April 2014

Seat No. | | | | | | |

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कण - 139 / 140

PHYSICS PAPER - II : PHY - 232

A) Electronics - I (New) (23126) OR /

B) Instrumentation - I (New) (23127)

P. Pages : 4

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A) Electronics - I

(New) (23126)

Time : Two Hours **Max. Marks : 40**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory and carry equal marks. Figure to the right indicate full marks.
5. Draw neat and labelled diagram wherever necessary.
6. Use of logarithmic table or standard electronic calculator is allowed.

1. Attempt **any eight** of the following select correct option. 8

i) P-type semiconductor is obtained by.
   a) Doping with tetravalent element
   b) Doping with pentavalent element
   c) Doping with trivalent element
   d) Doping with mixture of trivalent and tetravalent

ii) Ripple factor of full wave rectifier is.....
   a) 0.58 b) 0.28
   c) 0.48 d) 0.38

iii) In Transistor, base is very.....
   a) Narrow b) Thin
   c) Thick d) Broad

iv) The base or radix of Hexadecimal system is.....
   a) 8 b) 2
   c) 10 d) 16

v) In NOR gate, All inputs must be low to get a..... output.
   a) High b) Different
   c) Low d) Same

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vi) The current amplification factor in CE configuration is.....

a) α b) β

c) $1+\beta$ d) $\frac{1}{\beta}$

vii) ASCII code is..... code.

a) 8421 b) Weighted

c) 5211 d) Non - Weighted

viii) Half wave rectifier consist of..... diodes.

a) 3 b) 2

c) 4 d) 1

ix) When a temperature of a doped semiconductor is increased, it's conductivity.....

a) Decreases

b) Increases

c) Does not change

d) Increase or decrease depending on whether it is p - or n - type.

x) In hexadecimal number system the number 15 is represented by..... alphabets.

a) A b) B

c) E d) F.

2. Attempt **any four** of the following. **8**

a) What do you mean by a P-N junction diode ?

b) What is rectifier ?

c) Draw the symbol of LED.

d) What do you mean by amplifier ?

e) Define Radix or base of a decimal and binary number system.

f) Define logic gate.

3. Attempt **any two** of the following. **8**

a) Give the applications of LED.

b) With a neat circuit diagram, explain the working of half wave rectifier.

c) Conversion of decimal number $(7520)_{10}$ into hexadecimal.

4. a) Attempt **any two** of the following. **6**

i) Give the advantages of Transistor biasing.

ii) For amplifier, explain the term 'Bandwidth'.

iii) Explain BCD code.

b) Define voltage gain of amplifier. **2**

5. a) Attempt **any one** of the following. **6**

i) What is flip - flop ? Explain the working of R-S flip - flop.

ii) Explain the working of npn and pnp transistor with neat diagram.

b) Draw the circuit diagram of choke input filter. **2**

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B) Instrumentation - I
(New) (23127)

Time : Two Hours **Max. Marks : 40**

Instructions to Candidates :
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3. Students should note, no supplement will be provided.
4. Draw neat diagram wherever necessary.
5. Use of logarithmic table or standard calculator is allowed.

1. Attempt **any eight** of the following. **8**

a) If the velocity greater than the critical value. the flow of liquid remain does not steady is called.....
   i) Streamline flow ii) Turbulent flow
   iii) Continuous flow iv) None of these

b) The McLeod gauge is a scientific instrument to measure very law.....
   i) Frequency ii) Pressure
   iii) Area iv) Density

c) Errors are classified as systematic error and.....
   i) Random error ii) Actual error
   iii) Both error iv) None of these

d) The output voltage of typical thermocouple is .....
   i) Less than 100 mV
   ii) Greater than 1V
   iii) Thermocouple vary resistance, not voltage
   iv) None of these

e) Acoustics is the branch of physics studying .....
   i) Light ii) Heat
   iii) Sound iv) Motion of planets

f) A Hall probe is used to determine.....
   i) The magnetic moment of a coil
   ii) The susceptibility of a material
   iii) Relative permittivity
   iv) Magnetic flux density

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g) The frequency of audible range is in between .....
   i) 20Hz to 20kHz ii) 1kHz to 20kHz
   iii) 1.5 kHz to 25 kHz iv) None of these

h) Sensitivity of an instruments is defined as "The ratio of the magnitude of change in ..... signal to the magnitude of change in..... signal.
   i) Output, input ii) Input, output
   iii) input, input iv) output, output

i) Pressure is defined as..... per unit.....
   i) Force, area ii) Height, area
   iii) Length, height iv) area, area

j) When the velocity of molecule is zero the temperature is.....
   i) 0°C ii) 273K
   iii) -273°C iv) -273K

2. Attempt **any four** of the following. **8**
a) Describe the construction of constant volume thermometer.
b) What is thermocouple ?
c) What are advantages of pitot tube ?
d) Enlist different blocks of sound level meter.
e) Define sound power level.
f) What do you mean by term calibration ?

3. Attempt **any two** of the following. **8**
a) Write a note on electrical resistance thermometer.
b) What are advantages and limitations of Venturi meter ?
c) Explain the construction of carbon microphone.

4. a) Attempt **any two** of the following. **6**
   i) Write characteristics of sound.
   ii) What is search coil ? How it is connected for measurement of magnetic field ?
   iii) Discuss total radiation pyrometer.

b) Define errors in measurements. How they are classified ? **2**

5. a) Explain principle construction and working of platinum resistance thermometer. Discuss its merits and demerits. **8**

OR

a) Attempt the following. **8**
   i) Explain the working of Dead weight tester.
   ii) Distinguish between accuracy and precision.

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