

C.U.SHAH UNIVERSITY

Winter Examination-2015

Subject Name: Applied Physics

Subject Code: 2TE02APH1

Branch: DIPLOMA (ALL)

Semester: II

Date: 20/11/2015

Time: 10:30 To 01:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
-

Q-1 **Attempt the following questions:** **(14)**

- a) Main scale of vernier caliper is calibrated in mm. There are 100 divisions in its vernier scale. Then find out the least count of value of vernier caliper.
- b) Define: Derived physical quantity.
- c) Define: Angle of contact.
- d) Give the range of Infrasonic waves.
- e) Give the definition of mechanical waves.
- f) $1\text{\AA} = \underline{\hspace{2cm}}\text{m}$.
- g) Write down the statement of principle of magnetostriction transducer.
- h) Write down the formula of velocity of light and define each term in it.
- i) Write down the statement of Newton's first law of motion.
- j) Give the names of the types of the interference.
- k) Write down the statement of Ohm's law.
- l) What is Polarization?
- m) Define: Mass defect

- n) State the names of types of the nuclear chain reaction.

Attempt any four questions from Q-2 to Q-8

- Q-2** **Attempt all questions**
- 1 Explain: Vernier caliper. **(7)**
 - 2 State the name, units and symbols of the fundamental physical quantity according to S.I. system. **(7)**

- Q-3** **Attempt all questions**
- 1 The main scale of vernier caliper is calibrated in mm. There are 100 divisions in its vernier scale While measuring diameter of one sphere, zero of vernier scale lies between 4.3 and 4.4cm of main scale. The 8th division of vernier scale coincide with some division of main scale. Given vernier caliper is errorless. Then find out the radius of the given metal sphere. **(7)**



- 2 Explain surface tension by the molecular phenomenon. (7)
- Q-4** **Attempt all questions**
- 1 Explain cohesive force and adhesive force with example. (5)
- 2 Explain Angle of contact with necessary diagram. (5)
- 3 Give the applications of the ultrasonic waves. (4)
- Q-5** **Attempt all questions**
- 1 Explain any one method of production of ultrasonic waves with necessary diagram. (7)
- 2 Explain the laws of radioactivity with necessary formula. (7)
- Q-6** **Attempt all questions**
- 1 Derive the formula for surface tension. (5)
- 2 State the distinction between transverse and longitudinal waves. (5)
- 3 Explain interference of light with its types and figure. (4)
- Q-7** **Attempt all questions**
- 1 Explain the phenomenon of Nuclear fission. (5)
- 2 Draw the figure of nuclear reactor and explain about any two parts of it. (5)
- Explain the series combination of the resistance with its circuit diagram. (4)
- Q-8** **Attempt all questions**
- 1 Give the statement of Newton's third law of motion and derive the expression of conservation of momentum from it. (7)
- 2 What is semiconductor diode? Explain the V-I characteristics of the P-N junction diode, with necessary diagram. (7)



5|`G GLR[GF NZ[S 5|`GMGF HJFA VF5MP !\$f
v !

! JIG"IZ S[l,5ZDF\ D]bl :S[,G]\ ZL0L\U mm DF\ VF5[,]\ K[P
T[GL JIG"IZ :S[,DF\
S], v !__ IJEFU K[P TM VF5[,F JIG"IZ S[l,5ZGL ,P DFP
XP XMWM

Z jIFbIF VF5M ov ;FIWT EF{ITS ZFXL
jIFbIF VF5M ov ;\5S" SM6 q :5X" SM6
\$.gO|F;MGLS TZ\UMGL Z[gH sIJ:TFZf H6FJM
5 IF\+S TZ\UMGL jIFbIF VF5M
& 1 A⁰ = P P P P P P P P P P P P m
* D[uG[8M:8=LSXG 8=Fg;0I];ZGM I;wWF\T ,BM
(5|SFXGF J[UG]\ ;]+ ,BL T[DF\ VFJTL NZ[S ZFXLVM
IJX[H6FJM
) gl]8GGL UTLGF 5|YD IGIDG]\ IJWFG H6FJM
!_ jIITSZ6GF 5|SFZMGF GFD H6FJM
!! VMC'DGF IGIDG]\ IJWFG VF5M
!Z W|]JLEJG V[8,[X]\ m
!# jIFbIF VF5M ov ãjIDFG 1FIT
!\$ gl]IS,IZ X\B,F 5|IS|IFGF 5|SFZMGF GFD H6FJM

GLR[GF 5|`GMDF\YL SM.56 RFZ 5|`GMGF HJFA VF5M

5|`G GLR[GF 5|`GMGF HJFA VF5MP
v Z

!f ;DHFJM ov JIG"IZ S[l,5Z s*f

Zf V[;P VF.P 5wWIT D]HA D]/E]T EF{ITS ZFXLVMGF s*f
GFD 4 V[SDM VG[
;\7F H6FJM

5|`G GLR[GF 5|`GMGF HJFA VF5MP
v #

!f JIG"IZ S[l,5ZDF\ D]bl :S[,G]\ ZL0L\U DLPDLPDF\ s*f
VF5[,]\ K[P JIG"IZ :S[,DF\ S], !__ IJEFU K[P WFT]GF
V[S UM/FGM jIF; DF5TL JBT[JIG"IZ :S[,GM X}gIGM



SF5M 4 D]bl :S[,GF\ 4.3 & 4.4 cm. JrR[VFJ[,M K[P JIG"IZ :S[,GM 8 DM SF5M D]bl :S[,GF SM. 56 V[S SF5F ;FY[D[R YFI K[PVF5[,] JIG"IZ S[,5Z +]8LZCLT K[P TM VF5[,F WFT]GF UM/FGL I+HIF XMWM

5|`G
v \$ Zf VF6LS 38GF äFZF 5'Q9TF6GL ;DH]TL VF5M GLR[GF 5|`GMGF HJFA VF5MP s*f

If pNFCZ6 ;FY[;\;IST A/ VG[VF;IST A/ ;DHFJM s5f

Zf ;\5S" SM6 q :5X" SM6 IMul VFS'IT NMZL ;DHFJM s5f

#f V<8=F;MGLS TZ\UMGF p5IMUM H6FJM s\$f

5|`G
v 5 GLR[GF 5|`GMGF HJFA VF5MP

If V<8=F;MGLS TZ\UMGF pt5FNGGL SM.56 V[S 5wWIT VFS'IT ;FY[;DHFJMP s*f

Zf Z[0LIM V[S8LJL8LGF IGIDM ;]+ ;FY[;DHFJM s*f

5|`G
v& GLR[GF 5|`GMGF HJFA VF5M

If 5'Q9TF6G)\ ;]+ ;FALT SZMP s5f

Zf ,\AUT TZ\U VG[;\UT TZ\U JrR[GF TOFJT H6FJM s5f

#f jIITSZ6GL 38GF T[GF 5|SFZM VG[VFS'IT ;FY[;DHFJM s\$f

5|`G
v* GLR[GF 5|`GMGF HJFA VF5MP

If gl]IS,IZ IOXGGL 38GF ;DHFJM s5f

Zf gl]IS,IZ IZ[V[S8ZGL VFS'IT NMZM4 VG[T[GF SM.56 A[IJEFUM IJQF[;DHFJM s5f

#f VJZMWMG)\ z[6L HM0F6 ;DHFJM s\$f

5|`G
v(GLR[GF 5|`GMGF HJFA VF5MP

If gl]8GGL UTLGF +LHF IGIDG)\ IJWFG VF5M VG[T[GF 5ZYL J[UDFGG] ;\Z1F6G)\ ;]+ TFZJM s*f

Zf ;[DLS\0S8Z 0FIM0 V[8,[X]\ m P. N. H\SXG 0FIM0GL v - s*f



I ,F1FI6STF IMul VFS'IT ;FY[;DHFJM

