

## Wave and Motion : Sound – Subjective Questions (Typical)

### (Answers Only)

A-01	2.84 ms
A-02	0.5 s
A-03	333 m/s
A-04	18 mm, 18 m
A-05	7.25 cm, 72.5 m
A-06	(a) 170 Hz (b) 17 kHz
A-07	$7.6 \times 10^{-5}$ m, $3.3 \times 10^{-4}$ m
A-08	(a) $1.7 \times 10^{-5}$ , (b) $1.1 \times 10^{-4}$
A-09	(a) $\frac{\pi}{2}$ (b) $\frac{2\pi}{35}$
A-10	(a) Zero (b) Zero
A-11	<b>310 m/s</b>
A-12	349 m/s
A-13	819°C
A-14	$\frac{2d}{v} \times \frac{\sqrt{273}}{\sqrt{T_1} + \sqrt{T_2}}$ , 96 ms
A-15	0.14 cm <sup>3</sup>
A-16	$1.4 \times 10^5$ N/m <sup>2</sup>
A-17	(a) 44mW/m <sup>2</sup> (b) 6.0 pa (c) $1.2 \times 10^{-6}$ m
A-18	$4.0 \times 10^{-10}$ W/m <sup>2</sup>
A-19	20 dB
A-20	3 dB
A-21	40 cm
A-22	$\sqrt{10}$
A-23	53 dB
A-24	3.4 kHz
A-25	(a) 5.00 kHz (b) 2

A-26	1200 Hz, 2000 Hz, 2800 Hz, 3600 Hz and 4400 Hz
A-27	420 Hz
A-28	0.14 d
A-29	200(2n + 1) where n = 0,1,2,3 ... 49
A-30	12.6 cm
A-31	(a) 7.9 <sup>0</sup> (b) 16 <sup>0</sup> (c) Two at 33.3 <sup>0</sup> and 55.6 <sup>0</sup>
A-32	Zero
A-33	$\sqrt{3}D$
A-34	0 <sup>0</sup> , 48.5 <sup>0</sup> , 70.5 <sup>0</sup> , 90 <sup>0</sup> and similar points in other quadrants
A-35	(a) $\frac{l_0}{4}$ (b) $\frac{l_0}{8}$
A-36	850 Hz, 1700 Hz and 2550 Hz
A-37	17 cm
A-38	4.1 kHz
A-39	340 Hz
A-40	1020 Hz, 1360 Hz and 1700 Hz
A-41	(a) 336 m/s (b) 1 cm
A-42	20 cm
A-43	1.9 n kHz where n ∈ N: n ≤ 10
A-44	8.5 m
A-45	(a) 3.4 kHz (b) 5
A-46	100(2n + 1) where n = 0,1,2,3 ... 9
A-47	25 cm
A-48	328 m/s
A-49	18.8 cm, 56.3 cm
A-50	11.6 N

A-51	347 N
A-52	-
A-53	294 Hz
A-54	3400 m/s
A-55	5200 m/s, 338 m/s
A-56	478 Hz
A-57	252 Hz
A-58	7 per second
A-59	205 Hz
A-60	1.02
A-61	0.39 cm
A-62	2.06 kHz
A-63	2436 Hz
A-64	(a) 1328 Hz (b) 1181 Hz
A-65	1480 Hz
A-66	$4.67 \times 10^4$ Hz, $4.34 \times 10^4$ Hz, 3270 Hz
A-67	0.8
A-68	529 Hz, 474 Hz
A-69	(a) 11 kmph (b) a little less than 4 beats/s
A-70	4.6 Hz
A-71	Nil

A-72	485 Hz and 516 Hz
A-73	577 Hz
A-74	(a) 297 kmph (b) Impractical
A-75	827 Hz
A-76	(a) 2034 Hz (b) 2068 Hz
A-77	0.63 s
A-78	1670 Hz
A-79	(a) 680 Hz (b) 660 Hz (c) 640 Hz
A-80	(a) 500 Hz (b) 459 Hz (c-1) 500 Hz and (c-2) 458 Hz
A-81	(a) 1616 Hz (b) 1632 Hz
A-82	1417 Hz
A-83	(a) 80 cm (b) 80 cm (c) 437 Hz (d) Beats cannot be heard.
A-84	4 m/s
A-85	(a) $t = 1$ second (b) 2.0 kHz (c) at $x = 22$ m
A-86	4018 Hz
A-87	(a) 1600 Hz (b) 224 m
A-88	(a) 514 Hz (b) 490 Hz and 511 Hz
A-89	$\frac{2Vf^2}{2Vf - a}$
A-90	7