

**Academic Session : 2019 - 20**

**AIMS FULL TEST (FT) : FT # 21**  
**(NEET PATTERN)**

**Target : NEET - 2020**

**Date : 23<sup>rd</sup> August, 2020 | Duration : 3 Hours | Max. Marks : 720**

**COURSE : Dropper, Target, DLP., AITS**



*Please read the last page of this booklet for the instructions.*

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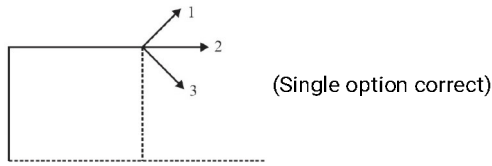
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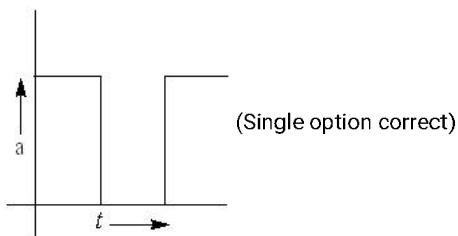
# PHYSICS

- 1 Three balls are projected from the top of a building with equal speeds but at different angles. Balls strike the ground with velocities  $v_1$ ,  $v_2$  and  $v_3$  respectively, then



- a  $v_1 > v_2 > v_3$                       b  $v_3 > v_2 > v_1$   
 c  $v_1 = v_2 = v_3$                       d  $v_2 < v_3 < v_1$

- 2 The figure shows the acceleration-time graph of a particle. Which of the following represents the corresponding velocity-time graph? (consider initial velocity zero)



- a                      b   
 c                      d

- 3 When a ceiling fan is switched off, its angular velocity falls to half while it makes **36** rotations. How many rotations will it make before coming to rest? (Single option correct)

- a 24    b 36  
 c 18    d 12

- 4 If Young's double slit experiment is performed in water instead of air (Single option correct)

- a The fringe width will decrease                      b The fringe width will increase  
 c The fringe width will remain unchanged                      d There will be no fringe

- 5 A current of **2.34 A** flows in resistance of **11.11111  $\Omega$** . The potential difference across the given resistance with due regard for the significant figure is (Single option correct)

- a 26.000 V                                      b 26.00 V  
 c 26.0 V    d 26 V

6 Two satellite are revolving around the earth with velocities  $v_1$  &  $v_2$  in radii  $r_1$  and  $r_2$  ( $r_1 > r_2$ ) respectively then - (Single option correct)

a  $v_1 = v_2$

b  $v_1 > v_2$

c  $v_1 < v_2$

d  $\frac{v_1}{r_1} = \frac{v_2}{r_2}$

7 A man, using a 70 kg garden roller on a level surface exerts a force of 200 N at  $45^\circ$  to the ground. What is the vertical force of the roller on the ground, if he pushed the roller? ( $g = 10\text{ms}^{-2}$ ) (Single option correct)

a 70 N

b 200 N

c 560 N

d 840 N

8 A body of mass **3 kg** acted upon by a constant force is displaced by  $S$  metre, given by relation  $S = \frac{1}{3}t^2$ , where  $t$  is in second. Work done by the force in **2** seconds is : (Single option correct)

a **8/3 J**

b **19/5 J**

c **5/19 J**

d **3/8 J**

9 A laser beam is sent to the moon and reflected back to earth by a mirror placed on the moon by an astronaut. If the moon is at **3,84,000 km** distance from earth, how long does it take the light to make the round trip? (Single option correct)

a **5 min**

b **2.5 min**

c **2.5 s**

d **500 s**

10 The arms of a physical balance are equal but an object weighs **7.00 kg** when placed in the left pan and **7.50 kg** placed in the right pan. What is the actual mass of the object?

(Single option correct)

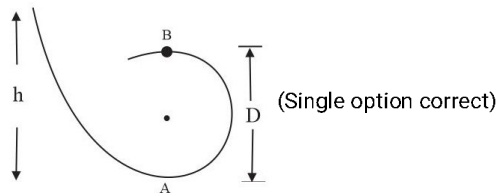
a **7.00 kg**

b **7.25 kg**

c **7.50 kg**

d **7.15 kg**

11 A body slides down on a frictionless track which ends in a circular loop of diameter  $D$ . The minimum height  $h$  in terms of  $D$  so that the body may just complete the circular loop, is



a  $h = \frac{5}{2}D$

b  $h = \frac{3}{2}D$

c  $h = \frac{5}{4}D$

d  $h = 2D$

12 Two bar magnets of the same mass, same length and breadth but having magnetic moments  $M$  and  $3M$  are joined together pole for pole and suspended by a string.

The time period of assembly in a magnetic field of strength  $1H$  is **3 s**. If now the polarity of one of the magnets is reversed and the combination is again made to oscillate in the same field, the time of oscillation is (Single option correct)

a 3 s

b  $3\sqrt{3}$  s

c  $3/\sqrt{3}$  s

d  $3\sqrt{2}$  s



21 If a bar magnet of pole strength  $m$  and magnetic moment  $M$  is cut equally 4 times parallel to its axis and 3 times perpendicular to its axis then the pole strength and magnetic moment of each piece are respectively (Single option correct)

a  $\frac{m}{20}, \frac{M}{20}$

b  $\frac{m}{4}, \frac{M}{20}$

c  $\frac{m}{5}, \frac{M}{20}$

d  $\frac{m}{5}, \frac{M}{4}$

22 Pressure of an ideal gas is increased by keeping temperature constant. What is the effect on kinetic energy of molecules?

(Single option correct)

a Increases

b Decrease

c No change

d Can't be determined

23 Two ions having masses in the ratio 1 : 1 and charges 1 : 2 are projected into uniform magnetic field perpendicular to the field with speeds in the ratio 2 : 3. The ratio of radius of circular paths along which the two particles move is (Single option correct)

a 4 : 3

b 2 : 3

c 3 : 1

d 1 : 4

24 In a series LCR circuit the rms voltages across the inductance, capacitance and resistance are respectively 4 volt, 8 volt and 5 volt. The RMS voltage of the AC source in the circuit is (Single option correct)

a 17 volt

b 13 volt

c 5 volt

d 6.4 volt

25 The potential energy of a particle of mass 5 kg moving in the  $x - y$  plane is given by  $U = (-7x + 24y) \text{ J}$ , where  $x$  and  $y$  are given in metre. If the particle starts from rest, from the origin, then the speed of the particle at  $t = 2 \text{ s}$  is (Single option correct)

a 5 m/s

b 14 m/s

c 17.5 m/s

d 10 m/s

26 A metal wire of linear mass density of  $9.8 \text{ g m}^{-1}$  is stretched with a tension of 10 kg-wt between two rigid supports 1 m apart. The wire passes at its middle point between the poles of a permanent magnet and it vibrates in resonance when carrying an alternating current of frequency  $n$ . The frequency  $n$  of the alternating sources is (Single option correct)

a 50 Hz

b 100 Hz

c 200 Hz

d 25 Hz

27 Which of the following cannot be polarized? (Single option correct)

a Ultrasonic waves

b Radiowaves

c Ultraviolet rays

d X-rays

28 The position of a projectile launched from the origin at  $t = 0$  is given by  $\vec{r} = (40\hat{i} + 50\hat{j}) \text{ m}$  at  $t = 2 \text{ s}$ . If the projectile was launched at an angle  $\theta$  from the horizontal, then  $\theta$  is (take  $g = 10 \text{ m s}^{-2}$ ). (Single option correct)

a  $\tan^{-1} \frac{3}{2}$

b  $\tan^{-1} \frac{2}{3}$

c  $\tan^{-1} \frac{7}{4}$

d  $\tan^{-1} \frac{4}{5}$

29 If the error in the measurement of momentum is **20 %**, then the error in the calculation of kinetic energy is (assume the error in measurement of **m** as zero) (Single option correct)

a 20 %

b 44 %

c 40 %

d 200 %

30 A vector  $\vec{A}$  when added to the vector  $\vec{B} = 3\hat{i} + 4\hat{j}$  yields a resultant vector that is in the positive **y** direction and has a magnitude equal to that of  $\vec{B}$ . Find the magnitude of  $\vec{A}$  (Single option correct)

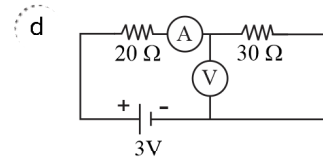
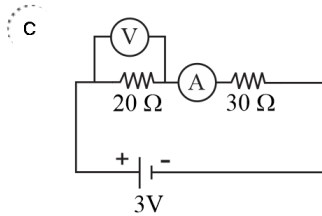
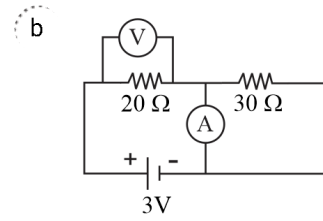
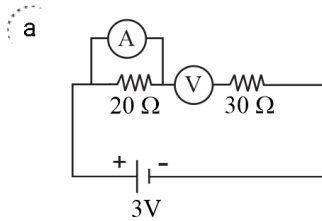
a  $\sqrt{10}$

b 10

c 5

d  $\sqrt{15}$

31 Resistors of resistance **20  $\Omega$**  and **30  $\Omega$**  are joined in series with a battery of emf **3 V**. It is desired to measure current and voltage across the **20  $\Omega$**  resistor with the help of an ammeter and a voltmeter. Identify the correct arrangement of ammeter (**A**) and voltmeter (**V**) out of four possible arrangements shown in the figure given below. (Single option correct)



32 An ideal gas at a pressure **1 atm** and temperature of **27  $^{\circ}\text{C}$**  is compressed adiabatically until its pressure becomes 8 times the initial pressures. Then the final temperature is ( $\gamma = \frac{3}{2}$ ) (Single option correct)

a 627  $^{\circ}\text{C}$

b 527  $^{\circ}\text{C}$

c 427  $^{\circ}\text{C}$

d 327  $^{\circ}\text{C}$

33 A coil of circular cross-section having **1000** turns and **4  $\text{cm}^2$**  face area is placed with its axis parallel to a magnetic field which decreases by  **$10^{-2} \text{ Wb m}^{-2}$**  in **0.01 s**. The e.m.f. induced in the coil is : (Single option correct)

a 0.4 mV

b 4 mV

c 200 mV

d 400 mV

34 A photon of energy **15 eV** collides with **H**-atom. Due to this collision, **H**-atom gets ionized. The maximum kinetic energy of the emitted electron is (Single option correct)

a 1.4 eV

b 5 eV

c 15 eV

d 13.6 eV

35. A thin biconvex lens of refractive index  $\frac{3}{2}$  and radius of curvature **30 cm** is put in water (refractive index =  $\frac{4}{3}$ ). Its focal length is (Single option correct)

a 0.15 m

b 0.30 m

c 0.45 m

d 1.20 m

36. A particle of mass  $m$  collides head-on with another stationary particle of mass  $M$  such that the second particle starts moving and the first particle comes to rest after the collision. Which of the following conditions is valid if the coefficient of restitution is  $e$ ? (Single option correct)

a  $e = 0$

b  $e = \frac{m}{M} \leq 1$

c  $e = \frac{m}{M} \geq 1$

d  $e = \frac{M}{m} \leq 1$

37. When U 238 nucleus, originally at rest, decays by emitting an alpha particle having a speed  $u$ , the recoil speed of the residual nucleus is (Single option correct)

a  $2u/238$

b  $3u/234$

c  $4u/234$

d  $5u/238$

38. Arrange the following electromagnetic radiations per quantum in the order of increasing energy:

A : Blue light

B : Yellow light

C : X-ray

D : Radiowave (Single option correct)

a C, A, B, D

b B, A, D, C

c D, B, A, C

d A, B, D, C

39. How many seconds will a 500 metre long train take to cross a man walking with a speed of 3 km/hr in the direction of the moving train if the speed of the train is 63 km/hr? (Single option correct)

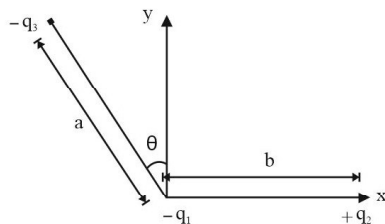
a 25

b 30

c 40

d 45

40. Three charges  $-q_1$ ,  $+q_2$  and  $-q_3$  are placed as shown in the figure. The x-component of the force on  $-q_1$  is proportional to



(Single option correct)

a  $\frac{q_2}{b^2} - \frac{q_3}{a^2} \cos \theta$

b  $\frac{q_2}{b^2} + \frac{q_3}{a^2} \sin \theta$

c  $\frac{q_2}{b^2} + \frac{q_3}{a^2} \cos \theta$

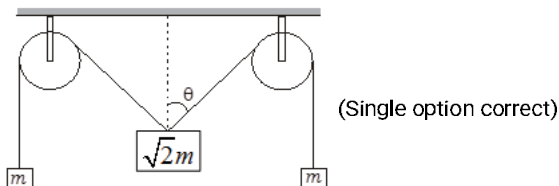
d  $\frac{q_2}{b^2} - \frac{q_3}{a^2} \sin \theta$

41 Assertion: Newton's third law is not applicable for nuclear forces.

Reason: Nuclear force are short ranged force. (Single option correct)

- a If both Assertion and Reason are true and the Reason is correct explanation of the Assertion.
- b If both Assertion and Reason are true but Reason is not correct explanation of the Assertion.
- c If Assertion is true but the Reason is false.
- d If Assertion is false but Reason is true.

42 The pulleys and strings shown in the figure are smooth and of negligible mass. For the system to remain in equilibrium, the angle  $\theta$  should be



- a  $45^\circ$
- b  $60^\circ$
- c  $0^\circ$
- d  $30^\circ$

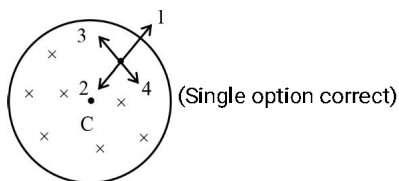
43 A magnetic dipole in a uniform magnetic field has: (Take zero potential energy when magnetic dipole is perpendicular to magnetic field) (Single option correct)

- a Maximum potential energy when the torque is maximum
- b Zero potential energy when the torque is maximum
- c Zero potential energy when the torque is minimum
- d Minimum potential energy when the torque is maximum

44 400 cc volume of a gas having  $\gamma = \frac{5}{2}$  is suddenly compressed to 100 cc through an adiabatic process. If the initial pressure is P, then the final pressure will be (Single option correct)

- a  $P/32$
- b  $8P$
- c  $32P$
- d  $16P$

45 A uniform but time varying magnetic field exists in cylindrical region and directed into the paper. If field decrease with time and a positive charge placed at any point inside the region, then it moves -



- a along 1
- b along 2
- c along 3
- d along 4

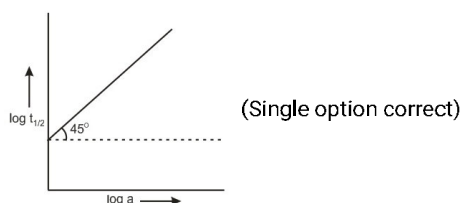


# CHEMISTRY

1. At  $25^{\circ}\text{C}$  the pH of a  $10^{-8}$  (M) HCl solution in water is (Single option correct)

- a 8
- b -8
- c within 7 and 8
- d within 6 and 7

2. Following is the graph between  $\log t_{1/2}$  and  $\log a$  ( $a$  = initial concentration) for a given reaction at  $27^{\circ}\text{C}$ . Hence, order is :



- a 0
- b 1
- c 2
- d 3

3. Salol prepared from (Single option correct)

- a Salicylic acid and methyl alcohol
- b Salicylic acid and phenol
- c Both A and B
- d Aspirin and phenol

4. Which of the following is epsom salt? (Single option correct)

- a  $2\text{CaSO}_4 \cdot \text{H}_2\text{O}$
- b  $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$
- c  $\text{MgSO}_4 \cdot 2\text{H}_2\text{O}$
- d  $\text{BaSO}_4 \cdot 2\text{H}_2\text{O}$

5. Self condensation of acetaldehyde, in the presence of dilute alkalies gives (Single option correct)

- a An acetal
- b An aldol
- c Mesitylene
- d Propionaldehyde

6. Calculate the angular momentum of the electron in third orbit of hydrogen atom, if the angular momentum in the second orbit of hydrogen atom is  $L$  (Single option correct)

- a  $L$
- b  $3L$
- c  $\frac{3}{2}L$
- d  $\frac{2}{3}L$

7. Electron Affinity of Cl is 3.7 eV. How much Energy released in kCal when 2g of gaseous chlorine atoms is converted to  $\text{Cl}^-$  ions in the gaseous state. (Single option correct)

- a 4.80 kCal
- b 5.20 kCal
- c 1.50 kCal
- d 3.60 kCal

8 How many mole of  $\text{FeSO}_4$  oxidized separately by one mole of  $\text{KMnO}_4$  in acid medium. (Single option correct)

a 5 mole

b 4 mole

c 7 mole

d 3 mole

9 Which one, among the following, is the van der Waals' equation, describing the behaviour of one mole of a real gas over wide ranges of temperature and pressure? (Single option correct)

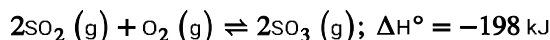
a  $\left(p + \frac{a}{V^2}\right)(V - b) = RT$

b  $\left(p - \frac{a}{V^2}\right)(V - b) = RT$

c  $\left(p + \frac{a}{V^2}\right)(V - b) = \frac{R}{T}$

d  $\left(p + \frac{a}{V^2}\right)(V + b) = RT$

10 Consider the reaction equilibrium,



On the basis of Le-Chatelier's principle, the condition favourable for the forward reaction is (Single option correct)

a Lowering of temperature as well as pressure

b Increasing temperature as well as pressure

c Lowering the temperature and increasing the pressure

d Any value of temperature and pressure

11 The molecular shapes of  $\text{SF}_4$ ,  $\text{CF}_4$  and  $\text{XeF}_4$  are (Single option correct)

a Different with 1, 0 and 2 lone pairs of electrons on the central atom, respectively

b Different with 0, 1 and 2 long pairs of electrons on the central atom, respectively

c The same with 1, 1 and 1 lone pair of electrons on the central atoms, respectively

d The same with 2, 0 and 1 lone pairs of electrons on the central atom, respectively

12 Among the following, the essential amino acid is: (Single option correct)

a Valine

b Alanine

c Serine

d Aspartic acid

13 The compound formed when Ethyl bromide is heated with dry Silver oxide is (Single option correct)

a dimethylether

b diethylether

c methylalcohol

d ethylalcohol

14  $[\text{Sc}(\text{H}_2\text{O})_6]^{3+}$  ion is (Single option correct)

a Colourless and diamagnetic

b Coloured and octahedral

c Colourless and paramagnetic

d Coloured and paramagnetic

15 Which of the following is not correct? (Single option correct)

a The metallic conduction is due to the movement of electrons in the metal

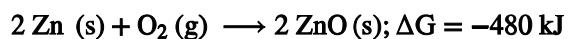
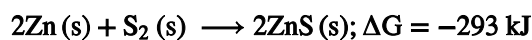
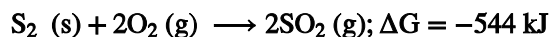
b The electrolytic conduction is due to the movement of ions in the solution

c The current carrying ions are not necessarily discharged at the electrodes

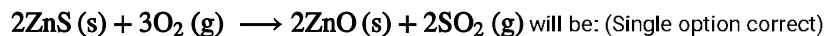
d The metallic conduction increases with the increase in temperature, whereas that of electrolytic conduction decreases with temperature.



24 The factor of  $\Delta G$  values is important in metallurgy. The  $\Delta G$  values for the following reactions at  $800^\circ\text{C}$  are given as:



Then  $\Delta G$  for the reaction:

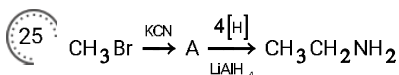


a -357 kJ

b -731 kJ

c -773 kJ

d -229 kJ



IUPAC name of A is (Single option correct)

a Methyl cyanide

b Methyl isonitrile

c Acetonitrile

d Ethane nitrile

26 Calculate the weight of ethylene glycol (an effective antifreeze) that must be added to 25 litre water to protect its freezing at  $-24^\circ\text{C}$ . ( $K_f = 1.86^\circ\text{C m}^{-1}$ ) (Single option correct)

a 20 kg

b 322.5 kg

c 200 kg

d 32.25 kg

27 Equal masses of  $\text{SO}_2$ ,  $\text{CH}_4$  and  $\text{O}_2$  are mixed in an empty container at 298 K, when total pressure is 2.1 atm. The partial pressure of  $\text{CH}_4$  in the mixture is

(Single option correct)

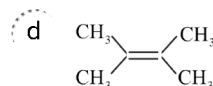
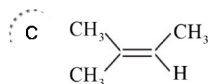
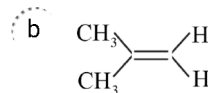
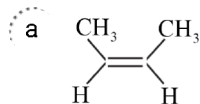
a 0.5 atm

b 0.75 atm

c 1.2 atm

d 0.6 atm

28 Which of the following alkene will react fastest with  $\text{H}_2$  under catalytic hydrogenation conditions? (Single option correct)



29 Determine the order of basic strength of the given molecules:

i.  $\text{NH}_3$  ii.  $\text{CH}_3\text{NH}_2$  iii.  $\text{CH}_3\text{NHCH}_3$  (Single option correct)

a  $i > iii > ii$

b  $ii > i > iii$

c  $iii > ii > i$

d  $i > ii > iii$



37 The freezing point of 1 molal NaCl solution assuming NaCl to be 100% dissociated in water is -  
 ( $K_f$  for  $H_2O = 1.86^{\circ}C\ m^{-1}$ ) (Single option correct)

a  $-1.86^{\circ}C$

b  $-3.72^{\circ}C$

c  $+1.86^{\circ}C$

d  $+3.72^{\circ}C$

38 For a reaction  $\frac{1}{2}A \rightarrow 2B$ , the rate of disappearance of 'A' is related to the rate of appearance of 'B' by the expression-  
 (Single option correct)

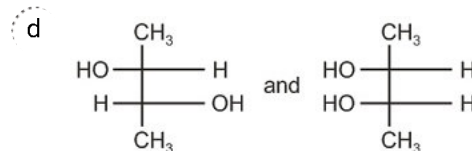
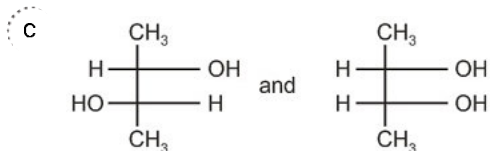
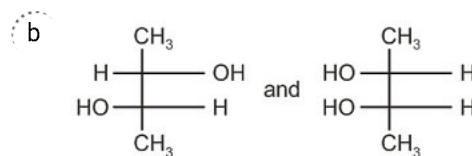
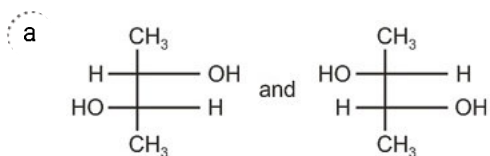
a  $-\frac{d[A]}{dt} = \frac{1}{2} \frac{d[B]}{dt}$

b  $-\frac{d[A]}{dt} = \frac{1}{4} \frac{d[B]}{dt}$

c  $-\frac{d[A]}{dt} = \frac{d[B]}{dt}$

d  $-\frac{d[A]}{dt} = 4 \frac{d[B]}{dt}$

39 Which of the following pairs of compounds are enantiomers? (Single option correct)



40 Which of the following statements is correct? (Single option correct)

a The electronic configuration of Cr is  $[Ar] 3d^5, 4s^1$   
 (Atomic No. of Cr = 24)

b The magnetic quantum number may have a negative value

c In silver atom, 23 electrons have a spin of one type and 24 of the opposite type, (Atomic No. of Ag = 47)

d All of the above

41 In the reaction  $4A + 2B + 3C \rightarrow A_4 B_2 C_3$ , what will be the number moles of product formed, starting from one mole of A, 0.6 moles of B and 0.72 moles of C? (Single option correct)

a 0.25

b 0.3

c 0.24

d 2.32

42 Which of the following statements are true.

(i)  $La^{3+}$  ( $Z = 57$ ) and  $Lu^{3+}$  ( $Z = 71$ ) do not show any colour in solutions.

(ii) Among the divalent cations in the first series of transition elements, manganese exhibits the maximum paramagnetism.

(Single option correct)

a (i),(ii)

b (ii)

c (i)

d None of these

43 The compound formed as a result of oxidation of ethyl benzene by  $KMnO_4$  is (Single option correct)

a Benzyl alcohol

b Acetophenone

c Benzoic acid

d Benzophenone

44

The hottest region of Bunsen flame shown in the figure below is:



a Region 3

b Region 4

c Region 1

d Region 2

45

 $[X] + H_2SO_4 \rightarrow [Y]$ , a colourless gas with irritating smell and  $[Y] + K_2Cr_2O_7 + H_2SO_4 \rightarrow$  Green solution

 $[X]$  and  $[Y]$  are, respectively - (Single option correct)
a  $SO_3^{2-}, SO_2$ b  $Cl^-, HCl$ c  $S^{2-}, H_2S$ d  $CO_3^{2-}, CO_2$

# BIOLOGY

1 When a fresh-water protozoan possessing a contractile vacuole, is placed in a glass containing marine water, the vacuole will (Single option correct)

- a Increase in number
- b Disappear
- c Increase in size
- d Decrease in size

2 Which of the following is not a true taxonomic unit? (Single option correct)

- a Malvaceae
- b Thalamiflorae
- c Polypetalae
- d China rose

3 Blood cancer is the excess production of leucocytes. It is known as: (Single option correct)

- a Haemorrhage
- b Haemolysis
- c Leukemia
- d Thrombosis

4 Vasopressin influences (Single option correct)

- a Electrolyte efflux
- b Nerve excitability
- c Water reabsorption
- d All of the above

5 Water potential in the leaf tissue is positive (+) during (Single option correct)

- a Excessive transpiration
- b Low transpiration
- c Excessive absorption
- d Guttation

6 Phytochrome is found in (Single option correct)

- a Algae
- b Fungi
- c Vascular cryptogams
- d Flowering plants

7 Which of the following cannot be considered a major cause of air pollution in metro cities? (Single option correct)

- a Smoke stacks of thermal power plants
- b Burning of fossil fuels in automobiles
- c Smoke from forest fires
- d Cooking of food by LPG

8 The transfer of energy from organism to organism in a natural community establishes (Single option correct)

- a Food chains
- b Biological control
- c Natural barriers
- d All the above



9 Lysis of foreign cell is mediated through:- (Single option correct)

- a IgM only
- b IgM and IgG
- c IgA only
- d IgD and IgE

10 The nuclear membrane disappears in (Single option correct)

- a Metaphase
- b Early prophase
- c Late prophase
- d Anaphase

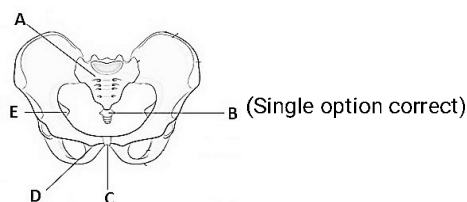
11 The art of growing short plants is called (Single option correct)

- a Bonsai
- b Horticulture
- c Topiary
- d Tissue culture

12 Genetically engineered bacteria have been successfully used in the commercial production of (Single option correct)

- a Human insulin
- b Testosterone
- c Thyroxine
- d Melatonin

13 In the given figure, identify A, B, C, D and E respectively.



- a A- Pubis; B- Acetabulum; C- Ilium; D- Ischium; E- Pubic symphysis
- b A- Sacrum; B- Coccyx; C- Pubic symphysis; D- Pubis; E- Ischium
- c A- Coccyx; B- Sacrum; C- Pubic symphysis; D- Pubis; E- Ischium
- d A- Ilium; B- Sacrum; C- Pubic symphysis; D- Ischium; E- Pubis

14 Sycon belongs to a group of animals, which are best described as (Single option correct)

- a Unicellular or acellular organisms
- b Multicellular organisms without any tissue organization
- c Multicellular organisms with a gastrovascular system
- d Multicellular organisms having tissue organization, but no body cavity

15 In human beings, the color of skin is controlled by (Single option correct)

- a Multiple alleles
- b Lethal genes
- c Polygenic effect
- d None of these

16 'Heart of Heart' is (Single option correct)

- a SA-node
- b AV-node
- c Bundle of His
- d Purkinje fibres

17. Competition for food, light and space is most severe between two (Single option correct)
- a Distantly related species growing in different habitat      b Distantly related species growing in the same habitat  
c Closely related species growing in different habitat      d Closely related species growing in the same area
18. Phytoalexins are secreted by plants in response to fungal reaction. These compounds are generally (Single option correct)
- a Proteins      b Glycoproteins  
c Phenolic compounds      d Lipids
19. Which of the following plants contain centrioles in their cells? (Single option correct)
- a Angiosperms      b Moss and some fern  
c Red alga      d All of these
20. *Peripatus* is a connecting link between (Single option correct)
- a Ctenophora and Platyhelminthes      b Mollusca and Echinodermata  
c Annelida and Arthropoda      d Coelenterata and Porifera
21. Blood groups are identified by the presence of various surface glycoproteins that are referred to as antigens present on the surface of RBC. The cell organelle that would have involved in glycosylation of protein is (Single option correct)
- a Ribosome      b Peroxisome  
c Golgi bodies      d Mitochondria
22. पूरे जीवन भर विभाजन और पुनरुद्भवन की क्षमता वाला ऊतक \_\_\_\_\_ है। (Single option correct)
- a उपकला ऊतक      b एरिओलर ऊतक  
c पेशीय ऊतक      d आच्छदी तंत्रिका तंतु
23. The gametophyte is not an independent, free-living generation in (Single option correct)
- a *Marchantia*      b *Polytrichum*  
c *Adiantum*      d *Pinus*
24. Through which route the pollen tube enters the ovule (Single option correct)
- a Chalaza      b Micropyle  
c Funiculus      d All of these
25. Co-varieties of sugarcane obtained red rot resistance from (Single option correct)
- a *Saccharum munja*      b *S. spontaneum*  
c *S. arundinaceum*      d *S. edula*

26 Select incorrect statement w.r.t. growth (Single option correct)

- a Increase in body-mass is criterion for growth in non-livings
- b Animals grow upto a certain age
- c Growth in plants is definite
- d In living organisms, growth is from inside

27 In case of mammals, testis are found in scrotal sacs outside the viscera because (Single option correct)

- a spermatogenesis requires a lower temperature.
- b mammals are highly evolved animals.
- c of the presence of a long vas deferens.
- d of limited space due to the presence of urinary bladder.

28 Chipko movement was launched for the protection of (Single option correct)

- a Forests
- b Livestock
- c Wetlands
- d Grasslands

29 The most important function of inflorescence is to help in (Single option correct)

- a Forming large number of fruits
- b Attracting insects for cross-pollination
- c Dispersal of seeds
- d Release of pollen grains

30 What helps in the penetration of the egg by the sperm? (Single option correct)

- a Fertilizin
- b Antifertilizin
- c Sperm lysin
- d Fertilization membrane

31 Select the correct statement from the ones given below with respect to dihybrid cross. (Single option correct)

- a Tightly linked genes on the same chromosome show higher recombinations.
- b Genes far apart on the same chromosome show very few recombinations.
- c Genes loosely linked on the same chromosome show similar recombination as the tightly linked ones.
- d Tightly linked genes on the same chromosome show very few recombinations.

32 Test-tube baby means a baby born when (Single option correct)

- a It is developed in a test tube
- b It develops from a non-fertilized uterus
- c It is developed through tissue culture method
- d The ovum is fertilized externally and there after implanted in the uterus

33 Eutherian mammals are (Single option correct)

- a Oviparous
- b Viviparous
- c Ovoviviparous
- d Both (a) and (c)

34 Which of the following is not correctly matched? (Single option correct)

- a Sucker - *Zingiber*
- b Rhizome - *Curcuma*
- c Stolon - *Jasmine*
- d Runner - *Cynodon*

35 In which type of flowers, stigma is rough and sticky (Single option correct)

- a Insect pollinated
- b Wind pollinated
- c Water pollinated
- d All the above

36 Name the blank spaces a, b, c and d from the table given below:

| Type of Microbe | Scientific Name            | Commercial Product |
|-----------------|----------------------------|--------------------|
| Bacterium       | a                          | Lactic acid        |
| Fungus          | b                          | Cyclosporin-A      |
| c               | <i>Monascus purpureus</i>  | Statin             |
| Fungus          | <i>Penicillium notatum</i> | d                  |

(Single option correct)

- a a = *Lactobacillus*
- b a = *Lactobacillus*
- b = *Cyclosporium Polysporum*
- b = *Trichoderma Polysporum*
- c = Fungus
- c = Yeast
- d = Penicillin
- d = Penicillin
- c a = *Lactobacillus*
- d a = *Lactococcus*
- b = *Trichoderma Polysporum*
- b = *Trichoderma Polysporum*
- c = Bacteria
- c = Fungus
- d = Red mould
- d = Black mould

37 Consider the statements given below regarding contraception and answer as directed thereafter:

- (1) Medical termination of pregnancy (MTP) during the first trimester is generally safe.
- (2) Generally, chances of conception are nil until the mother breast-feeds the infant for up to two years.
- (3) Intrauterine devices like copper-T are effective contraceptives.
- (4) Emergency contraceptive pills may be taken up to one week after coitus to prevent conception.

Which two of the above statements are incorrect? (Single option correct)

- a 1 and 2
- b 2 and 3
- c 3 and 4
- d 2 and 4

38 Contractile vacuole of *Amoeba* placed in salt water will (Single option correct)

- a Burst
- b Disappear
- c Enlarge
- d Multiply

39 Crop improvement is possible through: (Single option correct)

- a Judicious combination of evaluation and selection, hybridisation and testing and commercialisation
- b Selection and hybridisation only
- c Scientific improvement of cultivated plants
- d Selection and testing of superior recombinants

- 40 Plasmid is used as carrier because (Single option correct)
- a It has antibiotic resistance genes
  - b Its both ends are replicating points
  - c It can go between eukaryotic and prokaryotic cells
  - d It is circular DNA which has capacity to bind eukaryote DNA
- 41 Which of the following groups of plants are propagated through underground root? (Single option correct)
- a Ginger, Potato, onion and zamikand
  - b *Bryophyllum* and *Kalanchoe*
  - c *Pistia*, *Chrysanthemum* and pineapple
  - d Sweet potato, *Asparagus*, *Tapioca* and *Dahlia*
- 42 NADP reductase activity occurs in light reaction when this process (Single option correct)
- a Is supported by longer wavelength of light only
  - b Involves PS I and PS II
  - c Is not proceeded by OEC enzyme activity
  - d Does not remove protons from stroma to establish  $H^+$  gradient concentration
- 43 Triticale has been developed through intergeneric (Single option correct)
- a Wheat and Rye
  - b Wheat and maize
  - c Wheat and Rice
  - d Rice and Maize
- 44 Which of the following is an aquatic fern and an excellent bio-fertilizer? (Single option correct)
- a *Azolla*
  - b *Salvinia*
  - c *Marsilia*
  - d *Pteridium*
- 45 Effective filtration pressure in glomerulus is maintained due to (Single option correct)
- a powerful pumping action of the heart.
  - b secretion of adrenaline.
  - c afferent arteriole being slightly larger than efferent arteriole.
  - d vacuum develops in collecting duct and sucks the blood.
- 46 Photophosphorylation was discovered by (Single option correct)
- a Amon D.I.
  - b Hill R.
  - c Calvin M.
  - d Ruben and Kamen
- 47 The black pigment in the eye, which reduces the internal reflection, is located in (Single option correct)
- a Retina
  - b Iris
  - c Sclerotic
  - d Cornea
- 48 Which of the following is incorrect about IDDM? (Single option correct)
- a It commonly develops in younger people
  - b It is an autoimmune disorder
  - c It results in deficiency of insulin
  - d It is due to less sensitivity of target cells to insulin

49 A baby has been born with a small tail. It is a case exhibiting. (Single option correct)

- a Retrogressive evolution
- b Mutation
- c Reversion
- d Metamorphosis

50 Match the following based on their life spans.

|     | Column-I   |     | Column- II          |
|-----|------------|-----|---------------------|
| (1) | Elephant   | (a) | 2 to 3 Month        |
| (2) | Fruit fly  | (b) | 4 months            |
| (3) | Rice plant | (c) | less than one month |
| (4) | Butterfly  | (d) | 60-90 yrs           |

(Single option correct)

- a 1 2 3 4  
a b c d
- b 1 2 3 4  
d a c b
- c 1 2 3 4  
d a b c
- d 1 2 3 4  
d c a b

51 The term surrogate mother is used for (Single option correct)

- a Induction of lactation
- b Artificially inseminated female
- c Future mother with transplanted embryo
- d Mother who provides ovum

52 The term 'biodiversity' was given by (Single option correct)

- a Alexander von Humboldt
- b Edward Wilson
- c David Tilman
- d Paul Ehrlich

53 Wilting of leaves at noon and their recovery toward evening is known as (Single option correct)

- a Incipient wilting
- b Temporary wilting
- c Midday desiccation
- d Permanent wilting

54 Whose water potential is less than water potential of root hair during the water absorption by root hair? (Single option correct)

- a Gravitational water
- b Soil solution
- c Pure water
- d Vacuolar sap

55 Photoperiodic stimulus is received by (Single option correct)

- a Leaves
- b Buds
- c Meristem
- d Flowers

56 Which is called Hamburger shift? (Single option correct)

- a Hydrogen shift
- b Bicarbonate shift
- c Chloride shift
- d Sodium shift

57 B-cells are lymphocytes which produce the humoral immunity. These cells are produced by (Single option correct)

- a Liver
- b Spleen
- c Thymus
- d Bone marrow

58 Which of the following pairs, is correctly matched ? (Single option correct)

- a Hinge joint - between vertebrae
- b Gliding joint - between zygapophyses of the successive
- c Cartilaginous - skull bones joint
- d Fibrous joint - between phalanges

59 The overall goal of glycolysis, krebs cycle and the electron transport system is the formation of (Single option correct)

- a ATP in one large oxidation reaction
- b Sugars
- c Nucleic acids
- d ATP in small stepwise units

60 In which direction mRNA is synthesized on a DNA template. (Single option correct)

- a 5' → 3' prime
- b 3' → 5' prime
- c Both (a) and (b)
- d Any

61 Which one is polymer? (Single option correct)

- a Sucrose
- b Glycogen
- c Fructose
- d Lactose

62 Sunken stomata is found in leaves of (Single option correct)

- a *Trifolium*
- b *Lemna*
- c *Nerium*
- d *Lilium*

63 The situation where indigenous knowledge of nature, originating with indigenous people, is used by others for profit, without taking proper permission from them and with little or no compensation or recognition to the indigenous people themselves is known as (Single option correct)

- a Biopatents
- b Biopiracy
- c Biological diversity
- d Ethical issues

64 Bundles of nerve fibres are enclosed in a sheath called (Single option correct)

- a Fascicle
- b Endoneurium
- c Epineurium
- d Perineurium

65 Which of the following changes occur in diaphragm and intercostal muscles when expiration of air takes place ? (Single option correct)

- a External intercostal muscles relax and diaphragm contracts
- b External intercostal muscles contracts and diaphragm relaxes
- c External intercostal muscles and diaphragm relax
- d External intercostal muscles and diaphragm contract

66 Which of the following statement is correct about autoradiography? (Single option correct)

- a A double-stranded DNA or RNA probe is allowed to hybridize to its complementary DNA.
- b The clone having the mutated gene will appear on the photographic film.
- c The probe will not have complementarity with the mutated gene.
- d More than one option is correct

67 Fermentation is anaerobic production of (Single option correct)

- a Protein and acetic acid
- b Alcohol, lactic acid or similar compounds
- c Ethers and acetones
- d Alcohol and lipoproteins

68 Which of the following mineral deficiencies will cause death of stem and root tips?

(Single option correct)

- a Mo
- b Ca
- c S
- d Fe

69 During cytokinesis in plant cells (Single option correct)

- a Organelles get distributed between the two daughter cells
- b Wall formation starts near mother cell wall
- c Appearance of furrow in the plasma membrane
- d Both Wall formation starts near mother cell wall And Appearance of furrow in the plasma membrane

70 Which group of a plant can grow in nitrogen-deficient soil? (Single option correct)

- a Lichens
- b Gymnosperm
- c Bryophytes
- d Insectivores

71 Ecological pyramids are of

- I. three types (age pyramids, energy pyramids and biomass pyramids).
- II. four types (age pyramids, energy pyramids, number pyramids and biomass pyramids).
- III. five types ((age pyramids, energy pyramids, number pyramids, tropical pyramids and biomass pyramids).

Select the statements with the correct option. (Single option correct)

- a I, II and III
- b I and II
- c I only
- d None are correct

72 Which of the following is not an insectivorous plant?

(Single option correct)

- a *Drosera*
- b *Nepenthes*
- c *Monotropa*
- d *Utricularia*

73 Compensation point means (Single option correct)

- a No photosynthesis.
- b Beginning of photosynthesis.
- c Equal rate of photosynthesis and respiration.
- d Excess of respiration to compensate O<sub>2</sub> production.



74 Which one of the following pair is not correctly matched ? (Single option correct)

- a Vitamin B<sub>12</sub> - Pernicious anaemia
- b Vitamin B<sub>3</sub> - Pellagra
- c Vitamin C - Scurvy
- d Vitamin B<sub>1</sub> - Ariboflavinosis

75 Bioluminescence is well-marked in (Single option correct)

- a *Fasciola*
- b *Pleurobranchia*
- c *Adamsia*
- d *Ascaris*

76 Which of the following virus is used for the purpose of organic farming? (Single option correct)

- a Baculovirus
- b Influenza
- c Tobacco mosaic virus
- d Retrovirus

77 Which of the following is a secondary metabolite as well as a drug? (Single option correct)

- a Concanavalin A
- b Vinblastine
- c Diterpenes
- d Ricin

78 The testes in humans are situated outside the abdominal cavity, inside a pouch called scrotum. The purpose served is for (Single option correct)

- a Maintaining the scrotal temperature lower than the internal body temperature
- b Escaping any possible compression by the visceral organs
- c Providing more space for the growth of epididymis
- d Providing a secondary sexual feature for exhibiting the male sex

79 The tumour-inducing (Ti) plasmid has now been modified into a cloning vector which is no more pathogenic to the plants but is still able to use the mechanisms to deliver genes of our interest into a variety of plants because Ti plasmid has been modified by (Single option correct)

- a Adding tumor forming genes
- b Deleting tumor forming genes
- c Adding genes resistant to endonucleases
- d Deleting endonuclease

80 A thin, muscular wall (oval depression) in the heart is seen (Single option correct)

- a Inter-atrial septum
- b Inter-ventricular septum
- c Right auriculo-ventricular septum
- d Left auriculo-ventricular septum

81 In Bryophytes, antherozoids are (Single option correct)

- a Biflagellate
- b Multiflagellate
- c Sometimes biflagellate and sometimes multiflagellate
- d Biflagellate in a few species and multiflagellate in the rest

82 The layer of cells that secrete enamel of tooth is

(Single option correct)

a Ameloblast

b Dentoblast

c Odontoblast

d Osteoblast

83 What do epithelial cells of the intestine involved in food absorption have on their surface? (Single option correct)

a Pinocytic vesicles

b Phagocytic vesicles

c Zymogen granules

d Microvilli

84 The plants that grow on saline soils with a high concentration of  $\text{NaCl}_2$ ,  $\text{MgSO}_4$ , and  $\text{MgCl}_2$  are called (Single option correct)

a Mesophytes

b Xerophytes

c Ephemerals

d Halophytes

85 Occurrence of more than four spores from a spore mother cell is called (Single option correct)

a Polysiphony

b Polyspermy

c Polyspory

d Polyembryony

86 In anaerobic respiration in plants (Single option correct)

a Oxygen is taken in

b Oxygen is given out

c Carbon dioxide is given out

d Carbon dioxide is taken in

87 One strand of the given segment of DNA codes for mRNA having the sequence AUC, GCG, UCA needed for the synthesis of proteins. The strand by which DNA molecule will be responsible for the above mRNA sequence is (Single option correct)

a  
ATC GCC ATU  
| | |  
TAG CGG TAG

b  
AGA GCG GAT  
| | |  
TCT CGC CTA

c  
TGA CGC TAG  
| | |  
ACT GCG ATC

d  
TAG CGC AGT  
| | |  
ATC GCG TCA

88 Movements of leaves of sensitive plant, *Mimosa pudica* are due to (Single option correct)

a Themonasty

b Seismonasty

c Hydrotropism

d Chemonasty

89

Select the mismatched pair out of the following

(Single option correct)

- a Radial vascular bundle - Xylem and phloem on different radii
- b Bicolateral vascular bundle - Phloem present on both sides of xylem
- c Amphivasal vascular bundle - Phloem surrounds xylem
- d Conjoint vascular bundle - Xylem and phloem on same radii

90

When we ligate a foreign DNA at the *Sa*I site of pBR322, the \_\_\_a\_\_\_ plasmid will lose tetracycline resistance due to the insertion of foreign DNA but can still be selected out from \_\_\_b\_\_\_ ones by plating the \_\_\_c\_\_\_ on ampicillin containing medium. (Single option correct)

- a A = Non-recombinant , B = Recombinant , C = Transformant
- b A = Recombinant , B = Non-recombinant , C = Transformant
- c A = Transformant , B = Non-recombinant , C = Recombinant
- d A = Recombinant , B = Transformant , C = Non-recombinant

Date : 23 - 08 - 2020

**AITS FULL TEST : FT # 21**  
**(NEET PATTERN)**  
**Target : NEET - 2020**

**IMPORTANT INSTRUCTIONS**

1. Immediately fill the particulars on this page of the Test Booklet with Blue/Black Point Pen. Use of Pencil is strictly prohibited.
2. When you are directed, fill in the particulars of the Answer Sheet carefully.
3. The test is 3 hours duration.
4. The Test Booklet consists of **180** questions. The maximum marks are **720**.
5. There are three parts in the question paper **Biology** having **90** questions and **Physics** and **Chemistry** having **45** questions each.
6. For each question, you will be awarded **4** marks if you darken all the bubble(s) corresponding to the correct answer(s) and **zero** mark if no bubbles are darkened. In all other cases, **1 (one)** marks will be deducted.
7. There is only one correct response for each question. Filling up more than one response in any question will be treated as wrong response and marks for wrong response will be deducted accordingly as per instructions 6 above.

**Filling the ORS (Optical Response Sheet) :**

**Use only Black ball point pen only for filling the ORS. Do not use Gel/Ink pen as it might smudge the ORS.**

8. Write your Roll no. in the books given. Also darken the corresponding bubbles with Black ball point pen only. Also fill your roll no in the space provided.
9. **Fill your Paper Code as mentioned on the Test Paper.**
10. If student does not fill his/her roll no. and paper code correctly and properly, then his/her marks will not be displayed and 5 marks will be deducted (paper wise) from the total.
11. Since it is not possible to erase and correct pen filled bubble, you are advised to be extremely careful while darkening the bubble corresponding to your answer.
12. Neither try to erase/rub/scratch the option nor make the Cross(X) mark on the option once filled. Do not scribble, smudge, cut, tear, or wrinkle the ORS. Do not put any stray marks or whitener anywhere on the ORS.
13. If there is any discrepancy between the written data and the bubbled data in your ORS the bubbled data will be taken as final.

**Name of the candidate**

**Roll Number :**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
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I have read all the instructions and shall abide by them

.....

Signature of the Candidate

I have read all the instructions and shall abide by them

.....

Signature of the Candidate