Date Planned : __ / __ / __	Daily Tutorial Sheet-2	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	JEE Main Archive	Exact Duration :_____

16. Boron cannot form which one of the following anions ? **(2011)**

(A) BF_6^{3-} **(B)** BH_4^- **(C)** $B(OH)_4^-$ **(D)** BO_2^-

17. Which of the following exists as covalent crystals in the solid state ? **(2013)**

(A) Phosphate **(B)** Iodine **(C)** Silicon **(D)** Sulphur

18. Match the items in Column-I with its main use listed in Column-II : **(2016)**

Column-I		Column-II	
(I)	Silica gel	**(p)**	Transistor
(II)	Silicon	**(q)**	Ion-exchanger
(III)	Silicone	**(r)**	Drying agent
(IV)	Silicate	**(s)**	Sealant

(A) (I)-(r), (II)-(p), (III)-(s), (IV)-(q) **(B)** (I)-(s), (II)-(p), (III)-(q), (IV)-(r)

(C) (I)-(q), (II)-(s), (III)-(p), (IV)-(r) **(D)** (I)-(q), (II)-(p), (III)-(s), (IV)-(r)

19. **Assertion :** Among the carbon allotropes, diamond is an insulator, whereas, graphite is a good conductor of electricity. **(2016)**

Reason : Hybridization of carbon in diamond and graphite are sp^3 and sp^2, respectively.

(A) Both assertion and reason are correct, and the reason is the correct explanation for the assertion.

(B) Both assertion and reason are correct, but the reason is not the correct explanation for the assertion.

(C) Assertion is incorrect statement, but the reason is correct.

(D) Both assertion and reason are incorrect.

20. The number of 2-centre-2-electron and 3-centre-2-electron bonds in B_2H_6, respectively, are : **(2019)**

(A) 2 and 1 **(B)** 4 and 2 **(C)** 2 and 2 **(D)** 2 and 4

21. Aluminium is usually found in +3 oxidation state. In contrast, thallium exists in +1 and +3 oxidation states. This is due to : **(2019)**

(A) diagonal relationship **(B)** lanthanoid contraction

(C) inert pair effect **(D)** lattice effect

22. The chloride that CANNOT get hydrolysed is : **(2019)**

(A) $SnCl_4$ **(B)** CCl_4 **(C)** $SiCl_4$ **(D)** $PbCl_4$

23. The element that does NOT show catenation is : **(2019)**

(A) Si **(B)** Pb **(C)** Sn **(D)** Ge

24. The element that shows greater ability to form $p\pi - p\pi$ multiple bonds, is : **(2019)**

(A) Si **(B)** C **(C)** Ge **(D)** Sn

25. The relative stability of +1 oxidation state of group 13 elements follows the order : **(2019)**

(A) Tl < In < Ga < Al **(B)** Al < Ga < Tl < In

(C) Ga < Al < In < Tl **(D)** Al < Ga < In < Tl

26. Correct statements among a to d regarding silicones are : **(2019)**

(a) They are polymers with hydrophobic character

(b) They are biocompatible

(c) In general, they have high thermal stability and low dielectric strength

(d) Usually, they are resistant to oxidation and used as greases

(A) (a), (b), (c) and (d) **(B)** (a), (b) and (d) only

(C) (a) and (b) only **(D)** (a), (b) and (c) only

27. The correct order of catenation is : **(2019)**

(A) C > Sn > Si ≈ Ge **(B)** Ge > Sn > Si > C

(C) Si > Sn > C > Ge **(D)** C > Si > Ge ≈ Sn

28. C_{60}, an allotrope of carbon contains : **(2019)**

(A) 12 hexagons and 20 pentagons **(B)** 16 hexagons and 16 pentagons

(C) 20 hexagons and 12 pentagons **(D)** 18 hexagons and 14 pentagons

29. Diborane (B_2H_6) reacts independently with O_2 and H_2O to produce, respectively : **(2019)**

(A) HBO_2 and H_3BO_3 **(B)** B_2O_3 and H_3BO_3

(C) B_2O_3 and $[BH_4]^-$ **(D)** H_3BO_3 and B_2O_3

30. The C – C bond length is maximum in : **(2019)**

(A) C_{60} **(B)** graphite **(C)** C_{70} **(D)** diamond

31. The number of pentagons in C_{60} and trigons (triangles) in while phosphorus, respectively, are : **(2019)**

(A) 12 and 4 **(B)** 20 and 3 **(C)** 12 and 3 **(D)** 20 and 4

32. The correct statements among I to III regarding group 13 element oxides are : **(2019)**

(I) Boron trioxide is acidic.

(II) Oxides of aluminium and gallium are amphoteric

(III) Oxides of indium and thallium are basic

(A) (I), (II) and (III) **(B)** (I) and (II) only

(C) (II) and (III) only **(D)** (I) and (III) only

33. The amorphous form of silica is : **(2019)**

(A) tridymite **(B)** kieselguhr **(C)** cristobalite **(D)** quartz

34. The reaction of $H_3N_3B_3Cl_3$(A) with $LiBH_4$ in tetrahydrofuran gives inorganic benzene (B). further, the reaction of (A) with (C) leads to $H_3N_3B_3(Me)_3$. Compounds (B) and (C) respectively, are : **(2020)**

(A) Borazine and MeMgBr **(B)** Diborane and MeMgBr

(C) Borazine and MeBr **(D)** Boron nitride and MeBr