Explain the principle of feedback transistor oscillators and Barkhawuen Criteria.

(r) Ñà¹¦v¦ ÀààvØà §ýà qáÊqn w §ýàuâwâo ytlàm¦ Ñ¥ ¢y§ýL ¡àwâÙà Öààm §ýLâk¥ ñ

Describe the circuit and working of Hartley oscillator. Hence obtain an expression for its frequency.

Unit-V

ZàÎÂà-5. â¹¦Ãq½àã âvâh¥ ß

(¡) t¦tàÊã mnà ¢y§ý Zà§ýàÊ

(r) rÑ¦ Zààªààât ªà mnà ytu âwsààkm q÷âm

Write short notes on :

(a) Memory and its various types

(b) Multi programming and time sharing systems

OR

ZààmÐnàqÂà âwâo y¦ uªqm¦ ytâ§ýÊ½à §ýà Ñv Öààm §ýÊÂà¦ §ý âv¥ *C* Zààªààt âvâh¥ ñ

Write a C-Programme to solve simultaneous equations by elimination method.

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Roll No.....................

Total No. of Questions : 05

Total No. of Printed Pages : 04

Code No. : B-267 (B)

Annual Examination - 2017

B.Sc.-III

PHYSICS

Paper-II

SOLID STATE PHYSICS, SOLID STATE DEVICES AND ELECTRONICS

Max.Marks : 50

Time : 3 Hrs. Min.Marks : 17

¹¦àq ß Zà¾u§ý ¢§ýà¢¦ y¦ ¥§ý ZàÎÂà Ñv §ýLâk¥ ñ ysâ ZàÎÂàà¦ §ý ¡¦§ý ytàÂà Ñ¦ ñ

Note : Attempt one question from each unit. All questions carry equal marks.

Unit-I

ZàÎÂà-1. â§ýyã â§ýÐ¹¦v mv §ý âtvÊ y¦j§ýà§ý Öààm §ýÊÂà¦ §ýL âwâo ytlà¢¥ ñ i Âàà§ýàÊ â§ýÐ¹¦v t¦ kàv§ý mvà¦ §ý rãj §ýL vÈrwm ÀÊã §ýà yØà âÂà§ýààv¥ ñ yÊv i Âàà§ýàÊ â§ýÐ¹¦v t¦ (100) w (110) âtvÊ mv â jâØàm §ýLâk¥ ñ

Describe the method to determine Miller Indices for a crystal plane. Obtain a formula to determine perpendicular distance between two crystal planes in a cubic crystal. Draw (100) and (110) planes for a simple cubic crystal.

OR

yâÕàÅm â¹Åq½àã âvâh¥ ß

(¡) roÂà rvà §ý ¡àoàÊ qÊ ºàyà §ýà wªàJ§ýÉ½à

(r) ¥¨y-â§ýÉ½à âwwmÂà §ýà và£¥ ây÷àm

Write short notes on :

(a) Classification of solids based on binding forces

(b) Laue's theory of X-ray diffraction

Unit-II

ZàÎÂà-2. oàm¡à t tQý ¢v¨¹àÂà tà»v §ýL Íuà©uà §ýLâk¥ ñ ¢y§ýL yÄývmà¥ mnà ¡yÄývmà¥ £ÀàÑÉ½à yâÑm ytlà¢¥ mnà ¢y§ýL tv §ýàtuà §ýà w½àÀà §ýLâk¥ ñ

Describe the free electron model of metals. Explain its success and failure giving suitable examples. State basic drawbacks of this model.

OR

(¡) Zàâmjèr§ýLu, ¡Ààjèr§ýLu mnà vàÑ jèr§ýLu qÀànà t ¡mÊ Ðq~ §ýLâk¥ ñ

Distinguish between Diamagnetic, Paramagnetic and ferromagnetic substances.

(r) Zàâmjèr§ýLu qÀànà §ý âv¥ vkâwÂà §ýà âjÊyètm ây÷àm ytlàm Ñ¥ ¢Âà§ýL jèr§ýLu Zàwâà §ý âv¥ Íuk§ý ZààÅm §ýÊ ñ

Describe the classical theory of Langevin for diamagnetic susbstance. Hence obtain an expression for their magnetic susceptibility.

Unit-III

ZàÎÂà-3. yâo »àuà»§ý âv¥ wàÌ¹mà-oàÊà yèrÂo ¡nàm »àuà»§ ytã§ýÉ½à ZààÅm §ýLâk¥ mnà ¢y§ý ¡àoàÊ qÊ »àuà»§ý ¡âsvàÕàâ½à§ý w§ýà§ýL Íuà©uà §ýLâk¥ ñ

Obtain the current-voltage relation i.e. diode equation for a junction diode. Hence explain the characteristic curves of diode using diode equation.

OR

Zà§ýàÎà £¾yk§ý »àuà»§ §ýL Êj Âàà, ây÷àm, §ýàuâwâo mnà £quàªà ytlà¢¥ ñ

Explain the construction, principle, working and application of Light Emitting Diodes (LEDs).

Unit-IV

ZàÎÂà-4. ¡÷mÊªà âÀ~§ýàÊã mnà q½à mÊªà âÀ~§ýàÊã §ýL mvÂàà âÂàËÂà ârÀ¡à §ý ¡àoàÊ qÊ §ýLâk¥ ß

(¡) âwùm qáÊqn (r) §ýàu§ýàÊã ây÷àm

(y) £ât§ýà i¹§ý (À) ÀÕàmà

Compare half wave rectifier and full wave rectifier based on the following points :

(a) Circuit diagram (b) Working principle

(c) Ripple factor (d) Efficiency

OR

(¡) qÂàâÂàwÎàã Àà¢vØà §ýà ây÷àm w rÊhàyãÂà §ýyà¹ã §ýL Íuà©uà §ýLâk¥ ñ