

# PACE-IIT & MEDICAL

ANDHERI / BORIVALI / DADAR / CHEMBUR / THANE / NERUL / KHARGHAR / POWAI

FOR 2018 ASPIRANTS

Medical Droppers - Part Test - 5

DATE: 04-03-2018

SOLUTIONS  
PHYSICS

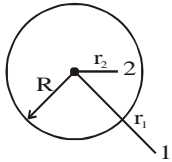
2.  $Q = ne = 10^{14} \times 1.6 \times 10^{-19} \Rightarrow Q = 1.6 \times 10^{-5} C = 16 \mu C$

7. [3]

7.  $r_1 = 20 \text{ cm.}, R = 10 \text{ cm.}, r_2 = 3 \text{ cm.}$

Now  $E_1 = \frac{kQ}{r_1^2}$  and  $E_2 = \frac{kQr_2}{R^3}$

so  $\frac{E_2}{E_1} = \frac{r_2 \cdot r_1^2}{R^3}$



$\frac{3 \times 20 \times 20}{10 \times 10 \times 10} \times 100 = 120 \text{ V/m}$

20. [1]

20. As  $V = 4x^2$

$E = \frac{-dv}{dx} = -8x$

Hence E at (1, 0, 2) =  $-8 \times 1 = -8 \text{ V/m}$

30. [1] Let separation between two parts be  $r \Rightarrow F = k \cdot q \frac{(Q-q)}{r^2}$

For  $F$  to be maximum  $\frac{dF}{dq} = 0 \Rightarrow \frac{Q}{q} = \frac{2}{1}$

31. [3] Power of the combination  $P_s = \frac{P}{n} = \frac{1000}{2} = 500 \text{ W}$

32. [2] For parallel combination  $P_{Consumed} \propto \text{Brightness} \propto P_{Rated}$

33. [4]  $\frac{H}{t} = \frac{V^2}{R} \Rightarrow \frac{H}{t} \propto \frac{1}{R}$

34. [1]

35. [1] The chemical energy reduced in battery =  $VIt = 6 \times 5 \times 6 \times 60 \text{ J} = 10800 \text{ J} = 1.08 \times 10^4 \text{ J}$

36. [4] 96500 coulombs of charge is needed to deposit one gram equivalent of an element at an electrode.

37. [3]

38. [2] With temperature rise, dielectric constant of liquid decreases.

39. [4] In the presence of medium force becomes  $\frac{1}{K}$  times.

40. [1] Separation between the spheres is not too large as compared to their radius so due to induction effect redistribution of charge takes place. Hence effective charge separation decreases so force increases.

## BOTANY

91. [1]  
92. [2]  
93. [3]  
94. [3]  
95. [2]  
96. [3]  
97. [4]  
98. [4]  
99. [1]  
100. [1]  
101. [4]  
102. [4]  
103. [1]  
104. [1]  
105. [3]  
106. [2]  
107. [3]  
108. [3]  
109. [3]  
110. [4]  
111. [2]  
112. [1]  
113. [1]  
114. [4]  
115. [2]  
116. [1]  
117. [3]  
118. [2]  
119. [3]  
120. [2]  
121. [2]  
122. [4]  
122. Colocasia is the example of corm. Ginger and banana are vegetatively propagated by rhizome. Bulbil of *Agave* and eyes of potato are vegetative propagules.  
123. [1]  
123. Successful grafting requires that cambia of both stock and scion fuse to form new vascular tissues which is absent in monocots.  
124. [1]  
124. Root of the plant originates from stock, therefore, possess the same number of chromosomes i.e., 48.  
125. [2]  
125. Hydrophytes such as *Pistia* and *Eichornia*, vegetative propagation occurs by offset.  
126. [3]  
126. Zygote is the first cell of new generation. It is formed by the fusion of two haploid gametes, therefore, zygote is always diploid.  
127. [2]  
127. The plant life cycle alternates between gametophytic [haploid] phase and sporophytic [diploid] phase. In primitive plants gametophytes are free living while in seed plants male and female gametes are different in structures. Embryosac structure and fertilization process are significant in seed plants.  
128. [4]  
128. Conidia formation occur in many fungi species, such as *Penicillium*, *Plasmodium* is a protozoans.  
129. [1]

129. Fig[A] is showing zoospores in *Chlamydomonas* and [B] is showing conidia in *Penicillium*. Both are illustrating sporulation.
130. [2]
130. Recombination of alleles are present in sexual reproduction, not in parthenogenesis.
131. [2]
132. [4]
133. [2]
134. [2]
135. [1]