) 13 (4) 4
- Q.72 What is the remainder when 6^{50} is divided by 215 ?
(1) 1 (2) 36 (3) 5 (4) 214
- Q.73 Let N = 28, the sum of All distinct factors of N is :
(1) 27 (2) 28 (3) 55 (4) 56
- Q.74 If the eight digit number 2575d568 is divisible by 54 and 87, the value of the digit 'd' is :
(1) 4 (2) 7 (3) 0 (4) 8
- Q.75 What will be the remainder if the number 7^{2012} is divided by 25 ?
(1) 24 (2) 18 (3) 7 (4) 1
- Q.76 The product the three consecutive natural numbers is 124850054994. What is their average ?
(1) 4993 (2) 4994 (3) 4997 (4) 4998
- Q.77 A number is said to be triangular number if it is the sum of consecutive numbers beginning with 1. What one of the following is not a triangular number :
(1) 1431 (2) 190 (3) 28 (4) 506
- Q.78 The sum of 2 digits x and y is divisible by 7. What can one say about a 3 digit number formed by these two digits.
(1) xxy is divisible by 7
(2) xyx is divisible by 7
(3) xyx is divisible by 7^2
(4) yyx is divisible by 7
- Q.79 Number plate of a vehicle consists of 4 digits. The first digit is the square of second. The third digit is thrice the second and the fourth digit is twice the second. The sum of all 4 digits is thrice the first. The number is
(1) 1132 (2) 4264 (3) 1642 (4) 9396
- Q.80 The biggest among the following is :
(1) $2^{1/2}$ (2) $3^{1/3}$ (3) $6^{1/6}$ (4) $8^{1/8}$

Answer Key

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