

Association of Physics Teachers
NATIONAL STANDARD EXAMINATION IN PHYSICS 2013- 2014

Date of Examination : 24th November 2013

Code - 137
Time 9.30 to 11.30 Hrs

ANSWER KEY

PART-A
SUB-PART A-1

- 1 b
2 b
3 a
4 c
5 b
6 d
7 b
8 c
9 d
10 a
11 b
12 a
13 b
14 a
15 b
16 a
17 b
18 c
19 c
20 d
21 a
22 a
23 c
24 b

- 25 c
26 a
27 d
28 c
29 c
30 d
31 c
32 a
33 b
34 c
35 d
36 c
37 c
38 c
39 a
40 b

SUB-PART A-2

- 41 a, b
42 a
43 a, c, d
44 a, b, c, d
45 a, b, c, d
46 c
47 c, d
48 a, c
49 a, b, c
50 c, d

PART-B

1. (i) $\frac{\alpha^2}{2}t$ (ii) $\frac{\alpha^2}{2}$
 (iii) $\frac{u+v}{2} = \frac{\alpha\sqrt{s}}{2}$
2. (i) $\epsilon_r = \frac{\sin^2 \theta_1 \tan \theta_1}{\sin^2 \theta_1 \tan \theta_2} \left(\frac{\rho}{\rho - \sigma} \right)$
 (ii) $\epsilon_r = \frac{\rho}{\rho - \sigma}$
3. (a) 40 cm (b) $\sqrt{2}$
4. (a) $P_C = P_B = \frac{1}{2^{5/3}} \text{ atm,}$
 $T_B = (300) \left(\frac{1}{2} \right)^{2/3},$
 $T_C = \frac{1}{2} \left(\frac{300}{2^{2/3}} \right) \text{ K}$
 (b) $150 \left[1 - \frac{1}{2^{2/3}} \right] \text{ J,}$
 $W_{CA} = 0, W_{BC} = -\frac{100}{2^{5/3}} \text{ J}$
 (c) $\Delta Q = \frac{1}{2^{2/3}} [150 \times 2^{2/3} - 200]$
 $= \Delta W$
 (d) 0.233
5. (a) 644 Ω
 (c) 0.155
 (d) 207.36 sec.