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## **ALPINE SCHOOL**

Melmuri- 27, SultanPalace, Malappuram - 676519

### NEET RPT- XX

Class : XII

Date : 19- 03 -2018 TIME: 3Hrs

Max. Marks: 720

### **IMPORTANT INSTRUCTIONS:**

### \* Pattern of the Entrance Examination:-

Paper containing 180 objective type questions from Physics (45), Chemistry (45) & Biology (90)

- Use Blue/Black Ball Point Pen only to darken the appropriate circle. Answers marked with pencil would not be evaluated.
- Each item carries 4marks. For each correct response the candidate will get 4 marks. For each incorrect response 1mark will be deducted from the total score.

### (BIOLOGY)

(Syllabus :- Class – XI Total )

1) Biosystematics aims at

- a) the classification of organisms based on board morphological characters
- b) the classification of organisms based on their evolutionary history & establishing their

phylogeny on the totality of various parameters from all fields of studies

c) Delimiting various taxa of organisms and establishing their relationships

- d) Identification and arrangement of organisms on the basis of their cytological characteristics
- 2) A few organisms are known to grow and multiply at temperatures of  $100 105^{\circ}$ C. They belong to
  - a) Marine archaebacteria b) Thermophilic sulphur bacteria
  - c) Hot- spring blue green algae (Cyanobacteria)
  - d) Thermophilic, Subaerial fungi
- 3) The chief characteristics of bryophyta is that
  - a) their gametophytic generation is dependent on sporophytic generation
  - b) their sporophytic generation is dependent on gametophytic generation
  - c) sporophytic generation is fully dependent
  - d) None of the above

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4) Which of the following statement is true of all flatworms?

- a) flatworms are biradially symmetric b) flatworms have a complete digestive system
- c) Flatworms tend to have large, thickened bidies
- d) flatworms are triploblastic
- 5) Which option is correctly matched with the diagrams?



a) A-Valvate, B- Twisted, C-Imbricate, D- Vexillary

b) A- Vexillary, B- Valvate, C- Twisted, D- Imbricate

c) A- Imbricate, B- Vexillary, C- Valvate, D- Twisted

d) A- Twisted, B- Imbricate, C- Vexillary, D- Valvate

6) In the monocot root, we observe

a) Suberized exodermis, polyarch xylem, pith

b) exodermis, endarch, teterch closed bundles

c) conjoint, collateral, open, polyarch vascular bundle

d) Suberized exodermis, casparian strip, passage cells, cambium

7) Which of the following is the correct statement about the circulatory system of cockroach?

a) It is closed type of circulatory system b) It is a complicated type of circulatory system

c) It takes place without the participation of tissue.

d) It has 13 chambered heart and in each segment one pair of ostia are present

8) Nuclear DNA exists as a complex of proteins called \_\_\_\_\_\_ that condenses into \_\_\_\_\_ during cellular division.

a) Chromosomes, chromatin

b) Chromatids, chromosomes

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9) How many pairs of spiracles present on surface of cockroach:							
a) 5 Pairs	b) 15 Pairs	c) 10 Pairs	d) 20 Pairs				
10) If a stock has $2n = 48$ a	and scion microscope me	other cell has $2n = 24$	; then root cell and the microspores				
will have chromos	omes respectively.						
a) 12, 48	b) 48, 12	c) 24, 12	d) 24, 96				
11) Which one of the follo	wing is the most commo	on type of transpiratio	n?				
a) Stomatal	b) Lenticular	c) Foliar	d) Cuticular				
12) Which pigment is esse	ntial for nitrogen fixation	n by leguminous plan	ts?				
a) Phycocyanin	b) Leghaemoglobin	c) Phycoerythin	d) Myoglobin				
13) Calvin cycle expends t	he following for fixation	n of 3- molecules of C	2 <b>O</b> 2				
a) 9 ATP and 6 NA	DPH <sub>2</sub>	b) 8 ATP and 6 NA	DPH <sub>2</sub>				
c) 9 ATP and 3 NA	DPH <sub>2</sub>	d) 6 ATP and 9 NA	DPH <sub>2</sub>				
14) Which of the following	g pathways outlines the o	order of events during	aerobic cellular respiration?				
First>	last	2					
a) Glucose $\rightarrow$ triose	$e$ phosphate $\rightarrow$ Pyruvate	$\rightarrow$ Krebs cycle $\rightarrow$ CO	$_{2} + H_{2}O + ATP$				
b) Glucose $\rightarrow$ triose	e phosphate → Pyruvate	$\rightarrow$ Krebs cycle $\rightarrow$ CO	$P_2 + H_2O + ADP + Pi$				
c) Glucose $\rightarrow$ hexos	se phosphate $\rightarrow$ Pyruvate	$e \rightarrow Krebs \ cycle \rightarrow Co$	$O_2 + H_2O + ADP + Pi$				
d) Glucose $\rightarrow$ hexo	se phosphate → Pyruvat	$e \rightarrow Krebs \ cycle \rightarrow et$	$hanol + CO_2 + ATP$				
15) The picture below shows a graph drawn on the parameters of growth versus time. A, B, C respectively							
represent							
a) A- Exponential p	a) A- Exponential phase, B- Log phase, C- Steady state phase						
b) A- Steady state p	bhase, B – Lag phase, C-	- Log phase	Size C				
c) A- Log phase, B	- Steady state phase, C-	Logarithmic phase	B				

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16) What is the function of enterokinase?

- a) It converts pepsinogen to pepsin
- b) It converts trypsinogen to trypsin

c) It digests proteins

d) It activates hydrochloric acid HCL

17) The movement of O<sub>2</sub> and CO<sub>2</sub> with blood in capillaries. Tissue capillaries and the cells in tissues depends most directly upon

- a) Active transport of  $O_2$  and  $CO_2$
- b) total atmospheric (barometric) pressure differences across the cell membranes
- c) diffusion of O<sub>2</sub> and CO<sub>2</sub> down a concentration gradient
- d) diffusion of O<sub>2</sub> and CO<sub>2</sub> down a partial pressure gradient
- 18) The atrial walls are \_\_\_\_\_ than the ventricles wall, and pressure generated in the atrial chambers is

than in the ventricles

c) thicker, higher a) thinner, higher b) thinner, lower d) thicker, lower

19) The diagram shows a simplified nephron. In which regions would cells with many microvilli and mitochondria be found?

- a) 1 and 5
- b) 2 and 4
- c) 2 and 3
- d) 3 and 4

20) Which of the following is not a function of the skeletal system?

a) Production of blood cells

c) Storage of carbohydrates

b) Storage of minerals

d) Protection of vital organs

21) Which is the correct sequence of the following events after threshold potential is reached?

1) Depolarization of the membrane

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JOIN IN OUR TELEGRAM CHANNEL https://t.me/AIMSDARETOSUCCESS [944 0 345 996] [5 of 31] 2) Sodium voltage-regulated channels open and sodium ions diffuse inward. 3) Repolarization of the membrane 4) Sodium channels close; potassium ions diffuse outward. a) 1, 2, 3, 4 b) 2, 1, 4, 3 c) 1, 2, 4, 3 d) 4, 1, 3, 2 22) Predict the effects of the administration of ACTH on a normal rat a) Decrease in cortisol release and an increase in CRH release b) Increase in cortisol release and a decrease in CRH release c) Increase in cortisol release and an increase in CRH release d) Increase in growth hormone release and a decrease in CRH release 23) Which of the following statement regarding the universal rules of biological nomenclature is incorrect? a) Biological names are either derived from Latin language or are Latinised b) The first word in a biological name represents the genus while the second component denotes the species c) Both the words in a biological name, when hand written, are separately underlined, or printed in italics to indicate their Latin origin d) The specific epithet starts with a capital letter while the generic epithet starts with a small letter. It can be illustrated with the example of mangifera Indica. 24) Which of the following classes of kingdom Fungi are characterised by the presence of coenocytic, multinucleate and branched mycelium? a) Basidiomycetes b) Phycomycetes c) Ascomycetes d) Deuteromycetes 25) Heterosporous pteridophytes show certain characteristics, which are precursor to the 'seed habit' in gymnosperms. One of such characteristics is a) presence of vascular tissues b) external water required for fertilisation c) presence of embryo stage d) development of embryo inside the female gametophyte 26) In most simple type of canal system of porifera, which of the following ways exhibit water flow? a) Ostia  $\rightarrow$  Spongocoel  $\rightarrow$  Osculum  $\rightarrow$  Exterior b) Spongocoel  $\rightarrow$  Ostia $\rightarrow$  Osculum  $\rightarrow$  Exterior

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# JOIN IN OUR TELEGRAM CHANNEL https://t.me/AIMSDARETOSUCCESS [944 0 345 996] [6 of 31] c) Osculum → Spongocoel → Ostia→ Exterior d) Osculum → Ostia→ Spongocoel → Exterior

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27) Match the following:-						
Γ		Column – I		Column - II		
-	A.	Thorns	i)	Vegetative propagation		
-	B.	Phylloclades	ii)	Defensive mechanism		
	C.	Runners	iii)	Mechanical support		
	D.	Stilt roots	iv)	Absorption of nutrition		
	E.	Haustoria	v)	Photosynthesis		
	a) /	A- v, B- iv, C – iii, D – ii, E – i		b) A- ii, B- v, C – iii, D – i, E – iv		
	c) /	A- ii, B- v, C – i, D – iii, E – iv		d) A- iii, B- v, C – iv, D – i, E – ii		
28) Se	lect	the mismatched pair		6.		
	a) I	Root hair – Unicellular		b) Stem hair – Multicellular		
	c) [	Trichomes – Cause water loss d	) Gua	ard cells – Regulate opening and closing of stomata		
29) W	29) Where is jelly deposited as a covering on the egg of frog?					
	a) In the oviduct (b) In the water during fertilisation					
	c) l	In the water after fertilisation	$ $	d) In the ovary		
30) In	whi	ch of the following parts of mitocho	ondria	succinic dehydrogenase enzyme is located?		
	a) I	Perimitochondrial space b) Outer	mem	brane c) Matrix d) Inner membrane		
31) St	udy	the given statement and select the co	orrect	t option.		
	i) (	Carbohydrates, proteins, nucleic acic	ls and	l lipids are primary metabolites		
	ii) Alkaloids, flavonoids, rubber, etc, are secondary metabolites					
	iii) Linoleic, linoleic and palmitic acids are the three essential fatty acids.					
	a) S	Statements i and ii are correct		b) Statements i and iii are correct		
	c) Statements i and iii are correct d) Only statement ii is incorrect					
32) Re	32) Read the following statements about cell division and select the correct ones.					

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between two successive M phases

ii) In the 24 hours average duration of cell cycle of a human cell, cell division proper lasts for only about an hour.

iii) M phase constitutes more than 95% of the duration of cell cycle.

a) I and ii b) ii and iii c) I and iii

d) I, ii, and iii

33) Refer to the given figure and select the correct statement.



a) Solution of chamber B has a lower water potential than chamber A

b) Solution of chamber A has lower solute potential than chamber B.

c) Solution of chamber B has lower solute potential than chamber A

d) Both a and c

34) Match the following:-

	Column – I ( Activator element)	),	Column – II (Enzyme)
A.	Mg <sup>2+</sup>	i)	Nitrate reductase
В.	Zn <sup>2+</sup>	ii)	RuBisCO, PEPcase
C.	Мо	iii)	Alcohol dehydrogenase
a) A- ii, B – iii, C- I			b) A- iii, B – ii, C – I
c) A- I, B – iii, C – ii			d) A – ii, B – I, C – iii

35) Who, After conducting experiments on purple and green sulphur bacteria, inferred that O<sub>2</sub> evolved during photosynthesis comes from H<sub>2</sub>O not from CO<sub>2</sub>?

a) Sachs (b) Engelmann c) van Niel d) Blackmann

36) At the end of glycolysis, X is the net energy gain from one molecule of glucose via Y, but there is also energy stored in the form of Z. Identify X, Y and Z.

a) X – 1 ATP, Y – Oxidative phosphorylation,  $Z – NADH + H^+$ 

b) 2 ATPs, Y – Oxidative phosphorylation,  $Z - NADH + H^+$ 

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,ot.

d) X – 2 ATPs, Y – Substrate level phosphorylation, Z – NADH +  $H^+$ 

37) Statement 1:- Ethylene is a gaseous hormone.

Statement 2:- Ethylene causes climacteric ripening of fruits.

a) Both statements 1 and 2 are correct

b) Statements 1 is correct but Statement 2 is incorrect

c) Statements 1 is incorrect but Statement 2 is correct

d) Both statements 1 and 2 are incorrect

38) The given statement represents the T.S of gut. Identify A, B, C and D



39) Complete the following sentences by selecting the correct option.

A) Inspiratory capacity (IC) = i + IRV

$$\mathbf{B}) \underline{ii} = \mathbf{TV} + \mathbf{IRV} + \mathbf{ERV}$$

C) Functional residual capacity (FRC) = ERV + <u>*iii*</u>

a) i – Vital capacity, ii – Tidal volume, iii – Residual volume

b) i – Expiratory capacity, ii - Residual volume, iii – Inspiratory reserve volume

c) i - Tidal volume, ii– Vital capacity, iii – Residual volume

d) i - Tidal volume, ii– Total lung capacity, iii - Expiratory capacity

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40) In the following table of human ABO blood groups, fill up the blanks (i), (ii), (iii) and (iv) from the options given below.

Blood group	Antigens on RBCs	Antibody in plasma	Donor groups
А	A	Anti – B	A, 0
В	В	Anti – A	В, О
AB	AB	(ii)	A, B, AB, O
0	(i)	(iii)	(iv)

a) i – Nil, ii – Nil, iii – Nil, iv – O	b) i – Nil, ii – Nil, iii – Anti A, B, iv – AB
c) i – Nil, ii – Anti A, B, iii – Nil, iv – O	d) i – Nil, ii – Nil, iii – Anti A, B, iv – O
41) A fall in glomerular filtration rate (GFR) activ	ates

a) Juxta glomerular cells to release rennin b) adrenal cortex to release aldosterone

c) adrenal medulla to release adrenaline d) posterior pituitary to release vasopressin

42) Read the following statements carefully and select the correct ones

i) Cardiac fibres are branched with one or more nuclei.

ii) Smooth muscles are unbranched and cylindrical

iii) Skeletal muscles can be branched or unbranched

iv) Smooth muscles are non - striated

a) only iv b) ii and iii c) iii and iv d) only iii

43) Which of the following Cranial nerves of man is both sensory and motor?

a) Olfactory b) Optic c) Vagus d) Oculomotor

44) Which of the following statements is correct for 'Parathormone'?

a) It increases blood calcium level and decreases calcium store of the bone

b) It decreases blood calcium level and increases calcium store of the bone

c) It increases blood glucose level and decreases calcium store of the bone

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JOIN IN OUR TELEGRAM CHANNEL https://t.me/AIMSDARETOSUCCESS [944 0 345 996] [10 of 31] d) It decreases blood glucose level and increases calcium store of the bone						
45) The most important fact of biological system is that all living organisms exist						
a) with cellular organisation b) and respond continuously						
c) in a steady state characterised by specific concentrations of each of the biomolecules						
d) more than one correct						
46) High temperature destroys enzymatic acitivity because						
a) High temperature preserves the enzyme in a temporarily inactive state						
b) Proteins are denatured by heat						
c) high temperature reduces substrate availability						
d) over holding is induced by heat						
47) (A) Cell type-eukaryotic (B) Cell wall- present (without cellulose)						
(C) Nuclear membrane- Present (D) Body organisation – Multicellular/loose tissue						
(E) Mude of – Heterotrophic Nutrition (Saprophytic/Parasitic)						
On the basis of inputs given above, one can put the given organism, in which of the following						
kingdom (as per understandings of Linnaeus)						
a) Plantae b) Fungi c) Animalia d) Protista						
48) Read the words given in box & find out that majority belongs to which of the following cell organelle						
Kinetochore, Tonoplast, Nucleolus, Telomere, Ribophorin, cis face, maturing face, cellulose, DNA,						
pectin, Radial spokes, chromatin, Nuclear pore complex						
a) Cell wall b) Mitochondria c) Nucleus d) E.R.						
49) what will be the DNA content of the cells at $G_1$ , after S and at in $G_2$ , if the content after M phase is 2C						
a) 2C, 4C, and 4C b) 4C, 4C and 2C c) 2C, C and 2C d) 4C, 4C, and 4C						
50) Correct description is (wrt – figure given)						
a) high concentration of excretory & secretory materials						
b) Processing and maturation of vesicular materials						
10						

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51) Which of the following will be correct for the condition where there is no increase in rate of photosynthesis after increasing  $CO_2$  availability?

a) Any factor, other than CO<sub>2</sub> will increase the rate.

b) Any factor, other than CO<sub>2</sub>, cannot increase the rate

c) Many factors simultaneously affect the process

d) When one factor becomes sub-optimum, the rate can be controlled by the factor, whose availability is optimum.

52) Quassi- fluid nature of lipids

a) Enables flip flop movement of proteins

b) is due to rotation, lateral diffusion and flip flop movements

c) Allows polar molecules to move without involvement of proteins

d) all of these

53) Match the following:-

	Column- I		Column- II
W.	Volvox	1.	Floridian starch
X.	Fucus	2.	Phycocyanin
Y.	Porphyra	3.	Fucoxanthin
Z.	Nostoc	4.	Chlorophyll b

a) W- 4, X- 3, Y - 2, Z-1 c) W- 4, X- 2, Y - 3, Z - 1

b) W- 4, X- 3, Y - 1, Z - 2

d) W-1, X-3, Y-2, Z-4

54) Find out the incorrect for the figure given:-

a) There is no net movement of water for cell B.

b) Surrounding solution is hypertonic in case of A.

c) More solute is present inside the cell C



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56) Succinate dehydrogenase complex of mitochondria ETS receives electrons from which of the following conversion

a) Iso- citrate  $\rightarrow$  Oxalo Succinate

b)  $\alpha$  –Ketoglutarate  $\rightarrow$  Succinyl CoA

c) Succinate  $\rightarrow$  Fumarate

d) Malate  $\rightarrow$  Oxalo acetate

57) In C<sub>4</sub> plants photorespiration does not occur because

a) They exhibit scotoactive pattern of stomatal movement

b) They have a mechanism that increases the concentration of CO<sub>2</sub> at the enzyme site.

c) C<sub>4</sub> plants do not have RUBISCO and PEPCO, functional at the same time.

d) They do not form transpiration pull

58) Match the following:-

	Column - A		Column - B
W.	Algae	1.	Amphibians of the plant kingdom
X.	Bryophytes	2.	Zygotic meiosis
Y.	Pteridophytes	3.	Advanced archegoniates
Z.	Gymnosperms		Vascular cryptogams
a) $W - 2$ , $X - 1$ , $Y - 3$ , $Z - 4$			b) W – 2, X – 3, Y – 1, Z – 4
c)	$W_2 X_1 V_4 7_3$		d) $W = 3 X = 1 Y = 4 Z = 2$

59) Cyclic phosphorylation occurs when

a) Electrons are circulated within the PSI

b) Only light of wavelengths beyond 680 nm are available for excitation

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JOIN IN OUR TELEGRAM CHANNEL https://t. c) Two photosystems work in a series	me/AIMSDARETOSUCCESS [944 0 345 996] [13 of 31] d) More than one correct							
60) Bark includes								
a) Periderm and secondary cortex	b) Phellogen, Phellem and secondary cortex							
c) All the tissues, present outside vascular of	c) All the tissues, present outside vascular cambium							
d) All the tissues, present outside pith	d) All the tissues, present outside pith							
61) An ability to resist a pulling force – tensile stre	ength, is not because of							
a) Cohesion b) Adhesion	c) surface tension d) Capillarity							
62) Trichomes help in								
a) Formation of epidermis	b) process of gaseous exchange							
c) Preventing water loss due to transpiration	n d) Origin of lateral branches							
63) Which of the following is incorrect	S							
a) C, H, O and N are components of bio mo	blecules							
b) $Mg^{++}$ and phosphorous are energy related	b) Mg <sup>++</sup> and phosphorous are energy related elements							
c) Mg <sup>++</sup> , Mo and Zn <sup>++</sup> participates in enzym	c) Mg <sup>++</sup> , Mo and Zn <sup>++</sup> participates in enzymes kinetics							
d) $K^+$ cannot alter osmotic potential of the	cell.							
64) Which of the following is used to speed up the	malting process in brewing industry							
a) NAA b) Bap	c) GA <sub>3</sub> d) ABA							
65) There is no increase in the chromosome number	er, during							
a) $G_0$ or Quiescent phase b) $G_1 \& G_2$ ph	hase c) Synthetic phase d) All of these							
66) Special functions like food storage, perennation and vegetative propagation are performed by which								
one of the modified stems?								
a) Phylloclade & Bulbil	b) Cladode & Bulb							
c) Stolon& Runner	c) Stolon& Runner d) Corm & Rhizome							
67) Mark the incorrect statement w.r.t, seed								
A) The seed coat has two layers, the outer testa and the inner tegmen								

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JOIN	JOIN IN OUR TELEGRAM CHANNEL https://t.me/AIMSDARETOSUCCESS [944 0 345 996] [14 of 31] B) The hilum is the small pore on seed coat						
	C) Both plumule and radical are enclosed in sheath known as coleoptiles						
	D) The food storing tissue of Castor is endosperm						
	E) Generally monoco	ots have non- en	dosperm	ic seeds except som	e like orchids	ÇO'	
	F) A dicot embryo co	onsists of an eml	bryonal a	axis and two cotyled	lons	X	
	a) A, B & F	b) B, C & E		c) B, C & D	d) A, E & F	0	
68) Hov	w many of the given	plants have alter	rnate phy	llotaxy?	5		
C	alotropis, Mustard, C	hina rose, Alsto	onia, Gua	va, Sunflower, Neri	um		
	a) 3	b) 5	,	c) 4	d) 6		
69) Cho	pose the correct optio	ons from the blar	nks A, B,	C and D.			
Kin	gdom/ features		Monera		В	D	
Cel	l wall			A	Present	Present in some	
Nue	clear membrane		Absent	G	С	Present	
Mo	Mode of nutrition/body organisation Autor			ophic + Hetetophic	Loose tissue	Cellular	
	a) A – Absent. B – P	rotista. C – Abse	ent. D –	Fungi			
	b) A – Non Cellulosi	c, B – Fungi, C	– Presen	t, D – Protista			
	c) A - Cellulosic, B -	- Fungi, C – Abs	sent, D –	Plantae			
	d) A – Present, B – F	Protista, C – Abs	sent, D –	Fungi			
70) Dire	ection of movement i	in phloem an xyl	lem can	be respectively			
	A) Bidirectional, uni	directional		B) Upward or down	ward, upward		
	C) Unidirectional, bidirectional			D) Upward, upward	or downward		
	Choose the correct option:-						
	a) $a + b$ b) $b + c$ c) $c + d$ d) $a + d$						
71) whi	ch hormone is derive	ed from pigment	s in plan	ts?			
	a) ABA	b) GA		c) C <sub>2</sub> H <sub>4</sub>	d) CK		
				14			

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JOIN IN OUR TELEGRAM 72) In animal cells, during th	JOIN IN OUR TELEGRAM CHANNEL https://t.me/AIMSDARETOSUCCESS [944 0 345 996] [15 of 31] 72) In animal cells, during the S phase, DNA replication begins in theA_, and the centriole duplicates						
in the <u>B</u> .							
a) A – Cytoplasm, B	– Nucleus	b) A – Nucleus, B -	- Nucleus				
c) A - Cytoplasm, B	– Cytoplasm	d) A – Nucleus, B -	- Cytoplasm				
73) Arithmetic growth inclu	des all, except		×·				
a) Constant linear gr	owth						
b) It can be exemplif	ied by a root elongat	ion at a constant rate	Q				
c) Mathematically, it	is expressed as $L_t =$	$L_0 + rt$					
d) Its characteristic s	hape is sigmoid						
74) How many ATP molecu	les are synthesized p	er Fructose phosphate	molecule (gross synthesis) in				
aerobic respiration through s	substrate level phospl	horylation?					
a) 10	b) 6	c) 30	d) 16				
75) Facilitated diffusion							
a) is the process of u	phill transport	b) requires ATP					
c) requires special m	embrane proteins	d) is unsaturable pr	ocess				
76) Which of the following	statements with respe	ect to photosynthesis is	/are correct?				
A) Three carbons are	e present in the prima	ry CO <sub>2</sub> acceptor in C <sub>4 J</sub>	plants				
B) Temperature optim	mum for C4 plants is	10 – 15°C					
C) RUBP is the prim	ary CO <sub>2</sub> acceptor in	C <sub>4</sub> plants					
a) A & C	b) A, B & C	c) A only	d) C only				
77) Which of the following	77) Which of the following organelles lack membrane?						
A) Lysosomes	B) Vacuoles C) C	Centriole D) Microbo	dies E) Ribosomes				
a) D & E	b) C & B	c) C & E	d) A & C				
78) Odd one out, with respec	ct to relative abundar	nce of elements, presen	t in Earth's crust and human body				
a) Hydrogen	b) Oxygen	c) Silicon	d) Carbon				
		15					

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a) Amino groups b) Carboxyl groups c) R functional groupsd) All of these					
80) Consider following pair	and choose options wi	hich have correct mate	ched pair:-		
A) "S" wave	(i) Start of at	rial systole	CO.		
B) T – wave	(ii) End of di	astole	×.		
C) R – wave	(iii) Repolari	isation of ventricles			
D) P – wave	(iv) De[polar	risation of Atria	S		
a) A & B	b) B and C	c) Only C	d) only D		
81) Antagonestic to angiote	nsin – II is				
a) Aldosterone	b) ANF	c) PTH	d) Mineralocorticoid		
82) Hormone which increas	es Ca <sup>++</sup> absorption from	m the digested food is			
a) TSH	b) PTH	c) Cortisol	d) Thymosin		
83) Which of the following gastric secretion is correctly matched with its source?					
a) Pepsin – Cheif cells b) Chymotrypsin – Parietal cells					
c) HCl – Goblet cells d) Mucus – Oxyntic cells					
84) Out of the which hormone is not secreted by anterior pituitary					
a) ADH	b) ACTH	c) LH	d) FSH		
85) Binding of O <sub>2</sub> with haemoglobin is depends on partial pressure of CO <sub>2</sub> , H <sup>+</sup> concentration, partial					
pressure of O <sub>2</sub> , pH etc. Which factor is most important for formation of oxyhaemoglobin:-					
a) H+ concentration	b) pO <sub>2</sub>	c) pCO <sub>2</sub>	d) pH		
86) In animals like $a$ to $b$ , organs have associated to form functional systems, each system					
concerned with a specific physiological function. This pattern is called <u>c</u> level of organisation.					
a) a $\rightarrow$ Aschelminthes, b $\rightarrow$ Chordata, c $\rightarrow$ Organ					
b) a $\rightarrow$ Annelida, b $\rightarrow$ Hemichordata, c $\rightarrow$ Organ system					
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### JOIN IN OUR TELEGRAM CHANNEL https://t.me/AIMSDARETOSUCCESS [944 0 345 996] [18 of 31] (PHYSICS)

### (Syllabus: - Waves And Oscillations)

91) The equation of motion of a particle of mass 1 gm is  $\frac{d^2x}{dt^2} + \pi^2 x = 0$  where x is displacement (in m) form mean position. The frequency of oscillation is (in Hz) :

a) 
$$1/2$$
 b) 2 c)  $5\sqrt{10}$ 

92) A particle performs S.H.M on x- axis with amplitude A and time period T. The time taken by the particle to travel a distance A/5 starting from rest is:

a) 
$$\frac{T}{20}$$
 b)  $\frac{T}{2\pi} \cos^{-1}\left(\frac{4}{5}\right)$  c)  $\frac{T}{2\pi} \cos^{-1}\left(\frac{1}{5}\right)$  d)  $\frac{T}{2\pi} \sin^{-1}\left(\frac{1}{5}\right)$ 

93) A 4 kg particle is moving along the x-axis under the action of the force  $F = -\left(\frac{\pi^2}{16}\right) x$  N. At t = 2 sec,

the particle passes through the origin and at t = 10 sec its speed is  $4\sqrt{2}$  m/s. The amplitude of the motion is

$$(a) \frac{32\sqrt{2}}{\pi} m \qquad b) \frac{16}{\pi} m \qquad c) \frac{4}{\pi} m \qquad d) \frac{16\sqrt{2}}{\pi} m$$

94) In a horizontal spring –mass system, mass m is released after being displaced towards right by some distance at t = 0 on a frictionless surface. The phase angle of the motion in radian when it is first time passing through the equilibrium position is equal to:

a) 
$$\frac{\pi}{2}$$
  
c)  $3 \pi/2$ 

b) π

d) 0



d)  $\frac{1}{5\sqrt{10}}$ 

95) A transverse periodic wave on a string with a linear mass density of 0.200 kg/m is described by the following equation  $y = 0.05 \sin(420 t - 21.0 x)$  where x and y are in metres and t is in seconds. The tension in the string is equal to:

96) The equation of a wave is  $y = 4 \sin \left[\frac{\pi}{2} \left(2t + \frac{x}{8}\right)\right]$  where y, x are in cm and time in seconds. The amplitude, wavelength, velocity and frequency of the wave are respectively,

a) 4 cm, 32 cm, 16 cm/s, 0.5 Hzb) 8 cm, 16 cm, 32 cm/s, 1.0 Hzc) 4 cm, 32 cm, 32 cm/s, 0.5 Hzd) 8 cm, 16 cm, 16 cm/s, 1.0 Hz

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JOIN IN OUR TELEGRAM CHANNEL https://t.me/AIMSDARETOSUCCESS [944 0 345 996] [20 of 31] 103) A cylindrical tube, open at both ends, has a fundamental frequency v. The tube is dipped vertically in water so that half of its length is inside the water. The new fundamental frequency is a) v/4 b) v/2d) 2 v c) v 104) A horizontal spring –block system of mass 2 kg executes S.H.M. when the block is passing through its equilibrium position, an object of mass 1 kg is put on it and the two move together. The new amplitude of vibration is (A being its initial amplitude): b)  $\sqrt{\frac{3}{2}}A$ c)  $\sqrt{2}$  A a)  $\sqrt{\frac{2}{3}}A$ d)  $\frac{A}{\sqrt{2}}$ 105) A simple pendulum 50 cm along is suspended from the roof of a cart accelerating in the horizontal direction with constant acceleration  $\sqrt{3}$  g m/s<sup>2</sup>. The period of small oscillation of the pendulum about its equilibrium position is  $(g = \pi^2 m/s^2)$ : L = 50 cm → a =/3 g m/s² b)  $\sqrt{2}$  sec a) 1.0 sec c) 1.53 sec d) 1.68 sec 106) A particle is subjected to two simple harmonic motions  $x_1 = A \sin \omega t$  and  $x_2 = A \sin (\omega t + \pi/3)$ . Find the resultant amplitude of particle:  $c)\sqrt{3}A$ b)  $\sqrt{2}$  A d) 4 A a) A 107) A metre stick swinging in vertical plane about an fixed horizontal axis passing through its one end undergoes small oscillation of frequency  $f_0$ . F the bottom half of the stick were cut off, then its new frequency of small oscillation would become: a)  $f_0$ b)  $\sqrt{2}$  f<sub>o</sub> c) 2 f<sub>o</sub> d)  $2\sqrt{2}$  f<sub>o</sub>

108) When two sound waves of frequencies 60 Hz and 62 Hz are produced simultaneously, then the time interval between successive intensity maxima is:

a) 1/4 sec b) 1/2 sec c) 1 sec d) 1.5 sec

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JOIN IN OUR TELEGRAM CHANNEL https://t.me/AIMSDARETOSUCCESS [944 0 345 996] [22 of 31] 115) There is a set of four tuning forks, one with lowest frequency vibrating at 550 Hz. By using any two							
tuning forks at a time, the fol	llowing beat frequencie	es are heard: 1, 2, 3, 5,	7, 8. The possible frequencies of				
the other three forks are:							
a) 552, 553, 560	b) 557, 558, 560	c) 552, 553, 558	d) 551, 553, 558				
116) The ratio of speed of sound in neon to that in water vapour at any temperature (when molecular							
weight of neon is $2.02 \times 10^{-2}$ kg mol <sup>-1</sup> and for water vapours is $1.8 \times 10^{-2}$ kg mol <sup>-1</sup> )							
$(M_{Neon} = 2.02 \times 10^{-2} \text{ kg mol}^{-2})$	<sup>1</sup> , $M_{water vapour} = 1.8 \times 10^{-1}$	10 <sup>-2</sup> kg mol <sup>-1</sup> )					
a) 1.06	b) 1.60	c) 6.10	d) 15.2				
117) A stationary observer receives sonic oscillation from two tuning forks, one of which approaches and							
the other recedes with same s	speed. As thic takes pla	ace the observer hears	the beat frequency of 2 Hz. Find				
the speed of each tuning fork	, if their oscillation fre	equency is 680 Hz and	the velocity of sound in air is 340				
$m/s [Use g = 10 m/s^2]$		5					
a) 1 m/s	b) 2 m/s	c) 0.5 m/s	d) 1.5 m/s				
118) The velocity of sound in	n a gas at temperature 2	27°C is V then in the sa	ame gas its velocity will be 2V at				
temperature:							
a) 54°C	b) 327°C	<b>2</b> c) 927℃	d) 108°C				
119) If $\lambda_1, \lambda_2, \lambda_3$ are the wavelengths of the waves giving resonance in the fundamental, first and second							
overtone modes respectively in a open organ pipe, then the ratio of the wavelengths $\lambda_1, \lambda_2, \lambda_3$ , is:							
a) 1 : 2 : 3	b) 1:3:5	c) 1 : 1/2 : 1/3	d) 1 : 1/3 : 1/5				
120) The second overtone of an open pipe A and a closed pipe B have the same frequencies at a given							
temperature. Both pipes contain air. The ratio of fundamental frequency of A to the fundamental frequency							
of B is :							
a) 3 : 5	b) 5 : 3	c) 5 : 6	d) 6 : 5				
121) A man is watching two trains, one leaving and the other coming in with equal speeds of 4 m/sec. IF							
they sound their whistles, each of frequency 240 Hz, the number of beats heard by the man (velocity of							
sound in air = $320 \text{ m/sec}$ ) will be equal to							
a) 6	b) 3	c) 4	d) 8				
		22					

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JOIN IN OUR TELEGRAM CHANNEL https://t.me/AIMSDARETOSUCCESS [944 0 345 996] [23 of 31] 122) A small source of sound moves on a circle as shown in fig, and an observer is sitting at O. Let at  $v_1, v_2, v_3$  be the frequencies heard when the source is at A, B, and C respectively. a)  $v_1 > v_2 > v_3$  b)  $v_1 = v_2 > v_3$ c)  $v_2 > v_3 > v_1$  d)  $v_1 > v_3 > v_2$ 123) A sound wave of frequency 440Hz is passing through air. An O<sub>2</sub> molecule (mass =  $5.3 \times 10^{-26}$  kg) is set in oscillation with an amplitude of  $10^{-6}$  m. Its speed at the centre of its oscillation is: a)  $1.70 \times 10^{-5}$  m/s b)  $17.0 \times 10^{-5}$  m/s c)  $2.76 \times 10^{-3}$  m/s d)  $2.77 \times 10^{-5}$  m/s 124) The frequency of a fork A is 3% more than the frequency of a standard fork whereas the frequency of fork B is 3% less. The forks A& B produce 6 beats per second. The frequency of standard fork will be c) 103 Hz a) 100 Hz b) 106 Hz d) 112 Hz 125) 16 tuning forks are arranged in the order of increasing frequencies. Any two successive forks give 8 beats per sec when sounded together. If the last fork gives the octave of the first, then the frequency of the first fork is a) n = 120 b) n = 160 c) n = 180d) n = 220126) A stationary observer receives sonic oscillation from two tuning forks, one of which approaches & the other recedes with same speed. As this takes place the observer hears the beat frequency of 2 Hz. Find the speed of each tuning fork, if their oscillation frequency is 680 Hz & the velocity of sound in air is 340 m/s. b) 2 m/s c) 0.5 m/sa) 1 m/s d) 1.5 m/s 127) A particle is moving on x – axis has potential energy  $U = 2 - 20x + 5x^2$  Joules along x- axis. The particle is released at x = -3. The maximum value of 'x' will be: [x is in meters and U is in joules] b) 3 m a) 5 m c) 7 m d) 8 m 128) At which temperature the speed of sound will be three times of its speed at  $0^{\circ}$ C? a) 1100°C b) 1284°C c) 1500°C d) 2184°C 129) A transverse wave is described by the equation  $Y = Y_0 \sin 2\pi \left(ft - \frac{x}{\lambda}\right)$ . The maximum particle velocity is equal to four times the wave velocity if b)  $\lambda = \frac{\pi Y_o}{2}$ a)  $\lambda = \frac{\pi Y_0}{1}$ c)  $\lambda = \pi Y_o$  d)  $\lambda = 2\pi Y_o$ 23

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a) 
$$\frac{g}{4\pi}$$
 b)  $4 \pi g$  c)  $\frac{\sqrt{2g}}{2\pi}$  d)  $2\pi \sqrt{2g}$ 

131) A particle executing simple harmonic motion has maximum acceleration is equal to 1000 m/s<sup>2</sup>, at position x = 10 m from mean position (x = 0). The period of oscillation is:

a)  $0.3 \pi sec$  b)  $0.2 \pi sec$  c)  $0.4 \pi sec$  d)  $0.8 \pi sec$ 

132) a particle is in a linear SHM. If the acceleration and the corresponding velocity of this particle are 'a'

and 'v', then the graph relating to these values is



133) The apparent frequency of the whistle of an engine changes in the ratio of 6:5 as the engine passes a stationary observer. If the velocity of sound is 330 m/s, then the velocity of the engine is

134) A train moves towards a stationary observer with speed 34 m/s. The train sounds a whistle and its frequency registered by the observer is  $f_1$ . If the train's speed is reduced to 17 m/s, the frequency registered is  $f_2$ . If the speed of the sound is 340 m/s, then the ratio  $f_1/f_2$  is

a) 18/19 b) 1/2 c) 2 d) 19/18

b) 2*f* 

135) A wire of length 'l' having tension T and radius 'r' vibrates with fundamental frequency 'f'. Another wire of the same metal with length '2l' having tension 2T and radius 2r will vibrate with fundamental frequency:

c)  $\frac{f}{2\sqrt{2}}$ 

d)  $\frac{f}{2}\sqrt{2}$ 

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(Syllabus :- Class - XI Total )

136) In  $PO_4^{3-}$  ion, the formal charge on each oxygen atom and bond order of P – O bond are respectively

a) – 0.75, 1.25 b) -0.75, 1.0 c) -0.75, 0.6 d) -3, 1.25

137) Assuming 2s – 2p mixing is not operative, the paramagnetic species among the following is

a)  $Be_2$  b)  $B_2$  c)  $C_2$  d)  $N_2$ 

138) Consider the molecules CH<sub>4</sub>, NH<sub>3</sub> and H<sub>2</sub>O. Which of the given statements is false?

a) The H - O - H bond angle in  $H_2O$  is smaller than the H - N - H bond angle in  $NH_3$ .

b) The H - C - H bond angle in  $CH_4$  is larger than the H - N - H bond angle in  $NH_3$ .

c) The H - C - H bond angle in  $CH_4$  the H - N - H bond angle in  $NH_3$  and the H - O - H bond

angle in H<sub>2</sub>O are all greater than 90°

d) The H - O - H bond angle in  $H_2O$  is larger than the H - C - H bond angle in CH<sub>4</sub>.

139) According to molecular orbital theory which of the following statements about the magnetic character and bond order is correct regarding  $O_2^+$ ?

a) Paramagnetic and bond order  $< O_2$  (b) Paramagnetic and bond order  $> O_2$ 

c) Dimagnetic and bond order  $< O_2$  d) Dimagnetic and bond order  $> O_2$ 

140) For which of the following molecules significant  $\mu \neq 0$ ?



141) Which transition involves maximum amount of energy?

a)  $M_{(g)}^{-} \to M_{(g)}^{+} + e^{-}$ b)  $M_{(g)}^{-} \to M_{(g)}^{+} + 2e^{-}$ c)  $M_{(g)}^{+} \to M_{(g)}^{2+} + e^{-}$ d)  $M_{(g)}^{2+} \to M_{(g)}^{3+} + e^{-}$ 

142) Which of the following represents the correct order of increasing first ionization enthalpy for Ca, Ba, S, Se and Sr?

a) Ca < Ba < S < Se < Ar b) Ca < S < Ba < Se < Ar

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143) An element X occurs in short period having configuration ns<sup>2</sup>np<sup>1</sup>. The formula & nature of its oxide is

a)  $XO_3$ , basic b)  $XO_3$ , acidic c)  $X_2O_3$ , amphoteric d)  $X_2O_3$ , acidic

144) The ionization enthalpies of Li and odium are 520 kJ mol<sup>-1</sup> and 495 kJ mol<sup>-1</sup> respectively. The energies required to convert all the atoms present in 7 mg of Li vapours and 23 mg of sodium vapours to their respective gaseous cations are respectively.

a) 52 J, 49.5 J b) 520 J, 495 J c) 49.5 J, 52 J d) 495 J, 520

145) Assertion: Alkaline earth metal carbonates (BeCO<sub>3</sub>) are soluble in water.

Reason: All ionic compounds are fairly soluble in water.

a) If both assertion and reason are true and reason is the correct explanation of assertion

b) If both assertion and reason are true but reason is not the correct explanation of assertion

- c) If assertion is true but reason is false
- d) If both assertion and reason are false

146) Assertion: The quantized energy of an electron is largely determined by its principal quantum number.

Reason: The principal quantum number, n is a measure of the most probable distance of finding the electron around the nucleus.

a) If both assertion and reason are true and reason is the correct explanation of assertion

b) If both assertion and reason are true but reason is not the correct explanation of assertion

c) If assertion is true but reason is false d) If both assertion and reason are false

147)  $\alpha$  –particle of 6 MeV energy is scattered back from a silver foil. Calculate the maximum volume in which the entire positive charge of the atom is supposed to be concentrated. (Z for silver = 47)  $K = 9.0 \times 10^9 \text{ Nm}^2 \text{ C}^{-2}$ 

a)  $1.4 \times 10^{-40} \text{ m}^3$  b)  $4.8 \times 10^{-42} \text{ m}^3$  c)  $4.8 \times 10^{-41} \text{ m}^3$  d)  $6.2 \times 10^{-40} \text{ m}^3$ 

148) With what velocity must an electron travel so that its momentum is equal to that of a photon of wavelength 5200 Å?

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149) The nucleus of an atom can be assumed to be spherical. The radius of the nucleus of mass number A is given by  $1.25 \times 10^{-13} \times A^{1/3}$  cm. Radius of atom is one Å. IF the mass number is 64, then the fraction of the atomic volume that is occupied by the nucleus is

a)  $1.0 \times 10^{-3}$  b)  $5.0 \times 10^{-5}$  c)  $2.5 \times 10^{-2}$  d)  $1.25 \times 10^{-13}$ 

150) If the shortest wavelength of spectral line of H – atom in Lyman series is *x*, then match the following for  $Li^{2+}$ .

	LIST – I		LIST - II
Р.	Shortest wavelength in Lyman series	1.	$\frac{4x}{5}$
Q.	Longest wavelength in Lyman series	2.	$\frac{4x}{9}$
R.	Shortest wavelength in Balmer series	3.	<i>x</i> 9
S.	Longest wavelength in Balmer series	4.	$5\frac{4x}{27}$
a) P	-1, Q-4, R-2, S-3	b) P –	3, <b>Q</b> -4, <b>R</b> -1, <b>S</b> -2
c) P	-3, Q-4, R-2, S-1	d) P –	4, Q - 3, R - 2, S - 1

151) A gas heated in such a way so that its pressure and volume both become double. Again by lowering temperature, one fourth of initial number of moles of air has been taken in, to maintain the double volume and pressure. By what fraction, the temperature must have been raised finally?

152) One mole of nitrogen gas at 0.8 atm takes 38 seconds to diffuse through a pinhole, where as one mole of unknown compound of xenon with fluorine at 1.6 atm takes 57 seconds to diffuse through the same hole. Calculate the molecular mass of the compound

a) 252 b) 525 c) 262 d) 380

153) 22 g solid CO<sub>2</sub> or dry ice is enclosed in a properly closed bottle of one litre. IF the temperature of bottle is raised to  $25^{\circ}$ C to evaporate all the CO<sub>2</sub>, the pressure in bottle is

a) 13.23 atm b) 12.23 atm c) 11.23 atm d) 14.23 atm

154) I, II, and II are three isotherms respectively at  $T_1$ ,  $T_2$  and  $T_3$ . Temperature will be in order

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 $NO_3^- + 4H^+ + e^- \rightarrow 2H_2O + NO$  is a) 5 b) 4 c) 3 d) 2

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JOI	$\begin{array}{l} n \text{ IN OUR TELEGRAD} \\ a) a = b \end{array}$	b) $2a = b$	s://t.m	c) a = 2b	RETOSUC	CESS [944 0 34 d) a=4b	5 996] [30 of 31]
169)	169) 4 mole of a mixture of Mohr's salt and Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> requires 500 mL of 1 M K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub> for complete						
	oxidation in acidic	medium. The mole	% of t	he Mohr's s	alt in the r	nixture is:	
	a) 25	b) 50		c) 60		d) 75	0
170) Silicon is found in nature combined with oxygen to give sand, quartz, agate and similar materials. The element has three stable isotopes.							
	Exact Mass	<u>Percent Abundar</u>	<u>ıce</u>				
	27.97	92.23				- A	
	28.97	4.67				S.	
	29.97	3.10 Calc	ulate th	ne average at	omic mas	s of silicon fron	n the data above?
	a) 14.08	b) 20.00		c) 12.50		d) 28.08	
171)	If 0.5 moles of Bac $Ba_3(PO_4)_2$ that can	Cl <sub>2</sub> is mixed with be formed is	0.2 m	noles of Na	<sub>3</sub> PO <sub>4</sub> , the	maximum nun	nber of moles of
	a) 0.20	b) 0.50		c) 0.30		d) 0.10	
172)	Which one of the follo	owing allotropic fo	rms of	carbon is is	omorphou	s with crystallin	ne silicon?
	a) Graphite	b) Coal		c) Coke		d) Diamond	
173) A meal, M forms chlorides in its +2 and +4 oxidation states. Which of the following statements about							
these	chlorides is correct?	X					
	a) MCl <sub>2</sub> is more ionic than MCl <sub>4</sub> b) MCl <sub>2</sub> is more easily hydrolysed than MCl <sub>4</sub>						
	c) MCl <sub>2</sub> is more volatile than MCl <sub>4</sub>						
	d) MCl <sub>2</sub> is more sol	luble in anhydrous	ethanc	l than MCl <sub>4</sub>			
174) Which of the following is the best order of Lewis acid strength of BF <sub>3</sub> , BCl <sub>3</sub> and BBr <sub>3</sub>							
	a) $BF_3 > BCl_3 > BBr_3$ b) $BF_3 = BCl_3 = BBr_3$						
	c) BF <sub>3</sub> < BCl <sub>3</sub> < BE	Br <sub>3</sub>	d) BBr	$_3 > BF_3 > BC$	$\mathbb{C}l_3$		
175) Which of the following cannot be detected by Borax-bead test							
	a) Ni <sup>+2</sup>	b) Cu <sup>+2</sup>		c) Co <sup>+2</sup>		d) Mg <sup>+2</sup>	
176) M(alkaline earth metal) + $O_2 \rightarrow MO \xrightarrow{NaOH}$ Complex ion. Choose incorrect statement related to							
the above compounds							

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JOIN IN OUR TELEGRAM CHANNEL https://t.me/AIMSDARETOSUCCESS [944 0 345 996] [31 of 31] a) Coordination number of metal in the complex is four

b) MO is covalent

c) MO has rock – salt structure

d) MO is amphoteric

177) A substance which gives brick red flame colouration and decomposes on heating into brown coloured gas is

a)  $Mg(NO_3)_2$  b)  $Ca(NO_3)_2$  c)  $Sr(NO_3)_2$  d)  $Ba(NO_3)_3$ 

178) The alkali metals from salt-like hydrides by the direct synthesis at elevated temperature. The thermal

stability of these hydrides decreases in which of the following orders?

a) NaH > LiH > KH > RbH > CsH b) LiH > NaH > KH > RbH > CsH

c) CsH > RbH > KH > NaH > LiH d) KH > NaH > LiH > CsH > RbH

179) which of the following is a correct set for the salts, types of hardness and the common methods used

for removing the respective hardness?

a) Mg(HCO<sub>3</sub>)<sub>2</sub>, temporary hardness, washing soda method

b) CaCO<sub>3</sub>, temporary hardness, boiling method

c) MgSO<sub>4</sub>, permanent hardness, calgon's method

d) CaCl<sub>2</sub>, permanent hardness, Clark's method

180) Dinitrogen and dioxygen are main constituents of air but these do not react with each other to form oxides of nitrogen because \_\_\_\_\_\_.

a) the reaction is endothermic and requires very high temperature.

b) the reaction can be initiated only in presence of a catalyst.

c) oxides of nitrogen are unstable.

d)  $N_2$  and  $O_2$  are unreactive.

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