1. (d) ⇒ 
2. (c) Phase difference = path difference ⇒= 0.5*m*

⇒ ⇒ 

1. (c) Velocity of sound in gas  ⇒  ⇒
2. (a) The time taken by the stone to reach the lake  (Using )

Now time taken by sound from lake to the man 

⇒ Total time 

1. (b)



*v*

*d*1

*d*2

*v*

⇒  = *m*.

1. (c) Comparing with the standard equation,

, we have , 

1. (c) 
2. (c) 
3. (b)  Hence 
4. (d) frequency will remain same *i.e.* *ω*.
5. (d) 

Here phase difference = The resultant amplitude = 

1. (d)
2. (a) Suppose *nA* = known frequency = 100 *Hz*, *nB* = ?

*x =* 2 = Beat frequency, which is decreasing after loading (*i.e.* *x*↓)

Unknown tuning fork is loaded so *nB*↓

Hence *nA* – *nB* ↓ = *x*↓ ... (i) Wrong

*nB* ↓ – *nA* = *x*↓ ... (ii) Correct ⇒ *nB* = *nA* + *x* = 100 + 2 = 102 *Hz*.

1. (a)  *m/s*. Velocity sound at *t*°*C* is 

⇒  ⇒ 

1. (a) ⇒ ⇒ 
2. (b) ⇒ ⇒ 
3. (a) 

*A*

*N*

*A*

*N*

*N*

1*.*21*Å*

1. (a) Required distance 
2. d) Minimum time interval between two instants when the string is flat = 

Hence .

1. (d) The distance between adjacent nodes  Also  Hence 
2. (a) 
3. (b) 
4. (a) Frequency heard by the observer



1. (b) According the concept of sound image

*Hz*

Number of beats 

1. (a) When a listener moves towards a stationary source apparent frequency

 …..(i)

When listener moves away from the same source

 …..(ii)

From (i) and (ii)

⇒ ⇒ 

1. (a) For closed pipe ;⇒ ⇒ 
2. (a) In first overtone of organ pipe open at one end,

end,  .....(i)

Third harmonic or second overtone of organ pipe open at both end,  .....(ii)

given 

1. (a) For end correction *x*, 

