Topic:- BIOSCI PHD S2

1) On selfing an insect of Aa Bb genotype, what proportion of progeny will be recessive homozygous for atleast one gene?
[Question ID = 517]
1. 1/16 [Option ID = 2062]
2. 3/16 [Option ID = 2063]
3. 7/16 [Option ID = 2064]
4. 9/16 [Option ID = 2065]

Correct Answer :-
- 7/16 [Option ID = 2064]

2) A nonsense mutant A reverted to wild type. When this revertant was crossed with a wild type, few mutants with phenotype of A were detected again. This shows that the revertant was
[Question ID = 518]
1. A true revertant [Option ID = 2066]
2. A suppressor mutation [Option ID = 2067]
3. A dominant mutation [Option ID = 2068]
4. A regulator mutation [Option ID = 2069]

Correct Answer :-
- A suppressor mutation [Option ID = 2067]

3) In terms of *lac* operon regulation, what happens when *E. coli* is grown in medium containing both glucose and lactose?

[Question ID = 519]
1. Both CAP and the *lac* repressor are bound to the DNA

   [Option ID = 2070]
2. CAP is bound to the DNA but the *lac* repressor is not

   [Option ID = 2071]
3. *Lac* repressor is bound to the DNA but CAP is not

   [Option ID = 2072]
4. Neither CAP nor the *lac* repressor are bound to the DNA

   [Option ID = 2073]

Correct Answer :-
- Neither CAP nor the *lac* repressor are bound to the DNA

  [Option ID = 2073]

4) Intrinsic pathway of apoptosis is regulated by Bax and Bcl2 wherein:
[Question ID = 520]
1. Bax stimulates apoptosis while Bcl2 inhibits apoptosis [Option ID = 2074]
2. Bax inhibits apoptosis while Bcl2 stimulates apoptosis [Option ID = 2075]
3. Both stimulate apoptosis [Option ID = 2076]
4. Both inhibit apoptosis [Option ID = 2077]

Correct Answer :-
- Bax stimulates apoptosis while Bcl2 inhibits apoptosis [Option ID = 2074]

5) Parkinson's disease is primarily due to degeneration of the:
[Question ID = 521]
1. Corticospinal tract [Option ID = 2078]
2. Cerebellum [Option ID = 2079]
3. Globus pallidus [Option ID = 2080]
4. Substantia nigra [Option ID = 2081]

Correct Answer :-
- Substantia nigra [Option ID = 2081]

6) Which one of the following is the most appropriate statement regarding folded proteins?
[Question ID = 522]
1. Tyrosine residues are always buried [Option ID = 2082]
2. Charged amino acid side chains are always buried [Option ID = 2083]
3. Non polar amino acid side chains are seldom buried [Option ID = 2084]
4. Charged amino acid side chains are seldom buried [Option ID = 2085]

Correct Answer :-
- [illegible] [Option ID = 2085]

7) Which of the following is NOT true about capsules and slime layers?

[Question ID = 523]

1. They consist of secreted material lying outside of the bacterial cell wall [Option ID = 2086]
2. They can prevent desiccation of bacteria cells [Option ID = 2087]
3. They are required for bacteria to grow normally in culture [Option ID = 2088]
4. They help bacteria resist phagocytosis by macrophages [Option ID = 2089]

Correct Answer :-
- They are required for bacteria to grow normally in culture [Option ID = 2088]

8) A patient suffering from pneumonia and tuberculosis was found to have very low CD4+T cells. In all probability the PRIMARY causative infectious agent belongs to

[Question ID = 524]

1. Klebsiella family [Option ID = 2090]
2. Mycobacterium family [Option ID = 2091]
3. Retrovirus family [Option ID = 2092]
4. Streptococcus family [Option ID = 2093]

Correct Answer :-
- Retrovirus family [Option ID = 2092]

9) A living microbe with reduced virulence that is used for vaccination is considered

[Question ID = 525]

1. A toxoid [Option ID = 2094]
2. Dormant [Option ID = 2095]
3. Attenuated [Option ID = 2096]
4. Denatured [Option ID = 2097]

Correct Answer :-
- Attenuated [Option ID = 2096]

10) Which of the following can be described as 'a sequence that can be approximately thousand base pairs upstream or downstream of a eukaryotic promoter and increases gene expression as much as 200-fold.'?

[Question ID = 526]

1. CAAT box [Option ID = 2098]
2. Enhancer [Option ID = 2099]
3. Insulator [Option ID = 2100]
4. TATA box [Option ID = 2101]

Correct Answer :-
- Enhancer [Option ID = 2099]

11) Which interactions promote T cell anergy

[Question ID = 527]

1. CD28: CD44 [Option ID = 2102]
2. CD28: CD86 [Option ID = 2103]
3. PD-1: PD-L1 [Option ID = 2104]
4. CD40:CD62L [Option ID = 2105]

Correct Answer :-
- PD-1: PD-L1 [Option ID = 2104]

12) Some peptides and proteins have been used as drugs. Which of the following statements is <u>not true</u>?

[Question ID = 528]

1. Protein drugs suffer a disadvantage in that they could produce an immune response.

   [Option ID = 2106]
2. Peptides and proteins generally show poor bioavailability

   [Option ID = 2107]
3. Peptide drugs are susceptible to peptidase enzymes

   [Option ID = 2108]
4. Peptide drugs are susceptible to nucleases

   [Option ID = 2109]

Correct Answer :-
- Peptide drugs are susceptible to nucleases

  [Option ID = 2109]

13) During each cycle of chain elongation in translation, how many conformational changes does the ribosome undergo that is catalysed by Elongation factor G?
[Question ID = 529]
1. Zero [Option ID = 2110]
2. One [Option ID = 2111]
3. Two [Option ID = 2112]
4. Three [Option ID = 2113]

Correct Answer :-
- Two [Option ID = 2112]

14) The mammalian oocyte prior to sperm entry is arrested at what stage of cell division?
[Question ID = 530]
1. Prophase of mitosis [Option ID = 2114]
2. Prophase of meiosis [Option ID = 2115]
3. G1 phase of mitotic cell cycle [Option ID = 2116]
4. Metaphase of meiosis II [Option ID = 2117]

Correct Answer :-
- Metaphase of meiosis II [Option ID = 2117]

15) Patient centered case management approach for the treatment of tuberculosis is:
[Question ID = 531]
1. BLOT [Option ID = 2118]
2. DOTS [Option ID = 2119]
3. ROT [Option ID = 2120]
4. SOT [Option ID = 2121]

Correct Answer :-
- DOTS [Option ID = 2119]

16) Which of the following events occur during the stationary phase of bacterial growth?

P. Rise in cell number stops
Q. Spore formation in some Gram-positive bacteria such as *Bacillus subtilis*
R. Cell size increases in some Gram-negative bacteria such as *Escherichia coli*
S. Growth rate of bacterial cells nearly equals their death rate
T. Decrease in peptidoglycan crosslinking

[Question ID = 532]
1. P, Q and S only

   [Option ID = 2122]
2. P, S and T only

   [Option ID = 2123]
3. Q, R and S only

   [Option ID = 2124]
4. P, R and T only

   [Option ID = 2125]

Correct Answer :-
- P, Q and S only

  [Option ID = 2122]

17) The main function of muscle spindles is to:
[Question ID = 533]
1. Provide the specialised membrane that holds nicotinic receptors [Option ID = 2126]
2. Act as stretch receptors [Option ID = 2127]
3. Cause contraction of the muscle [Option ID = 2128]
4. Act as structural support for the muscles [Option ID = 2129]

Correct Answer :-
- Act as stretch receptors [Option ID = 2127]

18) This antihypertensive drug is contraindicated in patients with bilateral renal artery stenosis:
[Question ID = 534]
1. Clonidine [Option ID = 2130]
2. Terazosin [Option ID = 2131]
3. Nifedipine [Option ID = 2132]
4. Captopril [Option ID = 2133]

Correct Answer :-

...opt... [Option ID = 2133]

...cal... proteins important for drug binding:

[Question ID = 535]

1. Lipoproteins

   [Option ID = 2134]

2. Alpha1-acidic glycoproteins

   [Option ID = 2135]

3. Albumin

   [Option ID = 2136]

4. All of these

   [Option ID = 2137]

Correct Answer :-

- All of these

  [Option ID = 2137]

20) Example(s) of an effectively irreversible alpha-adrenergic receptor blocker.

[Question ID = 536]

1. Phentolamine [Option ID = 2138]
2. Phenoxybenzamine [Option ID = 2139]
3. Both [Option ID = 2140]
4. Neither [Option ID = 2141]

Correct Answer :-

- Phenoxybenzamine [Option ID = 2139]

21) Inclusion of a vasoconstrictor in the local anesthetic solution is least likely to prolong the action of:

[Question ID = 537]

1. Procaine [Option ID = 2142]
2. Mepivacaine [Option ID = 2143]
3. Lidocaine [Option ID = 2144]
4. Bupivacaine [Option ID = 2145]

Correct Answer :-

- Bupivacaine [Option ID = 2145]

22) Cholestasis causes

[Question ID = 538]

1. Jaundice [Option ID = 2146]
2. Decrease in serum bilirubin [Option ID = 2147]
3. Activation of cytochrome P-450 [Option ID = 2148]
4. Increased synthesis of clotting factors [Option ID = 2149]

Correct Answer :-

- Jaundice [Option ID = 2146]

23) Which of the following antibodies are present in mammalian cells

[Question ID = 539]

1. IgG, IgM, IgE, IgD [Option ID = 2150]
2. IgG, IgM, IgE, IgK [Option ID = 2151]
3. IgG, IgM, IgF, IgK [Option ID = 2152]
4. IgG, IgD, IgF, IgE [Option ID = 2153]

Correct Answer :-

- IgG, IgM, IgE, IgD [Option ID = 2150]

24) Cytokine profile for Th2 Response includes

[Question ID = 540]

1. IL-4, IL-5 [Option ID = 2154]
2. IFN-gamma, IL-8 [Option ID = 2155]
3. IL-1, IFN-gamma [Option ID = 2156]
4. IL-1, IL-8 [Option ID = 2157]

Correct Answer :-

- IL-4, IL-5 [Option ID = 2154]

25) Forward and Side Scatter in flow cytometry gives:

[Question ID = 541]

1. Fluorescence enhanced by forward and side channels [Option ID = 2158]
2. Fluorescence quenched by scattering in forward and side channels [Option ID = 2159]

3. Relative size and granularity of cell [Option ID = 2160]
4. Presence of [illegible] cells [Option ID = 2161]

Correct Answer :-

- Relative size and granularity of cell [Option ID = 2160]

26) The central cytokine that mediates allergic response is

[Question ID = 542]

1. IL-5 [Option ID = 2162]
2. IFN-gamma [Option ID = 2163]
3. IL-8 [Option ID = 2164]
4. IL-13 [Option ID = 2165]

Correct Answer :-

- IFN-gamma [Option ID = 2163]

27) Isotype matched antibody is used in flowcytometry to

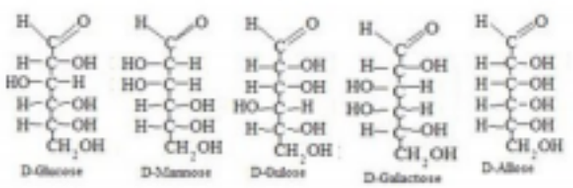
[Question ID = 543]

1. Check for specificity of stain of test antibody [Option ID = 2166]
2. Check for auto-fluorescence of the cell [Option ID = 2167]
3. Check for bleed over of multiple fluophores [Option ID = 2168]
4. To set height of the histogram [Option ID = 2169]

Correct Answer :-

- Check for specificity of stain of test antibody [Option ID = 2166]

28) Which of the following hexoses are not epimers?



[Question ID = 544]

1. Glucose and mannose [Option ID = 2170]
2. Glucose and Gulose [Option ID = 2171]
3. Glucose and Allose [Option ID = 2172]
4. Glucose and galactose [Option ID = 2173]

Correct Answer :-

- Glucose and Allose [Option ID = 2172]

29) Mannich reaction involves the

[Question ID = 545]

1. Reactions between aldimines and α-methylene carbonyls

   [Option ID = 2174]
2. Amino alkylation of an α-methylene carbonyls with formaldehyde and ammonia

   [Option ID = 2175]
3. Formation of ß-amino-carbonyl compound

   [Option ID = 2176]
4. All of these

   [Option ID = 2177]

Correct Answer :-

- All of these

  [Option ID = 2177]

30) Wang resin is one of the standard peptide synthesis resin used with Fmoc (fluorenylmethoxycarbonyl chloride) chemistry, the structure of the resin is represented as:

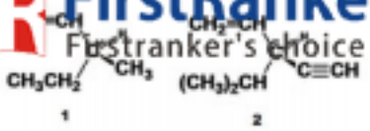
[Question ID = 546]

1. 2-alkoxybenzyl alcohol functionalized polystyrene [Option ID = 2178]
2. 2-alkoxybenzyl alcohol functionalized polyvinyl [Option ID = 2179]
3. 4-alkoxybenzyl alcohol functionalized polystyrene [Option ID = 2180]
4. 4-alkoxybenzyl alcohol functionalized polyvinyl [Option ID = 2181]

Correct Answer :-

- 4-alkoxybenzyl alcohol functionalized polystyrene [Option ID = 2180]

31) The absolute configuration of following compounds is



[Question ID = 547]
1. 1(S); 2(S) [Option ID = 2182]
2. 1(S); 2(R) [Option ID = 2183]
3. 1(R); 2(S) [Option ID = 2184]
4. 1(R); 2(R) [Option ID = 2185]

Correct Answer :-
- 1(S); 2(S) [Option ID = 2182]

32) The probable ^{1}H NMR spectrum of 4-chlorotoluene (Cl-C_6H_4-CH_3) will show δ value at:
[Question ID = 548]
1. s, 1.5 and d, 7.0-7.5 [Option ID = 2186]
2. t, 1.5 and m, 7.5 [Option ID = 2187]
3. s, 2.4 and d, 7.0-7.5 [Option ID = 2188]
4. t, 2.4 and m, 7.5 [Option ID = 2189]

Correct Answer :-
- s, 2.4 and d, 7.0-7.5 [Option ID = 2188]

33) Which of the following is correct representation of Hammett equation?
[Question ID = 549]
1. Log (K_0/K) = 1/rs [Option ID = 2190]
2. Log (k_0/k) = s/r [Option ID = 2191]
3. Log (k/k_0) = r/s [Option ID = 2192]
4. Log (k/k_0) =rs [Option ID = 2193]

Correct Answer :-
- Log (k/k_0) =rs [Option ID = 2193]

34) Compound B, the smelly component emitted by pulp mills, showed M+ at m/z 62 and also peaks at 63 and 64 in a 100:2.2:4.4 ratio. Fragment peaks were seen at m/z 15, 32 and 47.The 1H NMR spectrum of compound B consisted of only a single peak. Which of the following represents the correct structure of compound B.

[Question ID = 550]
1. Dimethyl sulfoxide

   [Option ID = 2194]
2. Thioethanol

   [Option ID = 2195]
3. Dimethyl sulphide

   [Option ID = 2196]
4. None of these

   [Option ID = 2197]

Correct Answer :-
- Dimethyl sulphide

  [Option ID = 2196]

35) A common target enzyme for non-steroidal anti-inflammatory drugs is
[Question ID = 551]
1. COX-2 [Option ID = 2198]
2. CCK-2 [Option ID = 2199]
3. CXC-R [Option ID = 2200]
4. CDK-2 [Option ID = 2201]

Correct Answer :-
- COX-2 [Option ID = 2198]

36) TseTse fly is the vector of the pathogen
[Question ID = 552]
1. Wuchereria [Option ID = 2202]
2. Trypanosoma [Option ID = 2203]
3. Plasmodium [Option ID = 2204]
4. Leishmania [Option ID = 2205]

Correct Answer :-

...ndoprim [Option ID = 2203]

37) The structure activity relationship shows that the important binding interactions in morphine are the piperidine ring, aromatic ring and hydroxyl groups. A diagram can be drawn which shows these functional groups and their relative orientations. What is the term for this?

[Question ID = 553]

1. Pharmacodynamics [Option ID = 2206]
2. Pharmacokinetics [Option ID = 2207]
3. Bioisostere [Option ID = 2208]
4. Pharmacophore [Option ID = 2209]

Correct Answer :-

- Pharmacophore [Option ID = 2209]

38) Protein S will fold into its native conformation only when protein Q is present in the solution. However, protein Q can fold into its native conformation without protein S. Protein Q , therefore, may function as a _____ for protein S.

[Question ID = 554]

1. Ligand [Option ID = 2210]
2. Molecular chaperone [Option ID = 2211]
3. Protein precursor [Option ID = 2212]
4. Structural motif [Option ID = 2213]

Correct Answer :-

- Molecular chaperone [Option ID = 2211]

39) Which of the following molecules is commonly used as a fluorophore?

[Question ID = 555]

1. Phenolphthlein

   [Option ID = 2214]
2. Fluorescein

   [Option ID = 2215]
3. Bromophenol blue

   [Option ID = 2216]
4. All of these

   [Option ID = 2217]

Correct Answer :-

- Fluorescein

  [Option ID = 2215]

40) Name of the monomer used to produce Orlon is

[Question ID = 556]

1. Vinyl cyanide [Option ID = 2218]
2. Formaldehyde + Phenol [Option ID = 2219]
3. Adipic acid + Hexamethylenediamine [Option ID = 2220]
4. Dimethyl terephthalate + Ethylene glycol [Option ID = 2221]

Correct Answer :-

- Vinyl cyanide [Option ID = 2218]

41) Which of the following possess a SP-carbon in its structure?

[Question ID = 557]

1. CH_2=CCl-CH=CH_2

   [Option ID = 2222]
2. CH_2=CH-CH=CH_2

   [Option ID = 2223]
3. CH_2=C=CH_2

   [Option ID = 2224]
4. CH_3-CH=CH-CH=CCl_2

   [Option ID = 2225]

Correct Answer :-

- CH_2=C=CH_2

  [Option ID = 2224]

42) Citral, a natural compound isolated from lemon grass oil is

1. [illegible] [Option ID = 2228]
2. [illegible] [Option ID = 2229]
3. An unnatural amino acid [Option ID = 2228]
4. A carotenoid [Option ID = 2229]

Correct Answer :-

- A terpinoid [Option ID = 2227]

43) Arrange the following compounds in order of their decreasing boiling points

a) $CH_3CH_2CH_2CHO$,

b) $CH_3CH_2CH_2CH_2OH$,

c) H_5C_2-O-C_2H_5,

d) $CH_3CH_2CH_2CH_2CH_3$

[Question ID = 559]

1. a > b > c > d

   [Option ID = 2230]
2. c > b > a > d

   [Option ID = 2231]
3. a > b > d > c

   [Option ID = 2232]
4. b > a > d > c

   [Option ID = 2233]

Correct Answer :-

- b > a > d > c

  [Option ID = 2233]

44) CD is the difference between the absorption of left and right handed circularly polarized light as a function of wavelength. In the following (e=extinction, c=concentration, l= pathlength). Which one is incorrect?

[Question ID = 560]

1. CD=DA/(absorbance units)=4pq(degrees)/(180 $\ln_{10}$)

   [Option ID = 2234]
2. CD= [e_L (l) - e_R (l)]lc

   [Option ID = 2235]
3. CD = De (l)lc

   [Option ID = 2236]
4. CD = ecl

   [Option ID = 2237]

Correct Answer :-

- CD=DA/(absorbance units)=4pq(degrees)/(180 $\ln_{10}$)

  [Option ID = 2234]

45) Pernicious anemia is caused by

[Question ID = 561]

1. Auto - antibodies to intrinsic factor [Option ID = 2238]
2. Auto - antibodies to vitamin B_{12} [Option ID = 2239]
3. Auto - antibodies to RBC antigens [Option ID = 2240]
4. None [Option ID = 2241]

Correct Answer :-

- Auto - antibodies to intrinsic factor [Option ID = 2238]

46) Atopic individuals

[Question ID = 562]

1. Show increased sensitivity to allergens [Option ID = 2242]
2. Are more prone to auto-immune disorders [Option ID = 2243]
3. Are resistant to bacterial infections [Option ID = 2244]
4. Resistant to viral infections [Option ID = 2245]

Correct Answer :-

- Show increased sensitivity to allergens [Option ID = 2242]

Match the items in Group I with Group II:

Group I	Group II
A. Circular Dichroism	I. Dehydration
B. X-ray Crystallography	II. Sedimentation Coefficient
C. Freeze-drying	III. Secondary structure determination
D. Ultracentrifugation	IV. Tertiary structure determination

Choose the correct answer from the options given below:

[Question ID = 563]

1. A - IV, B - I, C - II, D - III

   [Option ID = 2246]
2. A - I, B - IV, C - III, D - II

   [Option ID = 2247]
3. A - II, B - III, C - IV, D - I

   [Option ID = 2248]
4. A - III, B - IV, C - I, D - II

   [Option ID = 2249]

Correct Answer :-

- A - III, B - IV, C - I, D - II

  [Option ID = 2249]

48) _____ are inhibitory interneurons which modulate motor functions by sharpening the signals and secrete_____ for exerting their function.

[Question ID = 564]

1. Renshaw cells; glycine [Option ID = 2250]
2. Red nuclei; L-Dopamine [Option ID = 2251]
3. Gamma neurons; glycine [Option ID = 2252]
4. Alpha neurons; Acetylcholine [Option ID = 2253]

Correct Answer :-

- Renshaw cells; glycine [Option ID = 2250]

49) Yeast two hybrid technique is used for the study of:

[Question ID = 565]

1. Protein and protein interactions

   [Option ID = 2254]
2. DNA and Protein interactions

   [Option ID = 2255]
3. RNA and Protein interactions

   [Option ID = 2256]
4. All of these

   [Option ID = 2257]

Correct Answer :-

- Protein and protein interactions

  [Option ID = 2254]

50) Homeostatic regulation of feeding is controlled by

[Question ID = 566]

1. Hypothalamus and hind brain [Option ID = 2258]
2. Mid brain and hind brain [Option ID = 2259]
3. Higher cortical regions and hind brain [Option ID = 2260]
4. Limbic system [Option ID = 2261]

Correct Answer :-

- Hypothalamus and hind brain [Option ID = 2258]