LIST OF PROJECT

A PROJECT REPORT ON

"Studies on the Helminthes parasites in lives tack of SEONI"

Presented For Degree of
MASTER OF SCIENCE
(ZOOLOGY)

R.D.V.V.UNIVERSITY JABALPUR
BY

Alka Harinkhede
M.Sc.I Sem

Under the supervision of

Dr.Visnu Prajapati
Dr.Saleya Aktar

Department of Zoology

Govt.Raja bhoj college katangi (mp)

2018-19

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ACKNOWLEDGEMENT

If is First and foremost privilege to express my deep senses of gratitude of gratitude to all, who have helped me during the course of my research work. It is my prime duty to acknowledge my teacher supervison mentor and guide Professor Department of Zoology Govt. Art collage katangi for his simulative thoughout the present work and for construcative guidance, inspiration and untiring help rendered by him to work on this interesting research topic.

I am very much obliged to ***Anil ku. Sendey*** *Principal Govt. Art collage katangi for his very kind supportive attitude and proper guidance during theis research work.*

I am deeply obliged to respect ***Dr.Visnu Prajapati*** *principal Head of Department Zoology. Govt. Art collage katangi who suggested me this problem and gave guidelines in this research work observing my all of the discipline.*

I also want to express my deep and sincere gratiude to ***Dr.Saleya Aktar***

For his kind help and suggestion extended from time to in accomplishing of the present voluminous work.

I am deeply grateful to my father Mr. Madanlal My lovely Mother smt. Sagan bai whose unconditional support was instrumental in accomplishing this task.

And finally in wish to extend my thanks to all theose who have directly or indirecty helped me in any way to complete this research work.

Alka Harinkhede

M.sc.I sem

Dpartment of Zoology

Govt. Art collage katangi

CERTIFICATE

This is to certify that the work entited- **Studieson theHelminthes Parasites in lives tack of SEONI "**is a piece of research project work done by **Alka Harinkhede** under my guidance and supervision for the degree of **Master of science in Zoology of** R.D.V.V. Jabalpur (m.p.) India.

Forwarded
Prof.& Head
Department of Zoology
Govt Art college katangi

Singnature of the supervisor
Saleya Aktar
Department of Zoology
Govt Raja bhoj college katangi

राजा भोज शासकीय महाविद्यालय, फटंगी बालाघाट

एम.ए. चतुर्थ सेमेस्टर समाजशास्त्र

सत्र 2018-19

प्रोजेक्ट रिपोर्ट

फूलों की खेती में रोजगार के अवसर

एम.ए.षष्टम सेमेस्टर

शिक्षक

श्रीमति अनिता देशमुख
(समाज शास्त्र)

विद्यार्थी

रोशनी मात्रे
रोशनी मात्रे
अनुक्रमांक-17109438

शपथ पत्र

मानवशास्त्र

मैं **रोशनी मात्रे** कक्षा एम.ए. चतुर्थ सेमेस्टर राजा भोज शासकीय महाविघालय कटंगी। यह कथन है कि, राजा भोज शासकीय महाविघालय कटंगी में व्यक्तिगत रूप से उपस्थित रहकर कार्य स्थल प्रशिक्षण प्राप्त किया एवं प्रस्तुत प्रतिवेदन मेरे द्वारा तैयार किया गया, पूर्णतः मौलिक है।

हस्ताक्षर रोशनी मात्रे

नाम रोशनी मात्रे

संस्था द्वारा प्रमाण–पत्र

प्रमाणित किया जाता है कि रोशनी मात्रे ने एम. ए. चतुर्थ सेमेस्टर (समाज शास्त्र) राजा भोज शासकीय महाविद्यालय– कटंगी (बालाघाट) में दिनांक 01.04.2019 से 30.04.2019 तक उपस्थित रहकर कार्यस्थल पर प्रशिक्षण प्राप्त किया।

हस्ताक्षर

संस्था प्रमुख
(सील सहित)

कार्यस्थल प्रशिक्षण प्रतिवेदन का प्रारूप

1. विद्यार्थी का नाम :— रोशनी मात्रे
2. कक्षा :— एम.ए. द्वितीय वर्ष (चतुर्थ सेमेस्टर)
3. महाविद्यालय का नाम :— राजा भोज शासकीय महाविद्यालय कटंगी, जिला बालाघाट
4. कक्षा शिक्षक (निर्देशक) का नाम :— श्रीमति अनीता देशमुख
5. कार्यस्थल प्रशिक्षण संस्था :— राजा भोज शासकीय महाविद्यालय कटंगी, जिला बालाघाट
6. प्रगति प्रतिवेदन माह अप्रेल
   - प्रशिक्षण के दौरान सौंपा :— फलों की खेती में रोजगार के अवसर
   - प्रथम माह में अपेक्षित कार्य :— फलों की खेती में रोजगार के अवसर
   - आगामी माह की योजना :— फलों की खेती में रोजगार के अवसर
   - अध्ययन :— फलों की खेती में रोजगार के अवसर
7. संस्था द्वारा निर्धारित प्रमुख द्वारा विद्यार्थी के संबंध में आकलन।

1. समय की पाबंदी	:—	हाँ
2. वेशभूषा एवं व्यवहार	:—	ठीक है।
3. संस्था के नियमों का	:—	अनुशासन में रहकर प्रशिक्षण कार्य पूर्ण
4. आंवटित कार्य के प्रति निष्ठा	:—	अच्छी
5. क्षमता	:—	ठीक है
6. व्यक्तिगत में किस प्रकार का सुधार की आवश्यकता है विधार्थी के द्वारा इसके लिए गए प्रयास/सुधार की प्रति	:—	कर्तव्य निष्ठा होना चाहिये
7. आवंटित कार्य के प्रति किये गये कार्य की प्रगति	:—	पूर्ण रूप से सत्य है।

हस्ताक्षर
संस्था प्रमुख/प्रतिनिधि सील सहित

उपस्थिति पत्रक

दिनांक	दिन	छात्र हस्ताक्षर	संस्था के प्रमुख के हस्ताक्षर
01.04.2019	सोमवार	रोशनी मात्रे	
02.04.2019	मंगलवार	रोशनी मात्रे	
03.04.2019	बुधवार	रोशनी मात्रे	
04.04.2019	गुरूवार	रोशनी मात्रे	
05.04.2019	शुक्रवार	रोशनी मात्रे	
06.04.2019	शनिवार	रोशनी मात्रे	
08.04.2019	सोमवार	रोशनी मात्रे	
09.04.2019	मंगलवार	रोशनी मात्रे	
10.04.2019	बुधवार	रोशनी मात्रे	
11.04.2019	गुरूवार	रोशनी मात्रे	
12.04.2019	शुक्रवार	रोशनी मात्रे	
13.04.2019	शनिवार	रोशनी मात्रे	
15.04.2019	सोमवार	रोशनी मात्रे	
16.04.2019	मंगलवार	रोशनी मात्रे	
17.04.2019	बुधवार	रोशनी मात्रे	
18.04.2019	गुरूवार	रोशनी मात्रे	
19.04.2019	शुक्रवार	रोशनी मात्रे	
20.04.2019	शनिवार	रोशनी मात्रे	
22.04.2019	सोमवार	रोशनी मात्रे	
23.04.2018	मंगलवार	रोशनी मात्रे	
24.04.2019	बुधवार	रोशनी मात्रे	
25.04.2019	गुरूवार	रोशनी मात्रे	
26.04.2019	शुक्रवार	रोशनी मात्रे	
27.04.2019	शनिवार	रोशनी मात्रे	
29.04.2019	सोमवार	रोशनी मात्रे	
30.04.2019	मंगलवार	रोशनी मात्रे	
		रोशनी मात्रे	

उद्यान विकास अधिकारी

शासकीय कला एवं वाणिज्य महाविद्यालय

(कटंगी, जिला बालाघाट म0प्र0)

सत्र 2018–19

शिक्षा के क्षेत्र में रोजगार के अवसर

निदेशक/प्राचार्य

ए एस लोधी

प्राचार्य
प्रो. अनिल शेंडेकर

16.05.18

प्रस्तुतकर्ता

पदमा गौतम

रोल नं. 15109524

परियोजना (शुल्क प्रपत्र)

१. प्रतिवेदन का शीर्षक : शिक्षा के क्षेत्र में रोजगार

२. संस्था का नाम : शासकीय कला महाविद्यालय कटंगी

३. विद्यार्थी का नाम : पदमा गौतम

४. शिक्षक निर्देशक का नाम : श्री. ए. एस. लोधी

५. महाविद्यालय का नाम : शासकीय कला एवं वाणिज्य महाविद्यालय कटंगी (बालाघाट)

कार्यस्थल प्रशिक्षण प्रोजेक्ट का प्रारूप
कार्यस्थल प्रशिक्षण मासिक प्रगति प्रतिवेदन

1	विद्यार्थी का नाम	:	पदमा गौतम
2	कक्षा	:	बी.एस.सी. प्रथम सेमेस्टर
3	पिता का नाम	:	श्रीमान लोचनलाल गौतम
4	महाविद्यालय का नाम	:	शासकीय कला एवं वाणिज्य महाविद्यालय कटंगी (बालाघाट)
5	विद्यार्थी का पता एवं दूरभाष क्रमांक (निवास एवं मो.नं.)	:-	ग्रा.-कन्नगाँव पोस्ट-दुमपर त.कटंगी जिला - बालाघाट (म.प्र.)
6	कक्षा शिक्षक निर्देशक का नाम	:-	श्री. एन.एस. लोधी
6	कार्यस्थल प्रशिक्षण संस्था एवं दूरभाष क्रमांक	:-	कटंगी कटंगी (बालाघाट)
7	प्रगति प्रतिवेदन माह सितम्बर	:-	
	i प्रशिक्षण के दौरान सौंपा गया कार्य	:-	कक्षा बी.एस.सी. II से सेम तक
	ii प्रथम माह में अपेक्षित कार्य	:-	
	iii पूर्ण किया गया कार्य		पूर्ण किया गया
	iv आगामी माह की योजना		
8	संस्था द्वारा निर्धारित प्रपत्र द्वारा विद्यार्थी के संबंध में आकलन		
	i समय की पाबन्दी	:-	हाँ
	ii वेशभूषा एवं व्यवहार	:-	ठीक है
	iii संस्था के नियमों का पालन	:-	हाँ , किया गया
	iv आवंटित कार्य के प्रति निष्ठा	:-	अच्छी
	v क्षमता	:-	ठीक है
	vi व्यक्तिगत में किस प्रकार का सुधार की आवश्यकता है विद्यार्थी द्वारा इसके लिए किए गए प्रयास / सुधार की प्रति	:	कर्तव्य निष्ठा होना चाहिये
	i आवंटित कार्य के प्रति गए कार्य की प्रगति		उत्तरदायी है। पूर्ण रूप से [illegible] है।

[illegible signature]
[illegible] प्रमुख / [illegible] 5

कार्यालय/ संस्था का नाम [illegible]

इंटर्नशिप मूल्यांकन पत्रक

प्रारूप-1 इंटर्नशिप संस्था प्रमुख /प्रतिनिधि द्वारा भरा जाये।

विद्यार्थी का नाम :- पद्मा गौतम

विषय :- शिक्षा में रोजगार के अवसर

कक्षा :- B.Sc (III rd sem)

अनुक्रमांक :- 15109524

नामांकन :-

इंटर्नशिप संस्था प्रमुख /प्रतिनिधि द्वारा मूल्यांकन	अधिकतम कुल अंक - 50	प्राप्तांक	हस्ताक्षर
1- उपस्थिति की नियमितता 90-100% = 08 85-95% = 06 75-85% = 05	08		
2- संस्थान के नियमों का पालन 3- वेशभूषा एवं व्यवहार 4 सम्प्रेषण एवं संवाद क्षमता 5- जिज्ञासा 6- लीडरशिप एवं टीमवर्क	08		
7- सैद्धांतिक ज्ञान 8- व्यवहारिक ज्ञान एवं प्रायोगिक कौशल 9- पाठशाला प्रशिक्षण प्रतिवेदन 10- प्रतिवेदन का प्रस्तुतीकरण	34		

हस्ताक्षर
इंटर्नशिप संस्था प्रमुख /प्रतिनिधि

परियोजना कार्य का शीर्षक
फलो की खेती के क्षेत्र में रोजगार के अवसर

एम. ए. (IV) सेमेस्टर

शासकीय कला एवं वाणिज्य महाविद्यालय
कटंगी जिला - बालाघाट (म. प्र.)

सत्र 2017-18

निर्देशक
(अनिता देशमुख)
.....
हस्ताक्षर

प्रस्तुतकर्ता
(संदेश मेश्राम)
.....
हस्ताक्षर

कार्यस्थल प्रशिक्षण प्रतिवेदन का प्रारूप
कार्यस्थल प्रशिक्षण मासिक प्रगति प्रतिवेदन

1. विद्यार्थी का नाम – संदेश मेश्राम
2. कक्षा – M.A. IV Sem.
3. महाविद्यालय का नाम – शासकीय कला एवं वाणिज्य महाविद्यालय कटंगी, (बालाघाट)
4. विद्यार्थी का पता एवं दूरभाष – वार्ड नं. 12 कटंगी, तह. कटंगी, जिला–बालाघाट (म.प्र.)
5. कक्षा शिक्षक निर्देशक का नाम – अनिता देशमुख
6. कार्यस्थल प्रशिक्षण संस्था – शासकीय कला एवं वाणिज्य महाविद्यालय कटंगी, (बालाघाट)

एवं दूरभाश क्रमांक 07630–250087

7. प्रगति प्रतिवेदन माह – मार्च अप्रैल

अ. पूर्ण किया गया कार्य – फलो की खेती के क्षेत्र में रोजगार के अवसर

8. संस्था द्वारा निर्धारित प्रमुख द्वारा विद्यार्थी के संबंध में आंकलनः–

अ. समय की पाबन्दी – हॉ
ब. वेशभूशा के नियमों का पालन – ठीक है।
स. संस्था के नियमों का पालन – हॉ किया गया।
द. आबंटित कार्य के प्रति निश्ठा – अच्छी
म. क्षमता – ठीक है।
व. व्यक्तिगत में किस प्रकार का सुधार की आवश्यकता है, विद्यार्थी द्वारा इसके लिये किए गए प्रयास/सुधार के प्रति – कर्तव्य निश्ठा होना चाहिये।

आबंटित कार्य के प्रति – **उत्तरदायी है।**

किये गए कार्य की प्रगति – **पूर्ण रूप से सत्य है।**

संस्था द्वारा प्रमाण पत्र

प्रमाणित किया जाता है कि छात्र/छात्र संदेश मेश्राम, एम.ए. चतुर्थ सेमेस्टर शासकीय कला एवं वाणिज्य महाविद्यालय कटंगी, दि. 19.03.2018 से दि. 18.04.2018 तक उपस्थित रहकर कार्यस्थल पर प्रशिक्षण प्राप्त किया।

विद्यार्थी का शपथ–पत्र

शपथ–पत्र

मै छात्र/छात्रा- संदेश मेश्राम एम.ए. चतुर्थ सेमेस्टर शा.कला एवं वाणिज्य महाविद्यालय कटंगी, जिला बालाघाट (म0प्र0) की नियमित अध्ययनरत विद्यार्थी हुँ। मेरे द्वारा उपरोक्त दी गई जानकारी सत्य एवं सही है।

हस्ताक्षर .....

नाम:– .....

उपस्थिति पत्रक

दिनाँक	दिन	छात्र के हस्ताक्षर	संस्था प्रमुख के हस्ताक्षर
19/3/2018	सोमवार		
20/3/2018	मंगलवार		
21/3/2018	बूधवार		
22/3/2018	गुरूवार		
23/3/2018	शुक्रवार		
24/3/2018	शनिवार		
25/3/2018	रविवार	अवकाश	अवकाश
26/3/2018	सोमवार		
27/3/2018	मंगलवार		
28/3/2018	बूधवार		
29/3/2018	गुरूवार	अवकाश	अवकाश
30/3/2018	शुक्रवार	अवकाश	अवकाश
31/3/2018	शनिवार		
1/4/2018	रविवार	अवकाश	अवकाश
2/4/2018	सोमवार		
3/4/2018	मंगलवार		
4/4/2018	बूधवार		
5/4/2018	गुरूवार		
6/4/2018	शुक्रवार		
7/4/2018	शनिवार		
8/4/2018	रविवार	अवकाश	अवकाश
9/4/2018	सोमवार		
10/4/2018	मंगलवार		
11/4/2018	बूधवार		
12/4/2018	गुरूवार		
13/4/2018	शुक्रवार		
14/4/2018	शनिवार	अवकाश	अवकाश
15/4/2018	रविवार	अवकाश	अवकाश
16/4/2018	सोमवार		
17/4/2018	मंगलवार		
18/4/2018	बूधवार		

परियोजना कार्य का शीर्षक
सब्जियों की खेती

बी.एस.सी. (VI) सेमेस्टर बायो.

शासकीय कला एवं वाणिज्य महाविद्यालय
कटंगी जिला - बालाघाट (म. प्र.)

सत्र 2017-18

निर्देशक
(राजू विश्वकर्मा)
.....
हस्ताक्षर

प्रस्तुतकर्ता
(कु. नौरीन सिद्दिकी)
.....
हस्ताक्षर

कार्यस्थल प्रशिक्षण प्रतिवेदन का प्रारूप
कार्यस्थल प्रशिक्षण मासिक प्रगति प्रतिवेदन

1. विद्यार्थी का नाम – कु. नौरीन/अकील सिद्दिकी,
2. कक्षा – B.sc. VI Sem. Bio.
3. महाविद्यालय का नाम – शासकीय कला एवं वाणिज्य महाविद्यालय कटंगी, (बालाघाट)
4. विद्यार्थी का पता एवं दूरभाष – ग्राम– तिरोडी, तह. तिरोडी, जिला–बालाघाट (म.प्र.)
5. कक्षा शिक्षक निर्देशक का नाम – राजू विश्वकर्मा
6. कार्यस्थल प्रशिक्षण संस्था – शासकीय कला एवं वाणिज्य महाविद्यालय कटंगी, (बालाघाट)

   एवं दूरभाश क्रमांक 07630–250087

7. प्रगति प्रतिवेदन माह – फरवरी– मार्च
   अ. पूर्ण किया गया कार्य – सब्जियों की खेती
8. **संस्था द्वारा निर्धारित प्रमुख द्वारा विद्यार्थी के संबंध में आंकलनः–**
   अ. समय की पाबन्दी – हाँ
   ब. वेशभूशा के नियमों का पालन – ठीक है।
   स. संस्था के नियमों का पालन – हाँ किया गया।
   द. आबंटित कार्य के प्रति निश्ठा – अच्छी
   म. क्षमता – ठीक है।
   व. व्यक्तिगत में किस प्रकार का सुधार की आवश्यकता है, विद्यार्थी द्वारा इसके लिये किए गए प्रयास/सुधार के प्रति – कर्तव्य निश्ठा होना चाहिये।

आबंटित कार्य के प्रति – **उत्तरदायी है।**

किये गए कार्य की प्रगति – **पूर्ण रूप से सत्य है।**

संस्था द्वारा प्रमाण पत्र

प्रमाणित किया जाता है कि छात्र/छात्रा कु. नौरीन/अकील सिद्दिकी, बी.एस.सी. 6 सेमेस्टर शासकीय कला एवं वाणिज्य महाविद्यालय कटंगी, दि. 15.02.2018 से दि. 15.03.2018 तक उपस्थित रहकर कार्यस्थल पर प्रशिक्षण प्राप्त किया।

हस्ताक्षर

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विद्यार्थी का शपथ–पत्र

शपथ–पत्र

मै छात्र/छात्रा- कु. नौरीन/ अकील सिद्दिकी, बी.एस.सी. 6 सेमेस्टर शा.कला एवं वाणिज्य महाविद्यालय कटंगी, जिला बालाघाट (म0प्र0) की नियमित अध्ययनरत विद्यार्थी हुँ। मेरे द्वारा उपरोक्त दी गई जानकारी सत्य एवं सही है।

हस्ताक्षर .....

नाम– नौरीन सिद्दिकी

उपस्थिति पत्रक

दिनाँक	दिन	छात्र के हस्ताक्षर	संस्था प्रमुख के हस्ताक्षर
15/02/2018	गुरूवार		
16/02/2018	शुक्रवार		
17/02/2018	शनिवार		
18/02/2018	रविवार	अवकाश	अवकाश
19/02/2018	सोमवार		
20/02/2018	मंगलवार		
21/02/2018	बूधवार		
22/02/2018	गुरूवार		
23/02/2018	शुक्रवार		
24/02/2018	शनिवार		
25/02/2018	रविवार	अवकाश	अवकाश
26/02/2018	सोमवार		
27/02/2018	मंगलवार		
28/02/2018	बूधवार		
01/03/2018	गुरूवार		
02/03/2018	शुक्रवार	अवकाश	अवकाश
03/03/2018	शनिवार		
04/03/2018	रविवार	अवकाश	अवकाश
05/03/2018	सोमवार		
06/03/2018	मंगलवार		
07/03/2018	बूधवार		
08/03/2018	गुरूवार		
09/03/2018	शुक्रवार		
10/03/2018	शनिवार		
11/03/2018	रविवार	अवकाश	अवकाश
12/03/2018	सोमवार		
13/03/2018	मंगलवार		
14/03/2018	बूधवार		
15/03/2018	गुरूवार		

परियोजना कार्य का शीर्षक

"पुस्तकालय एवं सूचना विज्ञान"

बी.ए. षष्ठ्म सेमेस्टर

शासकीय कला एवं वाणिज्य महाविद्यालय कटंगी जिला - बालाघाट (म. प्र.)

सत्र 2016–17

निर्देशक
(प्रो. सीमा श्रीवास्तव)

प्रस्तुतकर्ता
(रजनी बड़वाईक)
(रोल नं. 14108155)

संस्था **प्रमुख के नाम**

संस्था प्रमुख के अनुसार कार्य किया गया है। जिनके संरक्षण में रहकर यह कार्य सम्पन्न हुआ है।

1. ईश्वर राहंगडाले

LIBRARIAN
GOVT. COLLEGE KATANGI

हस्ताक्षर

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उपस्थिति पत्रक

दिनांक	दिन	छात्र के हस्ताक्षर	संस्था प्रमुख के हस्ताक्षर
20/02/2017	सोमवार		
21/02/2017	मंगलवार		
22/02/2017	बुधवार		
23/02/2017	गुरूवार		
24/02/2017	शुक्रवार	अवकाश	अवकाश
25/02/2017	शनिवार		
26/02/2017	रविवार	अवकाश	अवकाश
27/02/2017	सोमवार		
28/02/2017	मंगलवार		
01/03/2017	बुधवार		
02/03/2017	गुरूवार		
03/03/2017	शुक्रवार		
04/03/2017	शनिवार		
05/03/2017	रविवार	अवकाश	अवकाश
06/03/2017	सोमवार		
07/03/2017	मंगलवार		
08/03/2017	बुधवार		
09/03/2017	गुरूवार		
10/03/2017	शुक्रवार		
11/03/2017	शनिवार		
12/03/2017	रविवार	अवकाश	अवकाश
13/03/2017	सोमवार	अवकाश	अवकाश
14/03/2017	मंगलवार		
15/03/2017	बुधवार		
16/03/2017	गुरूवार		
17/03/2017	शुक्रवार		
18/03/2017	शनिवार		
19/03/2017	रविवार	अवकाश	अवकाश
20/03/2017	सोमवार		
21/03/2017	मंगलवार		

Political Science

शासकीय कला एवं वाणिज्य महाविद्यालय कटंगी
जिला- बालाघाट म.प्र.

जिला – बालाघाट (म.प्र.)

INTERSHIP - REPORT

लेखापाल में रोजगार

संस्था का नाम :- शासकीय कला एवं वाणिज्य महा विद्यालय कटंगी, जिला- बालाघाट म.प्र.।

कक्षा का नाम :- B.A.(VI) SEMESTER

हस्ताक्षर

....

शिक्षक निर्देशक का नाम
शिल्पी शर्मा

हस्ताक्षर विद्यार्थी

....Mamta....

विद्यार्थी का नाम
कु. ममता सेन्दरे

कार्यस्थल प्रशिक्षण प्रतिवेदन का प्रारूप
कार्यस्थल प्रशिक्षण मासिक प्रगति प्रतिवेदन

1. विद्यार्थी का नाम – कु. ममता सेन्दरे
2. कक्षा – B.A.(VI) सेमेस्टर
3. महाविद्यालय का नाम – शासकीय कला एवं वाणिज्य महाविद्यालय कटंगी, (बालाघाट)
4. विद्यार्थी का पता एवं दूरभाष – निवास – मुण्डीवाड़ा, कटंगी , तह. कटंगी,जिला– बालाघाट, म.प्र.
5. कक्षा शिक्षक निर्देशक का नाम – शिल्पी शर्मा
6. कार्यस्थल प्रशिक्षण संस्था – शासकीय कला एवं वाणिज्य महाविद्यालय कटंगी, (बालाघाट)

   एवं दूरभाष क्रमांक – 07630–250087

7. प्रगति प्रतिवेदन माह – मार्च

अ. प्रशिक्षण के दौरान सौपा गया कार्य –लेखापाल का कार्य
ब. प्रथम माह में अपेक्षित कार्य – लेखापाल के कार्य
स. पूर्ण किया गया कार्य – कार्यालय में लेखापाल से संबधित कार्य
द. आगामी माह की योजना–

8. संस्था द्वारा निर्धारित प्रमुख द्वारा विद्यार्थी के संबंध में आंकलनः–

अ. समय की पाबन्दी – हॉ
ब. वेशभूषा के नियमों का पालन – ठीक है।
स. संस्था के नियमों का पालन – हॉ किया गया।
द. आबंटित कार्य के प्रति निष्ठा – अच्छी
म. क्षमता – ठीक है।
व. व्यक्तिगत में किस प्रकार का – कर्तव्य निष्ठा होना चाहिये।

सुधार की आवश्यकता है, विद्यार्थी द्वारा इसके लिये किए गए प्रयास/सुधार के प्रति

ब. आबंटित कार्य के प्रति — उत्तरदायी है।

गए कार्य की प्रगति — पूर्ण रूप से सत्य है।

हस्ताक्षर

प्राचार्य

शासकीय कन्या महाविद्यालय

कटंगी, जिला-बालाघाट (म.प्र.)

संस्था प्रमुख के नाम

संस्था प्रमुख के अनुसार कार्य किया गया है। जिनके संरक्षण में रहकर यह कार्य सम्पन्न हुआ है।

1. सी.एल. उईके –
2. डॉ. कस्तूरचन्द पारधी

उपस्थिति पत्रक

दिनांक	दिन	छात्र के हस्ताक्षर	संस्था प्रमुख के हस्ताक्षर
02.03.2015	सोमवार	Mamata	
03.03.2015	मंगलवार	Mamata	
04.03.2015	बुधवार	Mamata	
05.03.2015	गुरूवार	Mamata	
06.03.2015	शुक्रवार	अवकाश	
07.03.2015	शनिवार	Mamata	
08.03.2015	रविवार	अवकाश	
09.03.2015	सोमवार	Mamata	
10.03.2015	मंगलवार	Mamata	
11.03.2015	बुधवार	Mamata	
12.03.2015	गुरूवार	Mamata	
13.03.2015	शुक्रवार	Mamata	
14.03.2015	शनिवार	Mamata	
15.03.2015	रविवार	अवकाश	
16.03.2015	सोमवार	Mamata	
17.03.2015	मंगलवार	Mamata	
18.03.2015	बुधवार	Mamata	
19.03.2015	गुरूवार	Mamata	
20.03.2015	शुक्रवार	Mamata	
21.03.2015	शनिवार	Mamata	
22.03.2015	रविवार	अवकाश	
23.03.2015	सोमवार	Mamata	
24.03.2015	मंगलवार	Mamata	
25.03.2015	बुधवार	Mamata	
26.03.2015	गुरूवार	Mamata	
27.03.2015	शुक्रवार	Mamata	
28.03.2015	शनिवार	अवकाश	
29.03.2015	रविवार	अवकाश	
30.03.2015	सोमवार	Mamata	
31.03.2015	मंगलवार	Mamata	
01.04.2015	बुधवार	Mamata	
02.04.2015	गुरूवार	Mamata	

LIST OF TOURS AND EXCURSION

सहमतिशपथपत्र

(3 साल के लिए वैध)

प्रथमपक्ष

शासकीय कला महाविद्यालय, कटंगी

चीचगांव, रामनगर शिवनी रोड, कटंगी, जिला बालाघाट

तथा

द्वितीयपक्ष

शासकीय संजय निकुंज रोपणी, सेलवा

सेलवा, जिला बालाघाट

उद्देश्य

- जीवन विज्ञान में बुनियादी शिक्षा प्रदान करना।
- शोध के लिए छात्र तैयार करना।
- प्रयोगात्मक कौशल विकसित करना।
- उच्च शिक्षा के लिए छात्रों को तैयार करना।
- छात्रों को प्रत्यारोपण प्रशिक्षण देना।
- पर्यावरण संरक्षण और जैव विविधता के बारे में हमारे छात्र को जागरूक करना और ज्ञान देना।
- छात्र के बीच उद्यमी गुण विकसित करना।

मैं प्रथमपक्षशासकीय कला महाविद्यालय, कटंगी विद्यार्थियों के हित मेंउपरोक्त उद्देश्यों की पूर्ति हेतु द्वितीयपक्षशासकीय संजय निकुंज रोपणी, सेलवा केसाथबिना किसी दबाव के सहमति आपस पत्र हस्ताक्षरित करता हूँ ।

मैंद्वितीयपक्षशासकीय संजय निकुंज रोपणी, सेलवा उपरोक्त उद्देश्यों की पूर्ति हेतुप्रथमपक्षशासकीय कला महाविद्यालय, कटंगीके विद्यार्थियों को फील्ड ट्रिप प्रोजेक्ट वर्क तथा इंटर्नशिप करवाने तथा शिक्षा की गुणवत्ता में सुधार हेतु सहायता प्रदानकरने की अनुमति प्रदान करता हूँ।

प्रथमपक्ष

नामहस्ताक्षर: प्रो. अनिल कुमार शेण्डे

मोबाइलनंबर: 9425962613

दिनांक: 11-01-2018

स्थान: कटंगी

Principal
Raja Bhoj Govt. College
Katangi, Balaghat (M.P.)

द्वितीय पक्ष

नाम हस्ताक्षर: बी. एल. बिसेन

मोबाइल नंबर: 9406784415

दिनांक: 11-01-2018

स्थान: सेलवा

प्रति,

प्राचार्य
राजा भोज शा. महा. कटंगी (बालाघाट)

विषय :- फील्ड ट्रिप ले जाने बाबत् /

महोदय जी,

उपरोक्त विषयान्तर्गत लेख है कि B.Sc. के छात्र/ छात्राओं को शासकीय संजय निकुंज रोपणी सेलवा में दिनांक 22/01/20 को फील्ड ट्रिप ले जाने की अनुमति प्रदान करने की कृपा करें।

धन्यवाद

① कुलदीप देशमुख
② चन्द्रकान्त तिवारी
③ आशीष घोड़ेश्वर
④ दिपेन्द्र हिरकने

आवेदिका
शीतल गुर्जर
(रसायनशास्त्र विभाग)

PRINCIPAL
Raja Bhoj Govt. College
Katangi Balaghat. M.P.

राजाभोज शा. महा. कटंगी बालाघाट

<u>उपस्थिति पत्रक</u>

भ्रमण स्थल का स्थान - शासकीय संजय निकुंज रोपणी, सेल्वा

दिनांक - 22/01/2020

क्र.	छात्र/छात्राओं का नाम	क्र.	छात्र/छात्राओं का नाम
1	जितेन्द्र आंजेवार	23	नवीन
2	शोभा देशमुख	24	पायल चौधरी
3	सोनाली चौधरी	25	प्रेमी ठाकुर
4	यामीनि गौतम	26	कुरुक्षु बिसेन
5	छाया अगासे	27	मनिष
6	सुरेखा ठाकरे	28	राहुल वर्मा
7	कृपाल मानकर	29	धनराज
8	पूजा देशमुख	30	शालिनी
9	जयन्ती	31	कामिनी बिसेन
10	काजल तुर्वे	32	निकिता चौकसे
11	खिलेश्वरी दोण्डे	33	विशाल मेश्राम
12	नेहा पटले	33	मनिषा कावडे
13	मधुरी गौतम	34	रोशनी बोपचे
14	रजनी मेश्राम	35	रूपाली पटले
15	प्रतिमा दोण्डे	36	संगीता कागदे
16	पायल राहांगडाले	37	ज्योति चौधरी
17	सतीश		
18	रितु गहाने		
19	रुचि पटले		
20	सोना		
21	जितेन्द्र		
22	सुरुचि		

(1) Kuldeep Deshmukh - Deshmukh
(2) Sheetal Gujre - Guj
(3) Dipendra ... - ...

Memorandum of Understanding

(MoU)

(Valid For 3 Year)

Between

First Party

Raja Bhoj Govt. College, Katangi

Ram Nagar Chich Gao, Katangi

and

Second Party

Madhya Pradesh Warehousing and

Logistic Corporation, Katangi

Objective:

- Develop experimental skills.
- To prepare students for higher education.
- Transplant training to students.
- To make our student aware and acquire knowledge about industries.
- To develop entrepreneurial qualities among the students.
- Motivate students for experimental learning.
- To prepare the student for research.

I first party, **RajaBhoj Govt. College, Katangi**sign a consent MoU with second party **Madhya Pradesh Warehousing and Logistics Corporation, Katangi**without any pressure to fulfill the above objectives in the interest of students of first party.

I second party, **Madhya Pradesh Warehousing and Logistics Corporation, Katangi** sign a consent MoU with first party **Raja Bhoj Govt. College, Katangi** without any pressure to fulfill the above objectives in the interest of students of first party.

First Party

Name & Sign.:- Prof. Anil [illegible] Shende

PRINCIPAL
Raja Bhoj Govt. College
Katangi-Balaghat- M.P.

(In-charge Principal)

Mobile No.: 9425352614

Date:

Place: Katangi

Second Party

BRANCH MANAGER
Madhya Pradesh Warehousing and Logistics Corporation
Branch Katangi (Balaghat)

Name & Sign.: Ms. Lalita [illegible]

(Assist. Quality Controller)

Mobile No.:9407817884

Date: 20/01/2020

Place: Katangi

प्रति,

प्राचार्य

राजा भोज शासकीय महाविद्यालय

कटंगी (बालाघाट)

विषयः- फील्ड ट्रीप ले जाने बाबद।

महोदय जी,

निवेदन है कि एम० ए० अर्थशास्त्र / समाजशास्त्र के छात्र/छात्राओं को मध्यप्रदेश वेयर हाउसिंग एवं लोजिस्टिक कॉरपोरेशन कटंगी में दिनांक 16/10/2019 को फील्ड ट्रीप ले जाने की अनुमति प्रदान करें।

"धन्यवाद"

1. रागनी गुप्ता
2. अनिता देशमुख

आवेदिका

रागिनी गुप्ता (अर्थशास्त्र)

अनिता देशमुख (समाजशास्त्र)

PRINCIPAL
Raja Bhoj Govt. College
Katangi-Balaghat M.P

राजा भोज शासकीय महाविद्यालय कटंगी
उपस्थिति पत्रक (फील्ड ट्रीप)

फील्ड ट्रीप का स्थान - मध्यप्रदेश वेयर हाउसिंग एवं लॉजिस्टिक - कॉरपोरेशन कटंगी (बालाघाट)

दिनांक 16/10/2019

क्र.	छात्र/छात्राओं के नाम	हस्ताक्षर
1	मनु सोनी / सतीश सोनी	Manu
2	फरहीन खान / फिरोज खान	Farin
3	जितेन्द्र बोपचे / नीलाजी बोपचे	Jitendra
4	किरन दहलिये / लेखन	Kiran
5	पायल मेश्राम / सुनिल	payal
6	अरुणा एडे / चम्पालाल	Aruna Aede
7	नम्रता सोनगडे / सजीय	Namrata Songade
8	नेहा अलेराय / प्रहलाद	Neha
9	मोहिनी चौधरी / हेमराज	Mohini
10	पायल वडीचार / शिवाजी	Payal
11	मेनका पटले / चेतनलाल	Menka P.
12.	दिव्या माल्ने / आनन्दराव	Divya
13.	ज्योति पटले / रामदयाल	Jyoti
(14)	ममता टेम्भरे / महादेव	Mamta

15	आकांक्षा पन्द्रो / लिखराज	Akan
16	भुमेश्वरी मेश्राम / अशोक	Bhumeshwari
17	प्रतिमा ठाकरे / रामसिंग	P. Thakre
18	सुलभा शिवरे / अनुपचंद	Sulbha
19.	वर्षा नागदेवे / विनोद	वर्षा नागदेवे
(20)	विक्की रहांगडाले / नरेन्द्र	Vicky Rahangdale
21	नवीन / महेन्द्र बघाडे	Navin
22	आनंद / [illegible]	Anand
(23)	प्रियानी / कोडुराम	Prasad
(24)	कविता / रामेश्वर	Kavita
(25)	सुमन सिंह बैसवार / गौरीशंकर	Suman
(26)	नेहा सहारे / तिलकचन्द सहारे	[illegible]
(27)	विद्या पिल्लार / रविन्द्र पिल्लार	Vidya
(28)	अस्मिता शेन्डे / देवचन्द शेन्डे	Asmita
(29)	आकांक्षा [illegible] / [illegible]	Akanksha
(30)	ममता कुर्वेती / मनोज कुर्वेती	Mamta
(31)	प्रिया पटले / भरतलाल पटले	Priya
32)	प्रतिक्षा चौरे / [illegible] चौरे	Pratiksha
33)	माया कोडापे / श्रीराम कोडापे	maya
34)	निकिता वाघाडे / नंदकिशोर वाघाडे	Nikita
35)	शीतल अरमो / सुन्दरलाल अरमो	Sheetal
(36)	कुंदराज / शिवदयाल [illegible]	[illegible]

37	प्रतिक मेश्राम / राजेन्द्र मेश्राम	Batik
38	वैभव / हरिशचन्द्र	वैभव
39	लुमेश्वरी / जनापसिंह शरणागत	Lumeshwari
40	निकिता / धनीलाल ठाकरे	Nikita

संयोजक

शालिनी गुप्ता

अमिता डोंगरे -

25/03/2020

BRANCH MANAGER
Madhya Pradesh [illegible] Warehousing
and Logistics Corporation
Branch Katangi (Balaghat)

लक्ष्मी मरावी

LIST OF LAB MANUAL

INSTRUCTIONS MANUAL
FOR
Efficiency of electric kettle/heater/element

Apparatus required:

Electric kettle, A kit inbuilt with AC voltmeter 0-250 volts, and AC ammeter 0-1.5 amps; AC variable power supply ,thermometer and instructions manual.

Theory:

Suppose a current I ampere flows through an electric kettle when a voltage V volts applied across it

Input electric power = VI watts

If a temperature of a known mass (**m**) of water taken in the kettle rises through **T** °C in time **t** seconds, then heat gained by water (H) = mST calories.
Where **m** is the mass of water, **S** is the specific heat of water (**S** for water is =**1**) and **T** is the temperature.
Therefore H = mT
If **M** is the mass of the kettle and **S** is the specific heat of the material of the kettle, then heat gained by the kettle (H) = MST
Where **M** is the mass of kettle, **S** is the specific heat of kettle material and **T** is the temperature.

Total heat gained by water and kettle H = mT + MST = T (m + MS) calories

Work done by the kettle in time **t**
W = JH = 4.2 T(m + MS) joule

Output power = $\frac{4.2T(m+MS)}{t}$

Efficiency of the electric kettle $\eta = \frac{4.2T(m+MS)}{t \times VI} \times 100$

Procedure

1. Connect the two pin plug of electric kettle with two pin socket of the kit.
2. Find the weight of kettle with the help of a spring balance.
3. Take a known mass of water in the glass beaker.
4. Suspend a thermometer in the water taken in the glass beaker and note the initial temperature. A hole is provided on the top to insert thermometer.
5. Switch on the instrument and pass some electric current by varying the variable knob (the voltage and current will starts in the meters after

rotating the potentiometer at some forward position) and simultaneously start the stop watch.

6 There is appreciable rise in the temperature of water and kettle.

7 Note the readings of voltmeter and ammeter.

8 Switch off the instrument and simultaneously stop the stop watch.

9 Note the final temperature from the thermometer.

Calculations

Ammeter readings	=	------	ampere
Voltmeter readings	=	------	volts
Input electric power	=	------	VI watts
Time for which current is passed	=	------	t seconds
Mass of electric kettle,M	=	------	gram
Mass of water in kettle,m	=	------	gram
Rise in the temperature Of water & kettle	=	------	T °C

Specific heat of water = 1

Specific heat of the material of the kettle = S

Efficiency of the electric kettle $\eta = \frac{4.2T(m+MS)}{t \times VI} \times 100$

$= \text{-----}\%$

Similarly find the efficiency of the kettle at the different voltage and current by adjusting the knob and find the mean efficiency.

Result:- efficiency of electric kettle = ----- %

B.Sc. II year

INSTRUCTIONS MANUAL
FOR
SCHERING BRIDGE

EXPERIMENT: — Measurement of unknown capacitance using Schering bridge.

MAIN FEATURES OF THE BRIDGE: —

R_1 — Three decade resistance dials having value 10×1000Ω, 10×100Ω and 10×10Ω
R_2 — Two fixed standard resistances having value 1000 ohm & 100 ohms.
R_3 — Single decade resistance dial having value 10×100Ω.
C_1 — Unknown capacitor.
C_2 — Fixed standard capacitor having value 0.01μf (loss free)
C_3 — Single decade capacitance dial having value 10×0.001μf.

Terminals are provided for external connections to connect unknown capacitor, AC supply and head phone

FORMULA USED

$$C_1 = R_1/R_2 \times C_2$$

W here R_1 & R_2 are known standard resistance and C_2 is a known standard Capacitor.

PROCEDURE –

1. Connect the oscillator 1khz with the terminals marked **supply,** unknown capacitor with the terminals marked **unknown** and head phone with the terminals marked **D**
2. Set the resistance dial R_3 to zero position and also set capacitance dial C_3 to zero position. And also set R2 at 1000 ohms.
3. Now adjust the decade resistance dial R_1 to minimize the sound in the head phone .
4. Note the value R_1, R_2 and C_2 and calculate the value of unknown capacitor using above formula.
5. Repeat the same experiment on another value of R2 say 100 ohms.

ADDITIONAL EXPERIMENT

To determine the dissipation factor of a capacitor.

FORMULA USED

$$D = \omega C_1 R_3$$

where $\omega = 2\pi f$

C_1= capacitance of a capacitor

R_3= Series resistance of a capacitor representing the loss in the capacitor.

F = frequency of oscillator which is 1KHz.

PROCEDURE

Without disturbing the setting of the bridge introduce some resistance say 500 ohm from resistance dial R_3. There will again be some sound in the in the head phone. Now adjust the capacitor dial C_3 to minimize the sound in the head phone. Calculate the value of dissipation factor or power factor using above formula. (With only R2 at 1000 ohms)

INSTRUCTIONS MANUAL

FOR

MAXWELL INDUCTANCE BRIDGE

(Inbuilt oscillator and digital null detector)

EXPERIMENT --- Measurement of a unknown self inductance using Maxwell Inductance Bridge.

MAIN FEATURES OF THE BRIDGE

P ---- Three decade resistance dials having value 10×100Ω, 10×10Ω and 10×1Ω
R ---- three fixed value of resistances100ohms,200 ohms and 400 ohms.
L_1---- Fixed standard inductance having value 20 mH
L_2---- unknown inductance.
R1----Continuously variable resistance 0 to 100 ohm for impedance matching in dc arm.

Terminals are provided for external connections to connect unknown inductance and digital null detector or head phone.

FORMULA USED

$$L_2 = (R / P) \times L_1$$

Where R and P are known standard resistances and L_1 is a standard known inductance.

PROCEDURE

1. Connect unknown inductance with the terminals marked **unknown** and digital null detector or head phone with the terminals marked **D.**
2. Set the resistance dial R at 100 ohm position.
3. Now adjust the decade resistance dial P to minimize the readings in the digital null detector and then adjust R1 for minimum readings. (minimum readings may be 0.00-0.08)
4. Note the value L_1, P and R. and calculate the value of unknown inductance using above given formula.
5. Now repeat the above procedure at different value of resistance R and calculate the unknown inductance again.

NOTE :- VALUE OF UNKNOWN INDUCTANCE IS 10 mH

L.C.R SERIES & PARALLEL RESONANCE CIRCUIT

-:THEORY:-

The phenomenon of resonance occures only in A.C circuits containing inductance (L) and capacitor (C).The circuit also contain resistance (R) which may be the effective resistance of the coil itself or a resistance delibrately introduced in the circuit to create some desired results.

The circuit containing the above parameters may behave as an inductive circuit or capacitive circuit when connected across an A.C supply. However, when the supply frequency is such that inductive reactance is equal to capacitive reactance, the circuit behaves as a pure resistive circuit and current supplied to the circuit is in phase with supply voltage. This phenomenon is called resonance and the frequency at which this phenomenon occurs is called resonant frequency.

Thus, the phenomenon by which in an A.C circuit, at a particular frequency, inductive reactance becomes equal to capacitive reactance is called ***resonance*** *and the frequency at which this phenomenon occurs is called* ***resonant frequency.***

The component L and C may be connected in series or in parallel, accordingly they are known as ***series resonance circuit*** and ***parallel resonance circuit*** respectively.

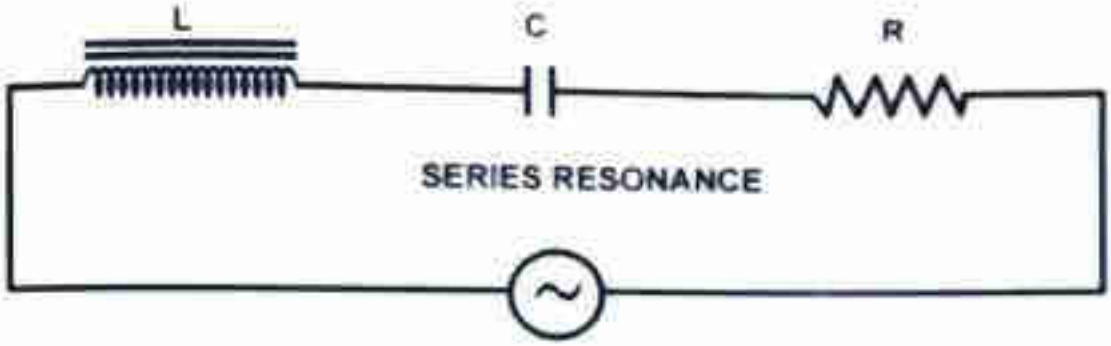
-:SERIES RESONANCE CIRCUIT :-

In series resonance circuit an inductor and capacitor are connected in series across an A.C source as shown in fig. The frequency of the supply source can be varied. At any given frequency (f),

$$X_L = 2\pi fL$$

$$X_C = \frac{1}{2\pi fC}$$

$$Z_s = \sqrt{R^2 + (X_L - X_C)^2}$$



-:RESONANT FREQUENCY:

The frequency at which an LC circuit shows resonance i.e the resultant current drawn by the circuit comes in phase with the source voltage is called resonant frequency. If (f) is the resonant frequency, than in LC series circuit, the condition of resonance is obtained when

$$X_L = X_C$$

$$2\pi fL = \frac{1}{2\pi fC}$$

$$f = \frac{1}{2\pi\sqrt{LC}}$$

-:*PROCEDURE* :-

(1) Make the connection as shown in fig.

(2) Give the input signal from function generator.

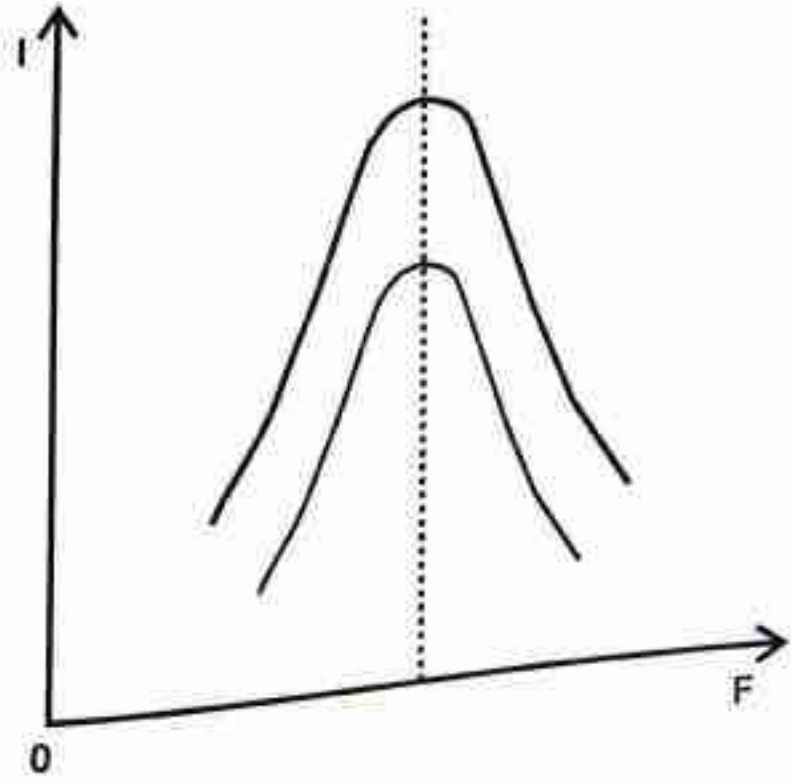
(3) Now vary the input signal slowly from function generator.

(4) At the point where the milli-ammeter reading goes maximum note down the reading of L,C and calculate the frequency.

(5) Now repeat the procedure and at that time note down the reading of milli-ammeter and frequency of function generator each time.

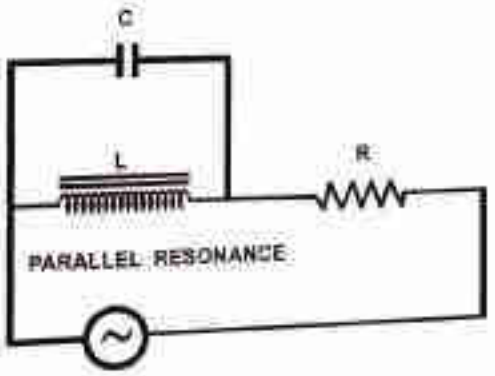
(6) Now plot a graph between frequency (f) and milli-ammeter.

The curve plotted between current drawn by the series resonance circuit and supply frequency is called resonance curve of series resonance circuit.



-:PARALLEL RESONANCE CIRCUIT :-

In parallel resonance circuit an inductor and capacitor are connected in parallel across an A.C source as shown in fig. The frequency of the supply source can be varied. If the frequency of applied voltage is equal to the natural or resonance frequency of LC circuit, then ***electrical resonance*** will occur. Under such condition, the impedance of the tuned circuit becomes maximum and circuit draws minimum current from the source.



-:RESONANT FREQUENCY:

The frequency at which an LC circuit shows resonance i.e the resultant current drawn by the circuit comes in phase with the source voltage is called resonant frequency. If (f) is the resonant frequency, than in LC series circuit, the condition of resonance is obtained when

$$f = \frac{1}{2\pi\sqrt{LC}}$$

-:PROCEDURE :-

(1) Make the connection as shown in fig.

(2) Give the input signal from function generator.

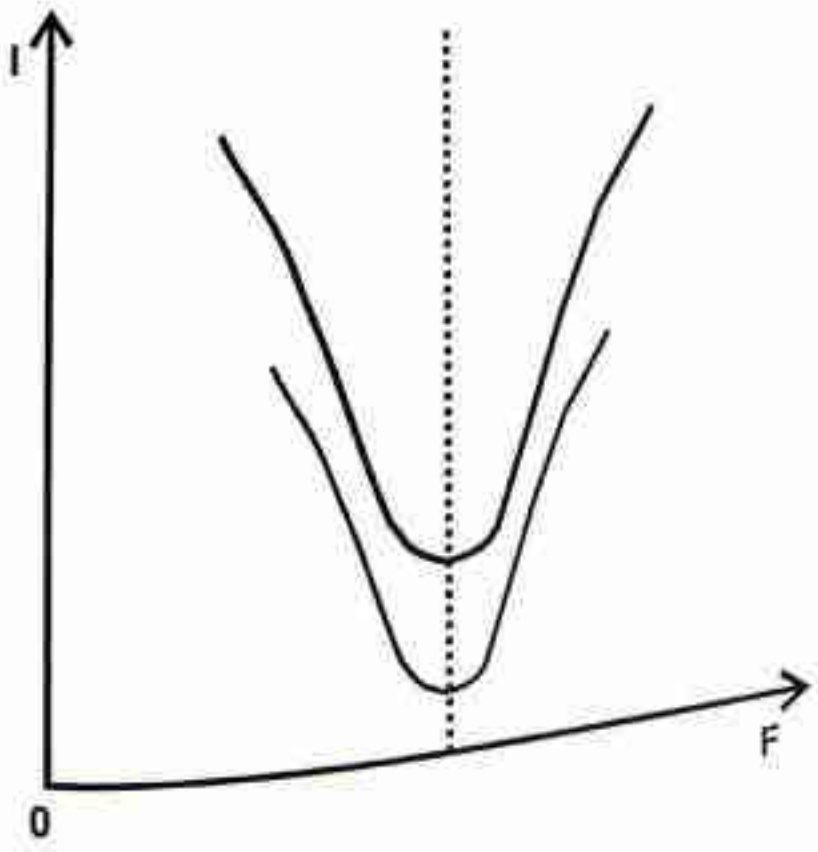
(3) Now vary the input signal slowly from function generator.

(4) At the point where the milli-ammeter reading goes maximum note down the reading of L,C and calculate the frequency.

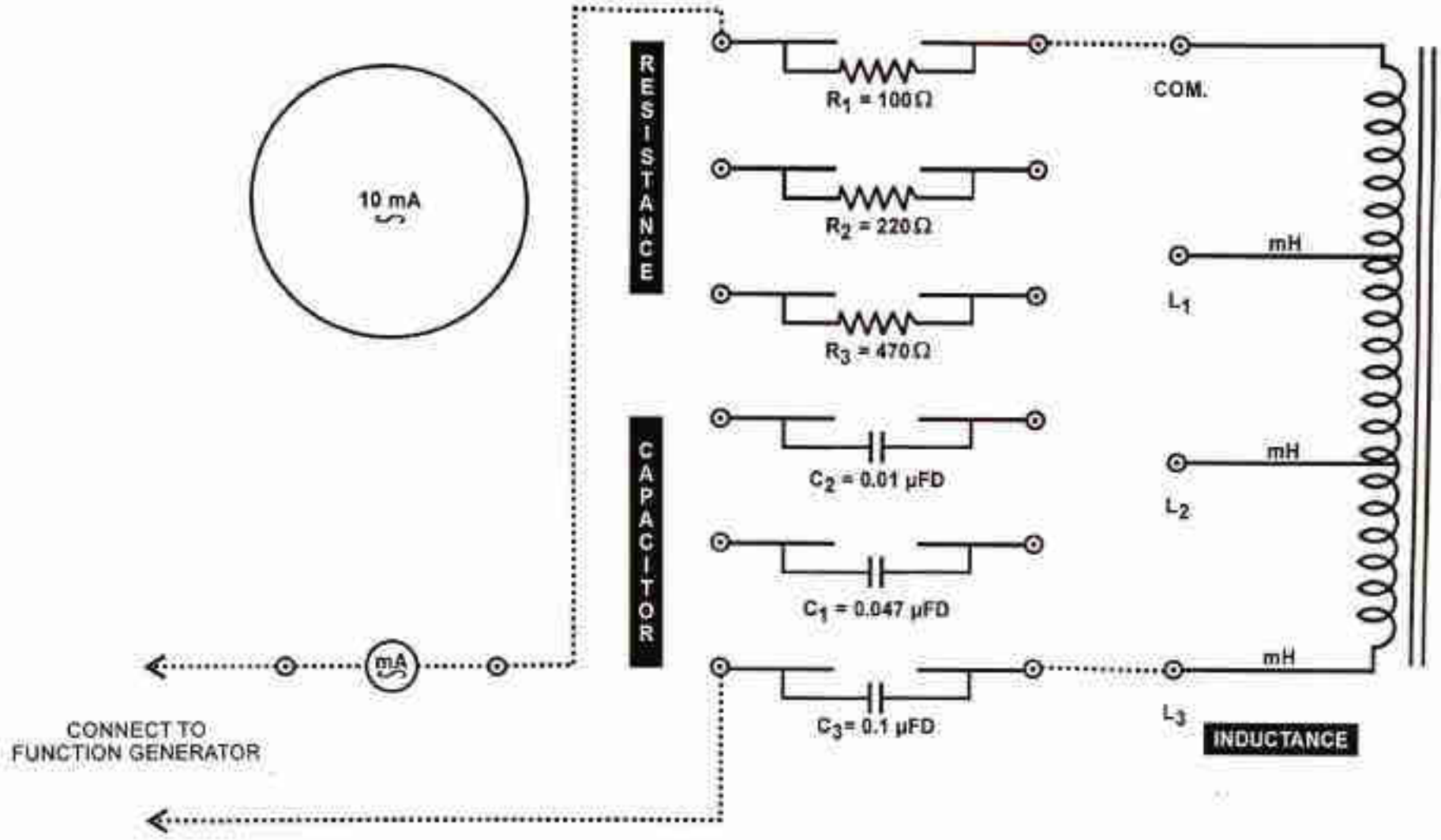
(5) Now repeat the procedure and at that time note down the reading of milli-ammeter and frequency of function generator each time.

(6) Now plot a graph between frequency (f) and milli-ammeter.

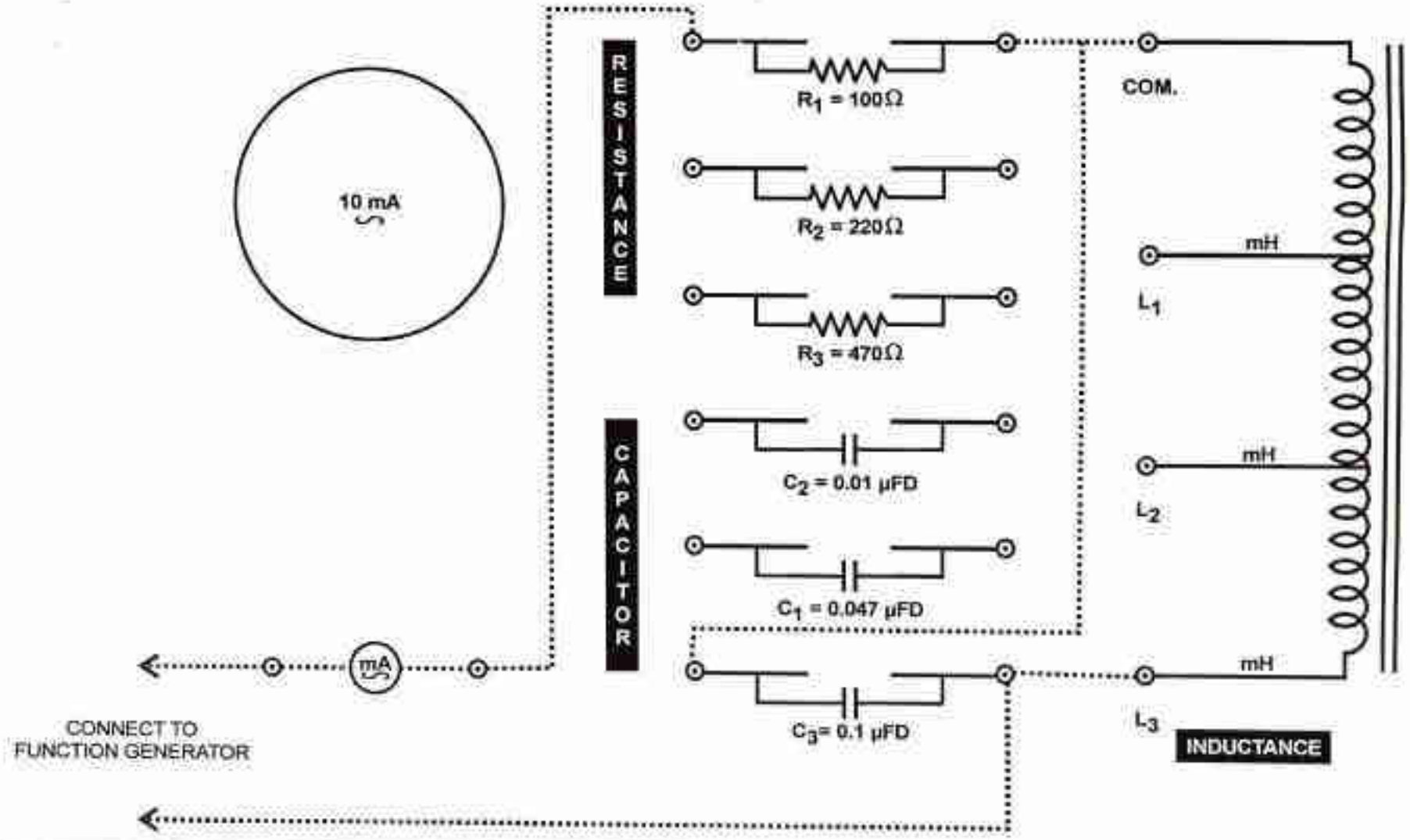
The curve plotted between current drawn by the series resonance circuit and supply frequency is called resonance curve of series resonance circuit.



SERIES RESONANCE CIRCUIT (MAKE THE CONNECTION AS SHOWN IN FIG. BY DOTTED LINES)



PARALLEL RESONANCE CIRCUIT (MAKE THE CONNECTION AS SHOWN IN FIG. BY DOTTED LINES)



ISO 9001:2000 Certified Co.

INSTRUCTION MANUAL
FOR
TRANSISTOR CHARACTERISTICS APPARATUS

Omega Transistor Characteristics Apparatus has been designed to plot the Input, Output & Transfer Characteristics of PNP & NPN transistor in common emitter and common base configuration.

The transistor comprises of the following built in parts:

1. Two continuously variable, overload & short circuit protected DC Regulated Power Supplies of 0-1V & 0-10V.

Specifications:

Input Voltage	: 230V± 10% AC, 50Hz
Load Regulation	: ± 0.2%
Line Regulation	: ± 0.5%
Ripple	: Less than 3mV R.M.S.
Protections	: Against Short Circuit & Overload.

2. Four Meters are mounted on the front to measure Voltage & Current and connections are brought out on 4mm Sockets.

Specifications Of Meters

Type	Parameter	Range	Resolution	Accuracy
Round Moving Coil	DC Voltage	0-1V DC	0.02V	+ 2.5% F.S.D.
Round Moving Coil	DC Current	0-250µA/25mA	5µA/0.5mA	+ 2.5% F.S.D.
		25mA	0.5mA	+ 2.5% F.S.D.

3. Two transistors one PNP & another NPN are placed inside the cabinet & connections are brought out on sockets.

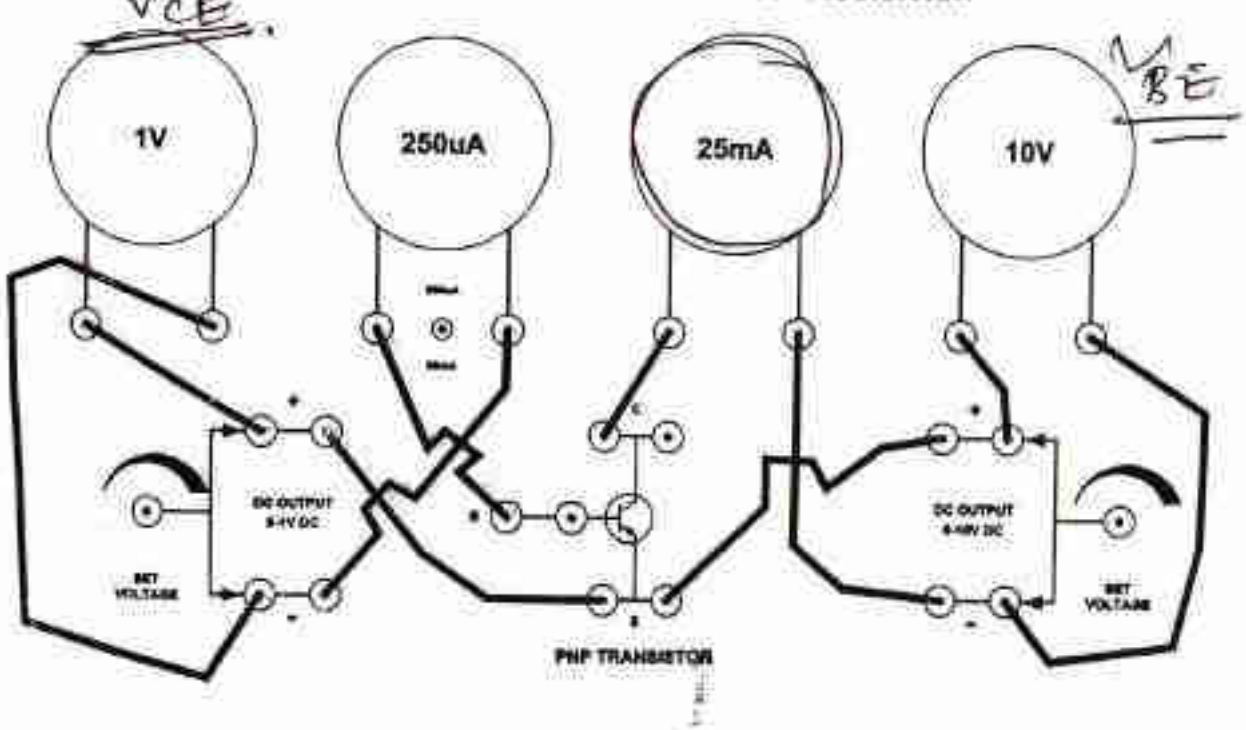
PROCEDURE

PNP COMMON EMITTER CONFIGURATION:

Input Characteristics:

Connect the circuit as shown in the figure. Keep the meter selector switch towards 250μA range. In the connections Collector Bias as well as the base bias both are negative with respect to emitter.

WIRING DIAGRAM FOR PNP COMMON EMITTER CONFIGURATION



1. Adjust collector to Emitter Voltage V_{CE} (0-10V DC Power Supply) at some suitable value (say at –0.2V) and keep it fixed.

2. By Adjusting input supply V_{BE} (0-1V DC Power Supply), set the base current to 20μA. Note down base to Emitter Voltage V_{BE}. Now increase V_{BE} in small steps and every time note down the corresponding base current I_B.

3. Repeat step no.1 & 2 for other values of V_{CE} (say –2V, -6V). Note down all the observations in the following table.

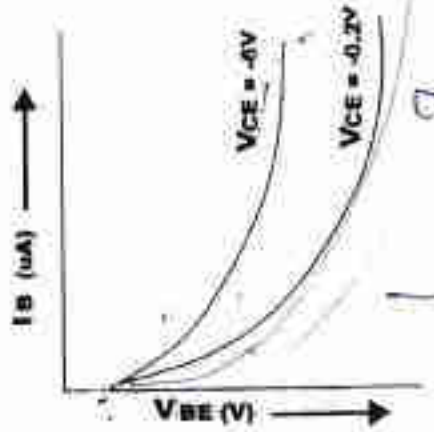
TABLE

S.No.	Base Voltage V_{BE} (Volts)	Base Current I_B in μA		
		V_{CE} = -0.2V	V_{CE} = -2V	V_{CE} = -6V
1.	2 volt .2	0.5		
2.	4 volt			
3.	6 volt			
4.	8 volt			
5.	10 volt			

4. Plot graph by taking base voltage V_{BE} along X-axis and base current I_B along Y-axis.

5. Draw a tangent to $V_{BE} - I_B$ curve & determine its slope. The reciprocal of the slope gives the values of input resistance of transistor.

INPUT CHARACTERISTICS



Output Characteristics:

1. Set Collector Voltage V_{CE} to 0.4V.

2. Adjust the base current I_B to 25μA by varying 0-1V DC Power Supply and note down the corresponding Collector Current I_C. Gradually increase the Collector Voltage (V_{CE}) in small steps (i.e. make it –2V, -4V, -6V, ...-8V) and note down the corresponding values of Collector Current I_C keeping the Base Current I_B constant.

3. Repeat the steps 1 & 2 for other values of Base Current I_B (say 50μA, 75μA) and note down all the observations in the following table.

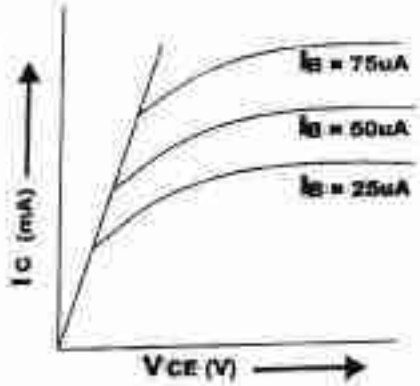
TABLE

S.No.	Collector Voltage V_{CE} (V)	Collector Current IC in mA		
		$I_B = 25\mu A$	$I_B = 50\mu A$	$I_B = 75\mu A$
1. 2. 3. 4. 5.				

4. Plot a graph by taking collector Voltage V_{CE} along X-axis & Collector Current I_C along Y-axis.

5. Draw a tangent $V_{CE} - I_C$ curve and determine its slope, reciprocal of the slope gives the value of output resistance of transistor.

OUTPUT CHARACTERISTIC



Transfer Characteristics:

1. Adjust the collector Voltage at suitable value (say $V_{CE} = -4V$) and maintain it fixed.

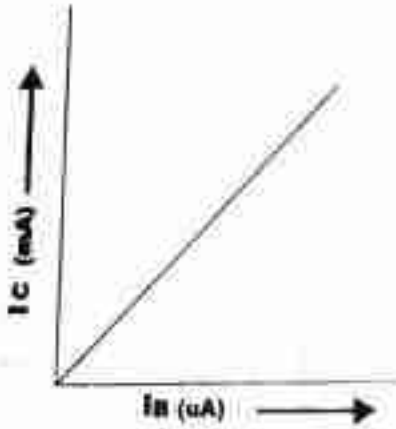
2. Adjust Base Current I_B to a suitable small but measurable value by adjusting 0-1V DC Power Supply and note down the corresponding Collector Current I_C. Increase I_B in small steps and note down the Collector Current I_C each time in the shown table.

3. Plot a graph by taking Base Current I_B along X-axis and Collector Current I_C along Y-axis as shown. The slope of the graph gives the value of Current gain β.

TABLE

S.No.	BASE CURRENT	COLLECTOR CURRENT
1. 2. 3. 4.		

TRANSFER CHARACTERISTICS

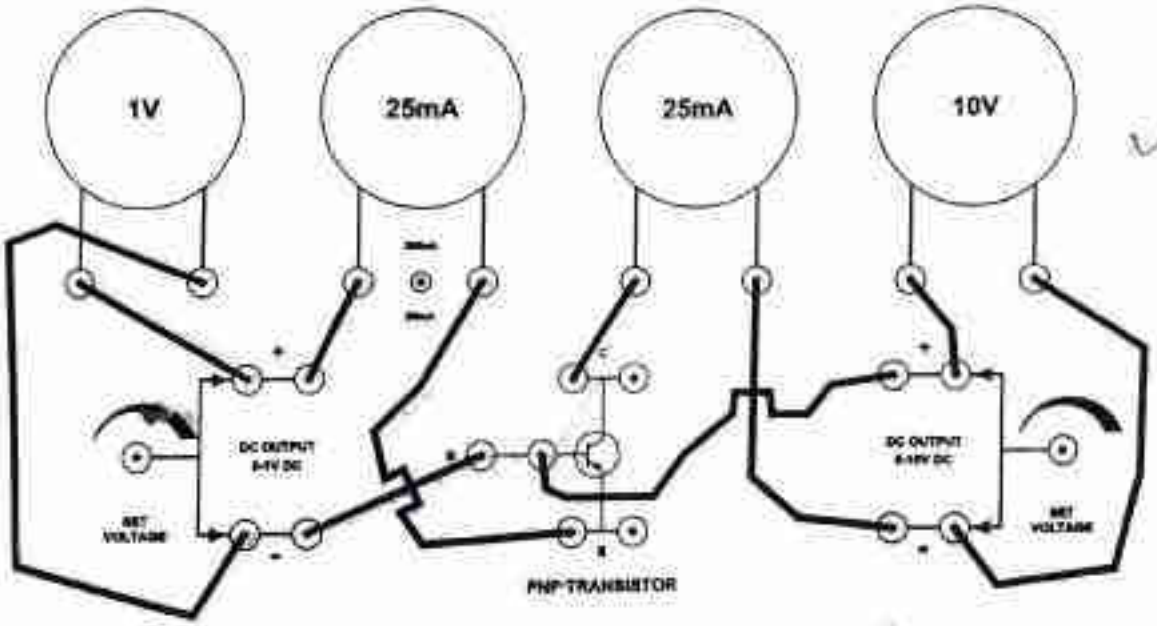


PNP COMMON BASE CONFIGURATION:

Input Characteristics:

Connect the circuit as shown in the figure. Keep the meter selector switch towards 25mA range. In the connections Collector Bias is –ve with respect to Base & Emitter bias is +ve with respect to Base.

WIRING DIAGRAM FOR PNP COMMON BASE CONFIGURATION



1. Adjust collector to base voltage V_{CB} (0-1V DC Power Supply) at some suitable value (say at –2V) and keep it constant.

2. By adjusting input supply (0-1V) set the Emitter Current to a small but measurable value say 5mA, note down the corresponding Emitter to Base Voltage V_{EB}. Increase V_{EB} in small steps and note down the corresponding Emitter Current I_E.

3. Repeat the step no. 1 & 2 for other values collector voltages (say –6V, -8V, etc). Note down all the observations in the table shown.

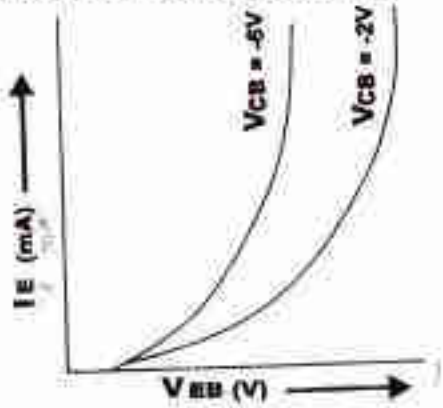
4. Plot the graphs by taking Emitter-Base Voltage V_{EB} along X-axis and Emitter Current I_E along Y-axis.

5. Draw a tangent to $V_{EB} - I_E$ curve & determine its slope. The reciprocal of the slope gives the value of input resistances of transistor.

TABLE

S.No.	Emitter Voltage V_{EB} (Volts)	Emitter Current I_E in mA		
		V_{CB} = -2V	V_{CB} = -6V	V_{CB} = -8V
1. 2. 3. 4. 5.				

INPUT CHARACTERISTICS



Output Characteristics:

1. Adjust the Emitter Current I_E to a suitable value (say 10mA) by adjusting 0-1V DC Power Supply.

2. Set Collector Voltage V_{CB} to 0.4V and note the corresponding Collector Current I_C. Gradually increase the Collector Voltage in small steps (i.e. make it –2V, -2.4V, -4V, ... –8V) etc) and note down the corresponding values of Collector Current I_C keeping the Emitter Current I_E constant.

3. Repeat steps 1 & 2 for other values of Emitter Current I_E (say 15mA, 20mA etc). Note down all the observations in the following table.

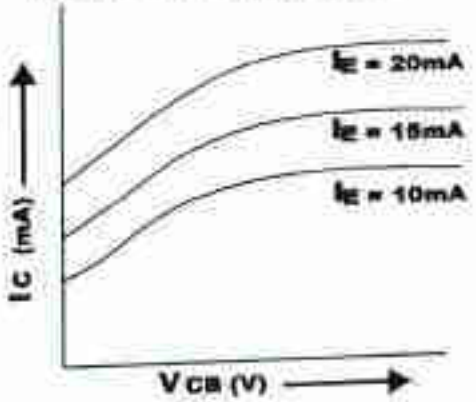
4. Plot a graph taking Collector Voltage V_{CB} along X-axis & Collector Current I_C along Y-axis.

5. Draw a tangent on a $V_{CB} - I_C$ curve and determine its slope, reciprocal of the slope gives the value of output resistance of transistor.

TABLE

S.No.	Collector Voltage V_{CB} (Volts)	Collector Current I_B in μA		
		I_E = 10mA	I_E = 15mA	I_E = 20mA
1. 2. 3. 4. 5.				

OUTPUT CHARACTERISTIC



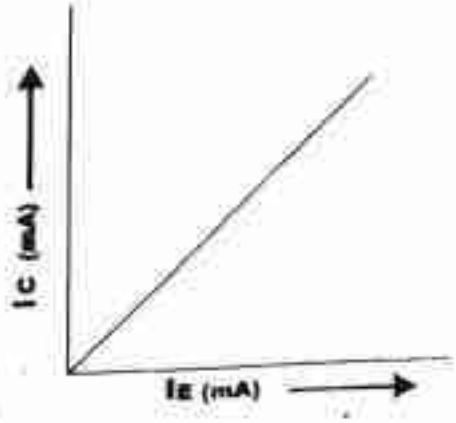
Transfer Characteristics:

1. Adjust Collector Voltage at suitable value (say V_{CB}=4V) and keep it fixed.
2. Adjust Emitter Current I_E to a suitable small bur measurable value by varying 0-1V DC Power Supply and note down corresponding Collector Current I_C. Increase I_E in small steps & note down the Collector Current I_C each time to be put in table here under.
3. Plot a graph by taking Emitter Current I_E along X-axis and Collector Current I_C along Y-axis. The slope of the graph gives the value of Current gain β.

TABLE

S.No.	BASE CURRENT	COLLECTOR CURRENT
1. 2. 3. 4.		

TRANSFER CHARACTERISTICS

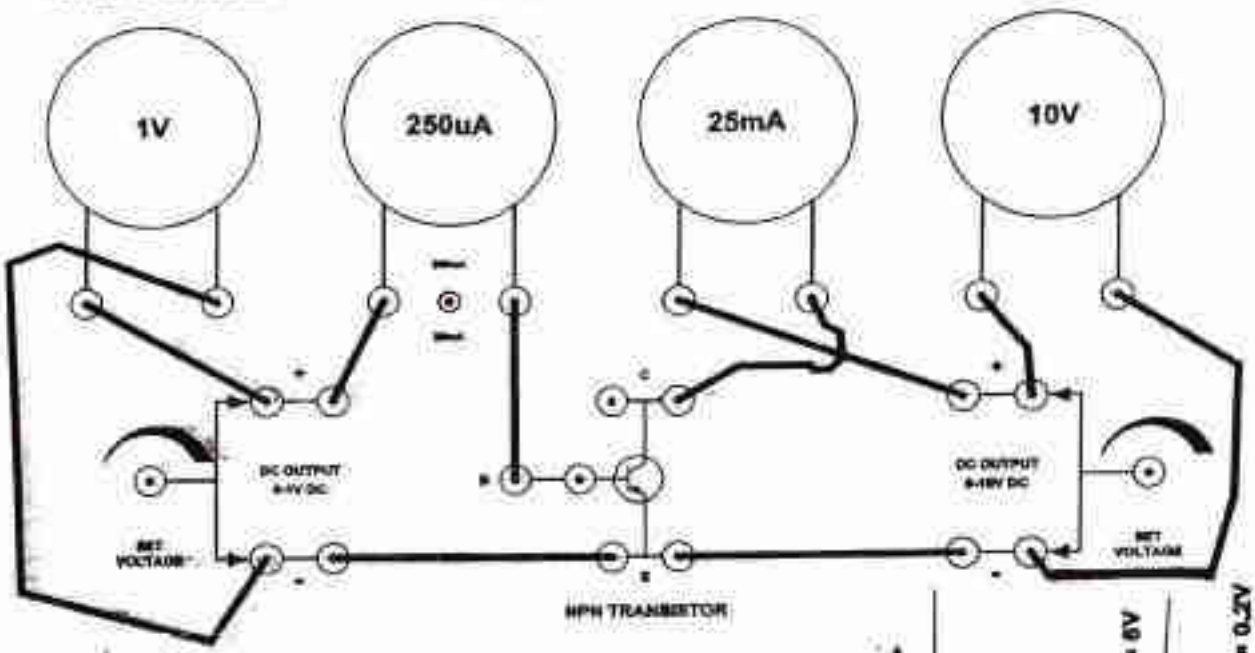


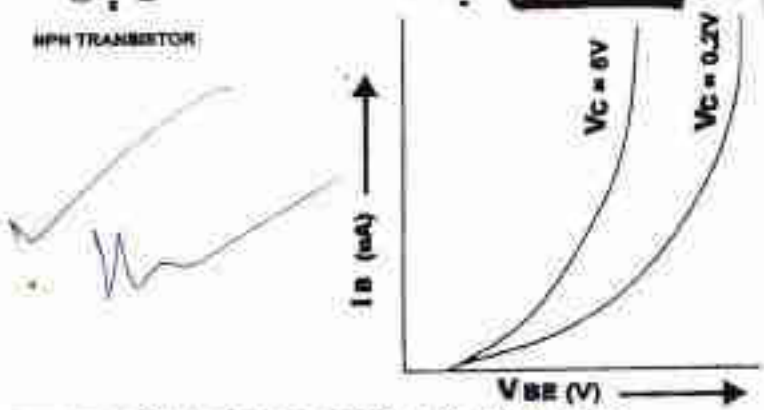
NPN COMMON EMITTER CONFIGURATION:

Input Characteristics:

Connect the circuit as shown in the figure. Keep the meter selector switch towards 250μA range. In the connections Collector Bias as well as base bias both are positive with respect to emitter.
Proceed in the same manner as in case of PNP common emitter characteristics & tabulate the results in the same type of table. Plot the graph as shown.

WIRING DIAGRAM FOR NPN COMMON EMITTER CONFIGURATION

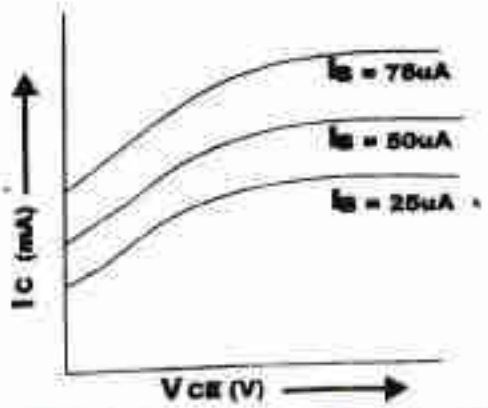




Output Characteristics:

Proceed in the same manner as in the case of PNP common emitter characteristics & tabulate the results in the same type of table. Plot the graph as shown.

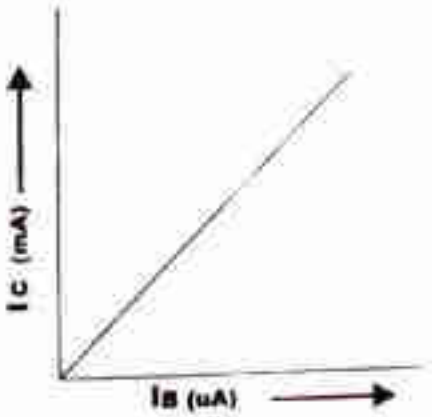
OUTPUT CHARACTERISTIC



Transfer Characteristics:

Proceed exactly in the same manner as in case of PNP common emitter characteristics & plot a graph as shown in figure.

TRANSFER CHARACTERISTIC

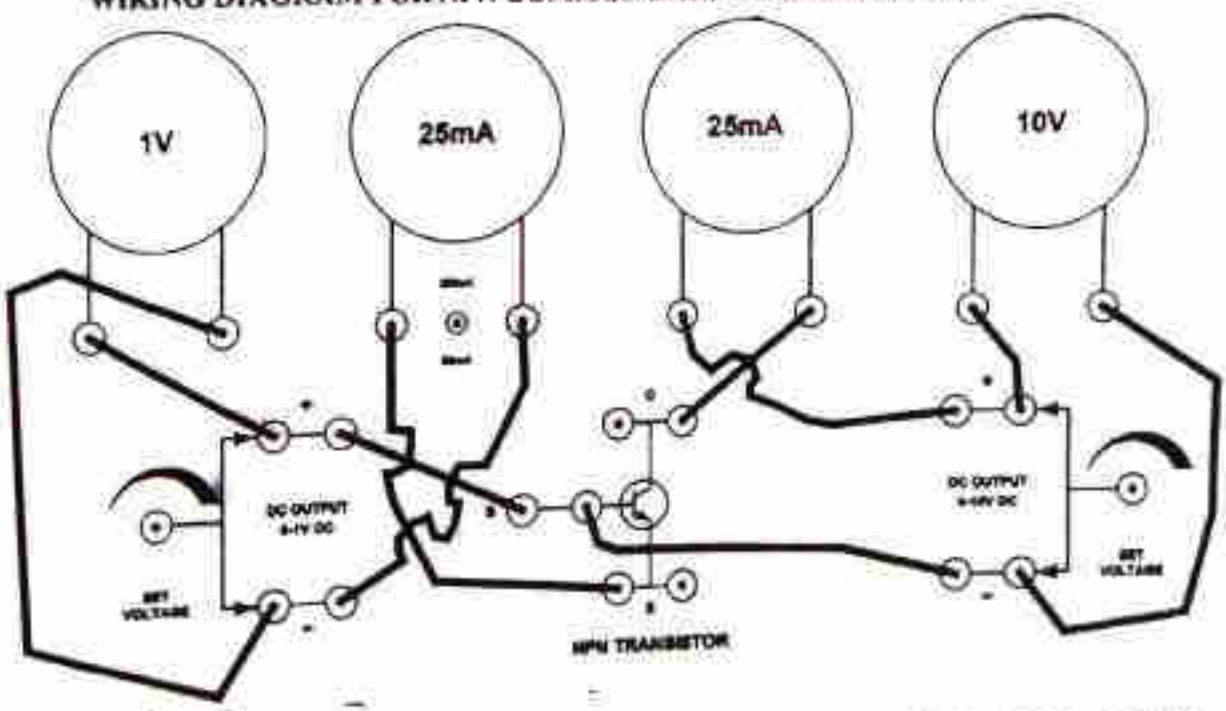


NPN COMMON BASE CONFIGURATION:

Input Characteristics:

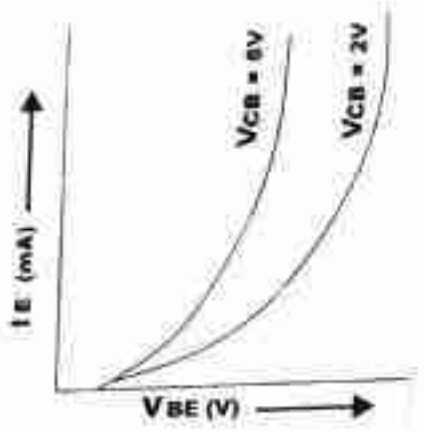
Connect the circuit as shown in the figure. Keep the meter selector switch towards 25mA range. In the connections Collector Bias is positive with respect to Base & Emitter Bias is negative with respect to base.

WIRING DIAGRAM FOR NPN COMMON BASE CONFIGURATION



Proceed in the same manner as in the case of PNP Common Base Characteristics & tabulate the results in the same type of table. Plot a graph as shown.

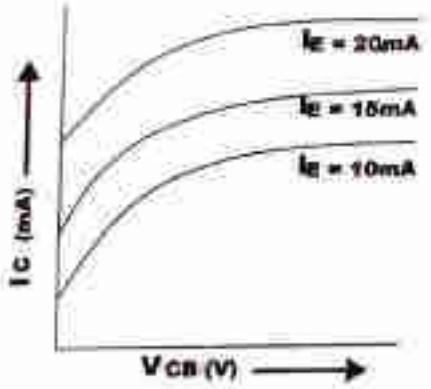
INPUT CHARACTERISTICS



Output Characteristics:

Proceed in the same manner as in the case of PNP Common Base Characteristics to tabulate the results in the same type of table. Plot a graph as shown in the figure.

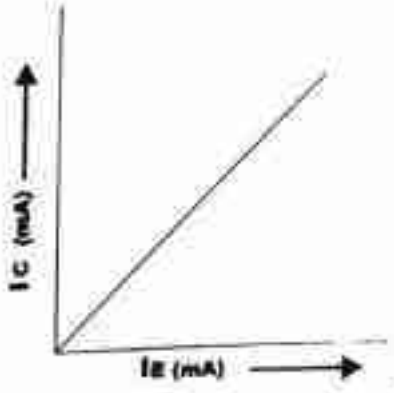
OUTPUT CHARACTERISTICS



Transfer Characteristics:

Proceed exactly in the same manner as in case of PNP Common Base Characteristics & plot a graph as shown in figure.

TRANSFER CHARACTERISTIC



STANDARD ACCESSORIES

1. Ten single point patch chords for inter connections.
2. Instruction Manual.

B.Sc. IIIrd year

INSTRUCTION MANUAL
FOR
F.E.T. CHARACTERISTICS APPARATUS

[redacted]

[redacted] FET Characteristic Apparatus has been designed to plot Mutual characteristics & Drain characteristics.

The instrument comprises of the following built in parts: -

1. Two continuously variable DC regulated power supplies of 0-5V and 0-10V are provided in ME 535, ME 535D & ME 535P.

Input Voltage	:	230 V ±10% AC, 50 Hz
Load Regulation	:	± 0.2%
Line Regulation	:	± 0.05%
Ripple	:	Less than 3 mV R.M.S.
Protections	:	Against Short Circuit & Over Load

2. Three meters to measure voltage & current are mounted on front panel & connections brought out on Sockets.
   (i) Analog moving coil round meters in ME 535.
   (ii) 72mm deluxe type acrylic square meters in case of ME 535D.
   (iii) 3.5 digit LED digital panel meters in case of ME 535P.

Specifications of Meters

Type	Parameter	Range	Resolution	Accuracy
Round Moving Coil	DC Voltage	0-5V DC 0-15V DC	0.1V DC 0.25V DC	±2.5% F.S.D. ±2.5% F.S.D.
Square Moving Coil	DC Voltage	0-1V DC 0-15V DC	0.1V DC 0.25V DC	±2% F.S.D. ±2% F.S.D.
Round Moving Coil	DC Current	0-15 mA	0.25mA	±2.5% F.S.D.
Square Moving Coil	DC Current	0-15 mA	0.25mA	±2% F.S.D.
3.5 Digit LED	DC Voltage	0-19.99V DC 0-19.99V DC	0.01V DC 0.01V DC	0.5% ± 2 Digits 0.5% ± 2 Digit
3.5 Digit LED	DC Current	0-19.99mA	0.01 mA	0.5% ± 2 Digits

FET/ JFET(BFW 10) on sockets.

NOTE:- Model No.'s ME 535D & ME 535P are in special type Tappered Shaped Powder Coated Rust proof steel cabinet for better viewing Angle.

THEORY

The Field Effect Transistor or Junction Field Effect Transistor is fabricated by using monolithic silicon technology. This device comprises of high input resistance as compared to bipolar transistor.

DRAIN CHARACTERISTICS:-

These are the curves between drain voltage (VDS) and drain current (ID) for different values of gate voltage(VGS).

PROCEDURE

1. Make the connection as shown in fig.1.

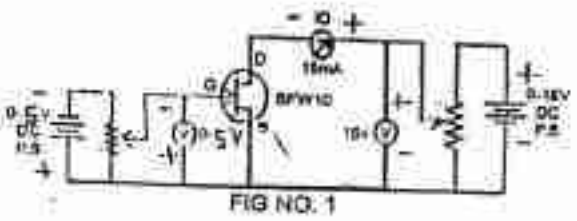


FIG NO. 1

2. Switch on the instrument & adjust gate supply voltage (VGS) to 0 volts.
3. Initially keep VDS 0 volts and note down the drain current (ID).
4. Increase VDS in the step of 0.5 volts and note down the ID.
5. Make VGS= -1volt and repeat steps 3 & 4.
6. Increase VGS in the step of -1volt and repeat steps 3 & 4.
7. Plot a graph between VDS and ID for different values of VGS by taking VDS along X-axis and ID along Y-axis as shown in fig.2.

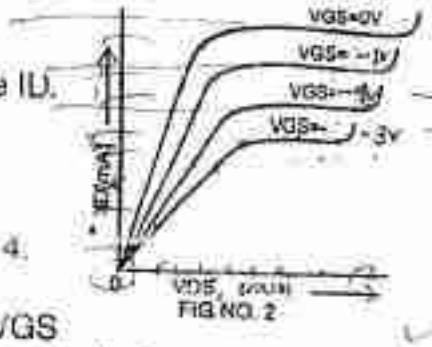


FIG NO. 2

TRANSFER / MUTUAL CHARACTERISTICS:-

8. Adjust VGS to 0 volts and note down drain current (ID).
9. Increase VGS in the step of 0.5 volts keeping VDS constant and note down ID.
10. Increase VDS in the step of 1V and repeat steps 3 & 4 for different values of VDS.
11. Plot a graph between VGS & ID for different values of VDS as shown in fig.3.

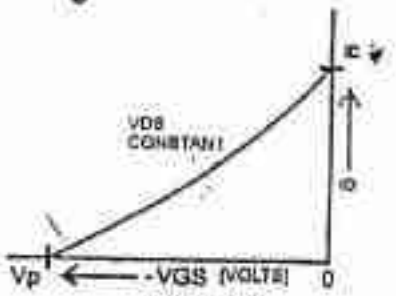


FIG NO. 3

STANDARD ACCESSORIES

1. Set of Nine Single Point patchcords for interconnections.
2. Instruction Manual.

B.Sc. IInd year

INSTRUCTION MANUAL FOR VERIFICATION OF LOGIC GATES

AIM : To study or verification of logic gates for AND, OR, NAND, NOR, NOT [redacted] GATES

INSTRUMENTS COMPRISES OF FOLLOWING BUILT IN PARTS :

1. Two input AND, NAND, NOR, OR, [redacted] and Single input NOT gate.
2. Two logic inputs for Logic 0 and 1.
3. One output [redacted] LED

THEORY :

Gates are digital circuits because input and output signals have only two states either low (0) or high (1)

1. **OR GATE :** An OR gate has two or more than two inputs and only one output which is equal to the sum of all inputs as shown in fig. (a). According to truth table apply different inputs A&B and verify the output Y.

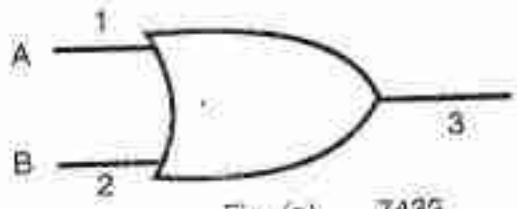


Fig. (a) 7432

Truth Table

Inputs		Output Metre
A	B	Y = A+B
0	0	0
0	1	5V
1	0	5V
1	1	5V

2. **AND GATE :** An AND gate has two or more than two inputs and only one output which is equal to AND products of all the inputs as shown in fig. (b). According to truth table apply different inputs A&B and verify the output Y.

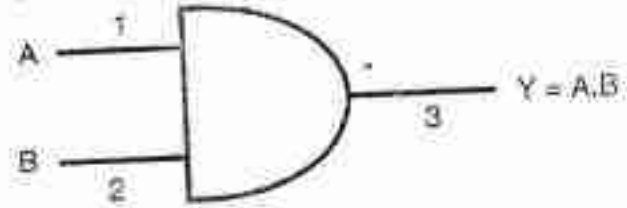


Fig. (b) 7408

Truth Table

Inputs		Output Metre
A	B	Y = A.B
0	0	0
0	1	0
1	0	0
1	1	5V

3. **NOR GATE :** NOR gate actually means NOT+OR. It has two or more than two inputs but only one output which is the compliment (inverter or NOT) of the OR Gate or sum of two or more inputs as shown in fig. (c). According to truth table apply different inputs A&B and verify the output Y.

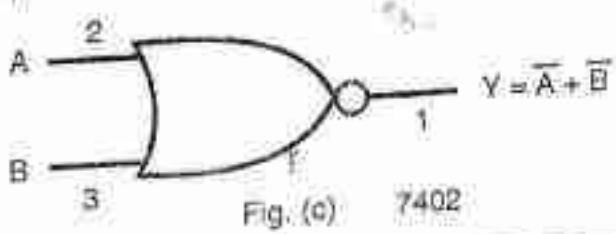


Fig. (c) 7402

Truth Table

Inputs		Output Metre
A	B	Y = A+B
0	0	1
0	1	0
1	0	0
1	1	0

4. **NAND GATE :** NAND gate actually means NOT+AND. It has two or more than two inputs but only one output which is the compliment (inverter or NOT) of the AND product of all inputs as shown in fig. (d). According to truth table apply different inputs A&B and verify the output Y.

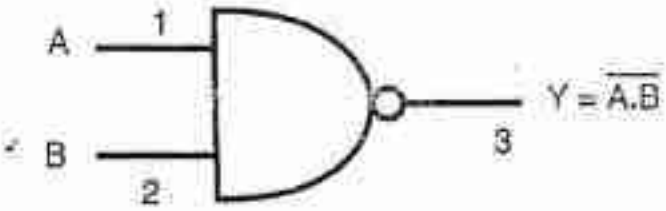


Fig. (d) 7400

Truth Table

Inputs		Output Metre
A	B	$Y = \overline{A.B}$
0	0	5V
0	1	5V
1	0	5V
1	1	0

5. **NOT GATE :** An inverter or NOT gate has only a single output and always a single input signal output logic is compliment of input logic as shown in fig. (e) symbol, function & truth table.

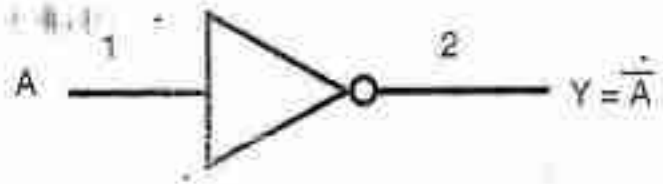


Fig. (e) 7404

Truth Table

Inputs	Output Metre
A	$\overline{Y}$
0	5V
1	0

INSTRUCTION MANUAL
FOR
ZENER DIODE CHARACTERISTICS APPARATUS

Zener Diode Characteristics Apparatus has been designed to study Forward & Reverse Bias characteristics of a Zener Diode & voltage stabilization characteristics of zener diode.

The Instrument comprises of the following built in parts:-

1. One continuously variable DC regulated power supply of 0 - 30V with output brought out at 4mm Sockets.

2. Three meters to measure voltage & current are mounted on front panel & connections brought out at 4mm Sockets.

3. One series Resistance & one Zener Diode (9V) has been provided on front panel with connections brought out at 4mm Sockets.

4. Different type of load resistances selectable using band switch are also provided on the front panel.

THEORY

A rectifier with appropriate filter serves as a good source of DC output. However , the major disadvantage of such a power supply is that the output voltage changes with the variations in the input voltage or load. Thus if the input voltage increases, the DC output voltage of the rectifier also increases. Similarly, if the load current increases, the output voltage falls due to the voltage drop in the rectifying element, filter chokes, transformer winding etc. In many electronic applications, it is desired that the output voltage should remain constant regardless of the variations in the input voltage or load. In order to ensure this, a voltage stablizing device, called voltage stablizer is used. Several stablizing circuits have been designed but only *Zener Diode* as a voltage stablizer will be discussed.

When the reverse bias on a crystal diode is increased, a critical voltage, called *breakdown voltage* is reached where the reverse current increases sharply to a high value. The breakdown region is the knee of the reverse characteristics. The satisfactory explanation of this breakdown of the junction was first given by the American scientist C. Zener. Therefore, the breakdown voltage is sometimes called, zener voltage and the sudden increase in current is known as Zener current.

The breakdown or Zener voltage depends upon the amount of doping. If the diode is heavily doped, depletion layer will be thin and consequently the breakdown of the junction will occur at a lower reverse voltage on the other hand, a lightly doped diode has a higher breakdown voltage. When an ordinary crystal diode is properly doped so that it has a sharp breakdown voltage, it is called ***Zener Diode***.

A properly doped crystal diode which has a sharp breakdown voltage is known as a Zener Diode.

Symbol of a Zener Diode is just like an ordinary diode except that the bar is turned into Z-shape. The following points may be noted about the zener diode:

(i) A zener diode is like an ordinary diode except that it is properly doped so as to have a sharp breakdown voltage.

(ii) A zener diode is always reverse connected i.e. it is always reverse biased.

(iii) A zener diode has sharp breakdown voltage, called zener voltage Vz.

(iv) When forward biased, its characteristics are just those of ordinary diode.

(v) The zener diode is not immediately burnt just because it has entered the break down region. As long as the external circuit connected to the diode limits the diode current to less than *burn out* value, the diode will not burn out.

When the reverse voltage across a zener diode exceeds the breakdown voltage Vz, the current increases very sharply. In this region, the curve is almost vertical. It means that voltage across zener diode is constant at Vz even though the current through it changes. Therefore, in the breakdown region, an ideal zener may be represented by a battery of voltage Vz.

PROCEDURE

FOR FORWARD BIAS CHARACTERISTICS

1. Make all the connection as shown in Fig. (1a) using Patchcords. Connect Positive end of Power Supply to Positive of voltmeter (30V). Negative end of Power Supply to Negative of Voltmeter (30V). Connect other end of resistance Rs to anode (A) of Zener Diode, Connect Cathode (K) of Zener Diode to positive socket of mA meter, connect negative socket of Power Supply to Negative of mA.

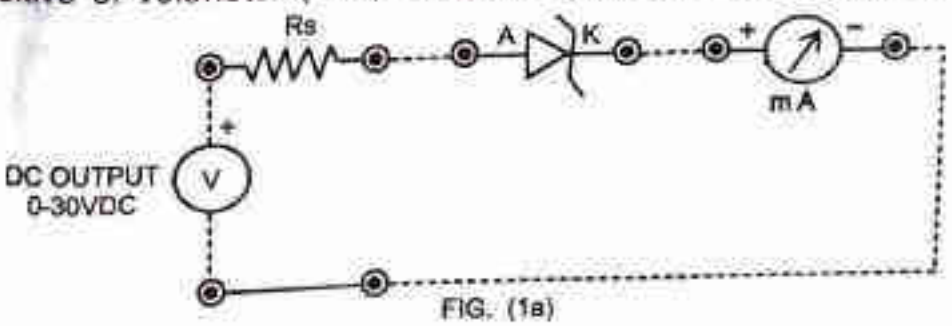


FIG. (1a)

2. Switch ON the instrument and set the voltage to 0 volts.

3. Increase the voltage slowly and note down the corresponding current. Note down the observation in Table No. (1).

4. Plot a graph between voltage and current as shown in Fig. (1b).

SR. NO.	FORWARD VOLTAGE	FORWARD CURRENT
1.		
2.		
3.		
4.		
5.		

TABLE NO. 1

FOR REVERSE BIAS CHARACTERISTICS

1. Make all the connection as shown in Fig. (2a) through Patch cords. Connect Positive end of Power Supply to Positive of voltmeter (30V). Negative end of Power Supply to Negative of Voltmeter (30V). Connect other end of resistance Rs to cathode (K) of Zener Diode. Connect anode (A) of Zener Diode to positive socket of mA meter, connect negative socket of Power Supply to Negative of mA.

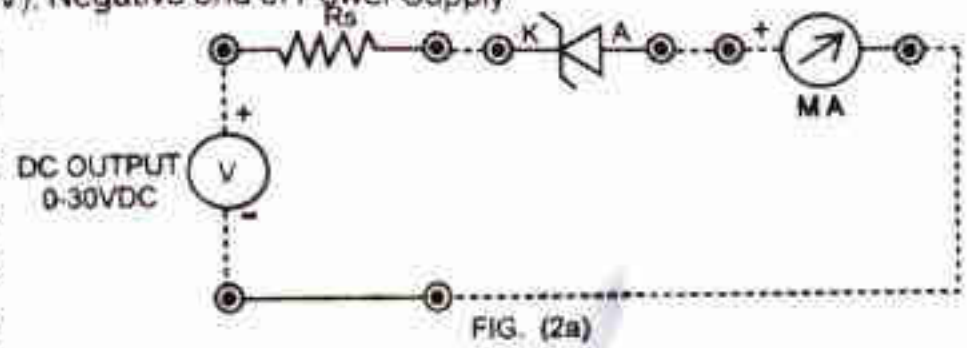


FIG. (2a)

2. Voltage selection knob on extreme left & Switch ON the instrument.

3. Increase the voltage slowly & note down the corresponding current. Note down the observations in Table no. (2).

SR. NO.	REVERSE VOLTAGE	REVERSE CURRENT
1.		
2.		
3.		
4.		
5.		

TABLE NO. (2)

4. Keep on increasing the voltage till current is rising uniformly. At a particular voltage (the voltage rating of Zener Diode) current rises abruptly. This is called Zener Breakdown Voltage of PN Junction Diode.

5. Plot a graph between V & I for reverse characteristics as shown in Fig. (2b).

V-I Char. of Zener Diode

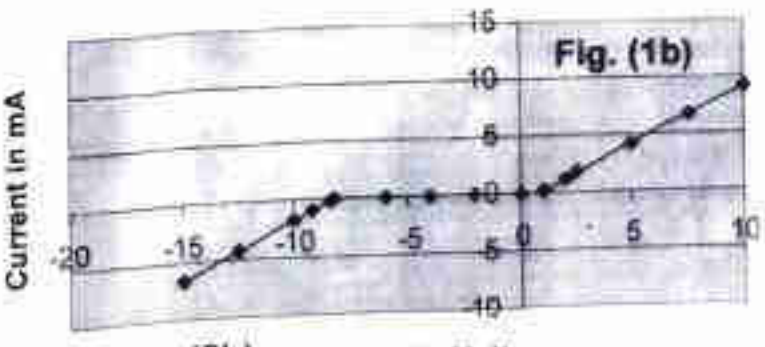


Fig. (2b) Voltage in Volts

Procedure for Zener Diode Voltage Stabilization.

1. Make all the Connections as shown in Fig. (3a).

2. Switch ON the instrument using ON/ OFF toggle switch.

3. Select the load resistance 10kΩ across output through band switch, increase the input voltage in small steps and everytime note down the output voltage.

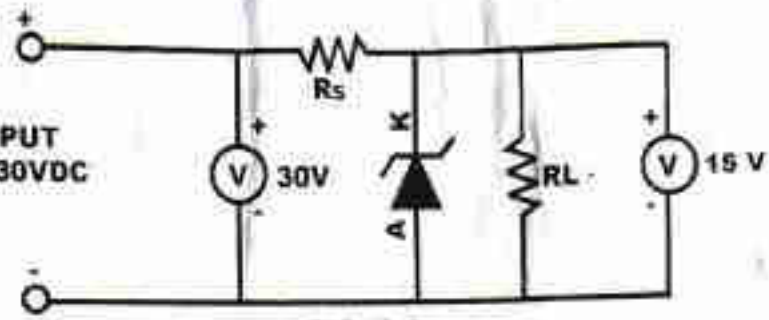


FIG (3a)

4. Note down the observations in Table (1).

SR. NO.	INPUT VOLTAGE	OUTPUT VOLTAGE
1.		
2.		
3.		
4.		
5.		

TABLE (1)

5. Plot the graph between input voltage & output voltage as shown in Fig. (3b).

6. Keep the input voltage at 30 Volts.

7. Select 100Ω Resistance across the output & note down the output voltage.

8. Repeat step 7 for other values of load resistances .Note down the observations in Table (2).

9. Plot a graph between output voltage & load resistance as shown in Fig. (3b).

FIG 3b

SR. NO.	LOAD RESISTANCE	OUTPUT VOLTAGE
1.		
2.		
3.		
4.		
5.		

TABLE (2)

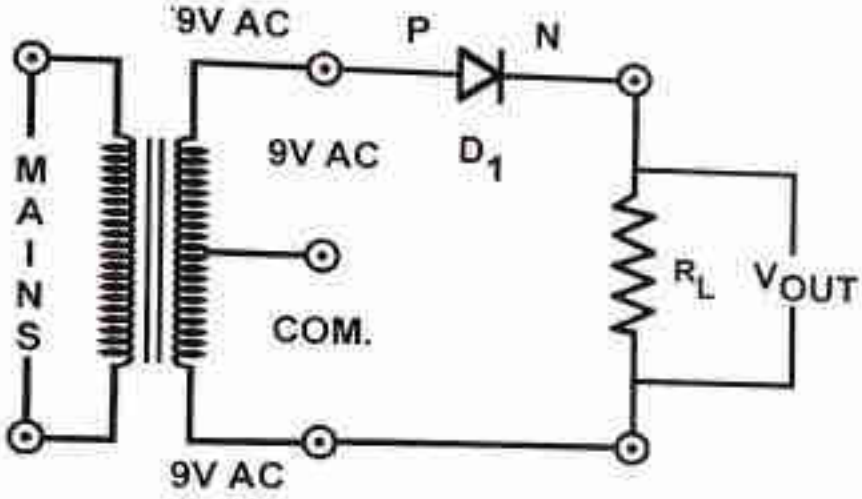
DIODE AS HALF / FULL WAVE RECTIFIER

RECTIFIER:-The Conversion of A.C. into D.C. is called rectification.The fol lowing two type of rectifier are generally used;

(1) Half Wave Rectifier

(2) Full Wave Rectifier.

HALF WAVE RECTIFIER:-In half wave rectification,when a.c supply is ap plied at input,only positive half cycle appears across the load,whereas,the



Half Wave Rectifier

FULL WAVE RECTIFIER:- In full wave rectification,when a.c supply is ap plied at input,during both the half cycles current flows through the load in same direction. This can be achived by using atleast two diodes,conducting current alternatively.

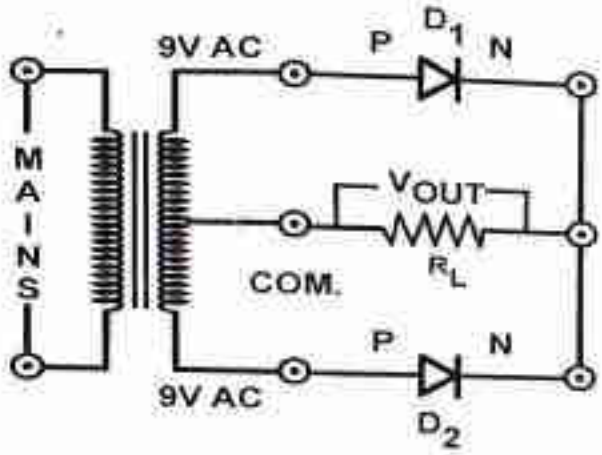
To obtaine same direction of flow of current in the load resistor RL dur ing positive as well as negative half cycle of input a.c the following two circuits are commonly used.

(1) Centre-Tap Full-Wave Rectifier

(2) Full-Wave Bridge Rectifier.

CENTRE-TAP FULL-WAVE RECTIFIER:-

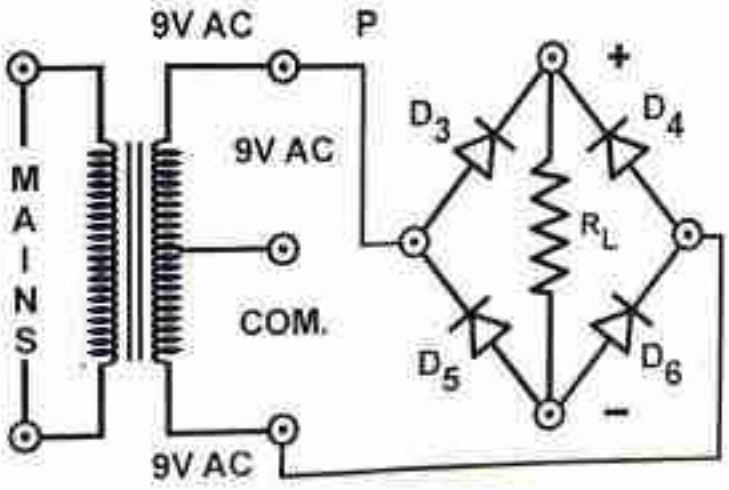
A centre-tap full-wave rectifier circuit is shown in fig.It employs a transformer with secondary winding AB tapped at centre point C.T he two diodes D1 and D2 are connected in the circuit so that each one of them uses one half cycle of input a.c voltage. The diode D1 utilises the a.c voltage appearing across the upper half of secondary winding for rectification while D2 uses the lower half of secondary winding.



Full Wave Rectifier

FULL-WAVE BRIDGE RECTIFIER:-

In this case, an ordinary transformer is used in place of a centre-tap transformer. The circuit containe four diodes D1,D2,D3,and D4 connected to form a bridge. The a.c supply to be rectified to the diagonally opposite ends of the bridge. Whereas,the load resistor RL is connected across the remaning two diagonally opposite ends of the bridge.



Full Wave Bridge Rectifier

FILTER CIRCUITS:-

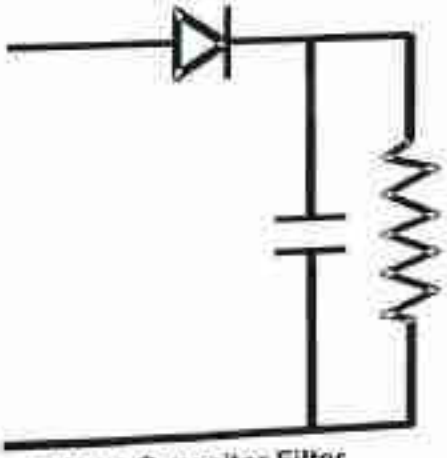
The output of a rectifier is pulsating and contains a steady d.c compo -nents with undesirable ripples.If such a pulsating d.c is given to the electronic circuits, it will produce hum (disturbance).Therefore, the a.c components or ripple have to be kept away from the load. This is achieved by using a filter circuit in between the rectifier and load.

Thus, an electronic circuit or device which blocks the a.c component but allows the d.c components of rectifier to pass to the load is called a filter circuit.

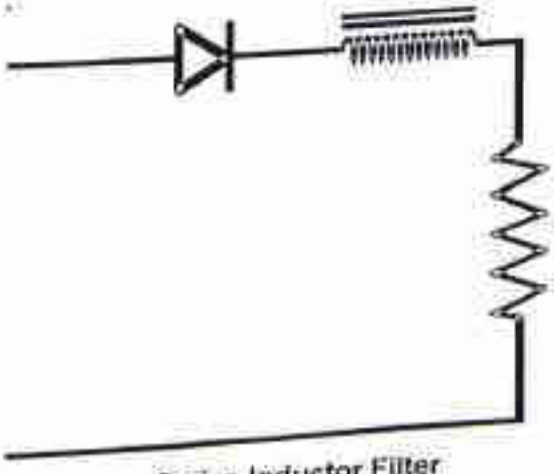
TYPE OF FILTER CIRCUITS:-

Depending upon the components used in the filter circuit and the way they are connected, the filter circuit may be classified as,

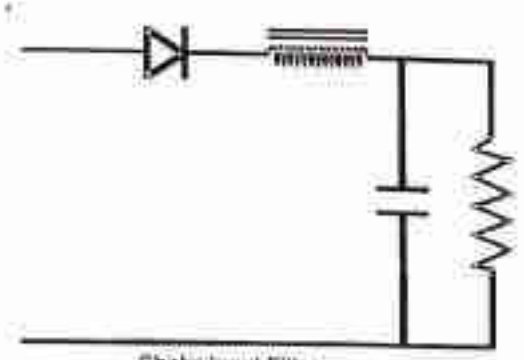
(1) Shunt Capacitor Filter,
(2) Series Inductor Filter,
(3) Choke-Input (LC) Filter,
(4) Capacitor Input (π) Filter,



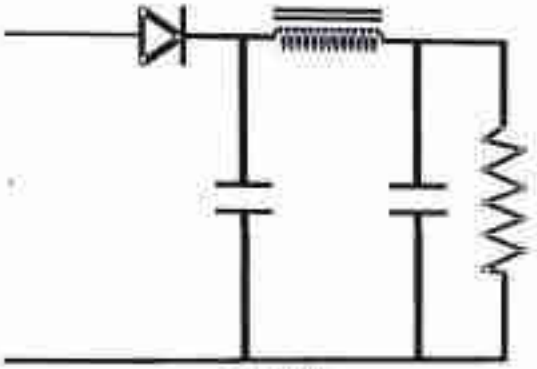
Shunt Capacitor Filter



Series Inductor Filter



Choke Input Filter



π - Filter

RIPPLE FACTOR :-

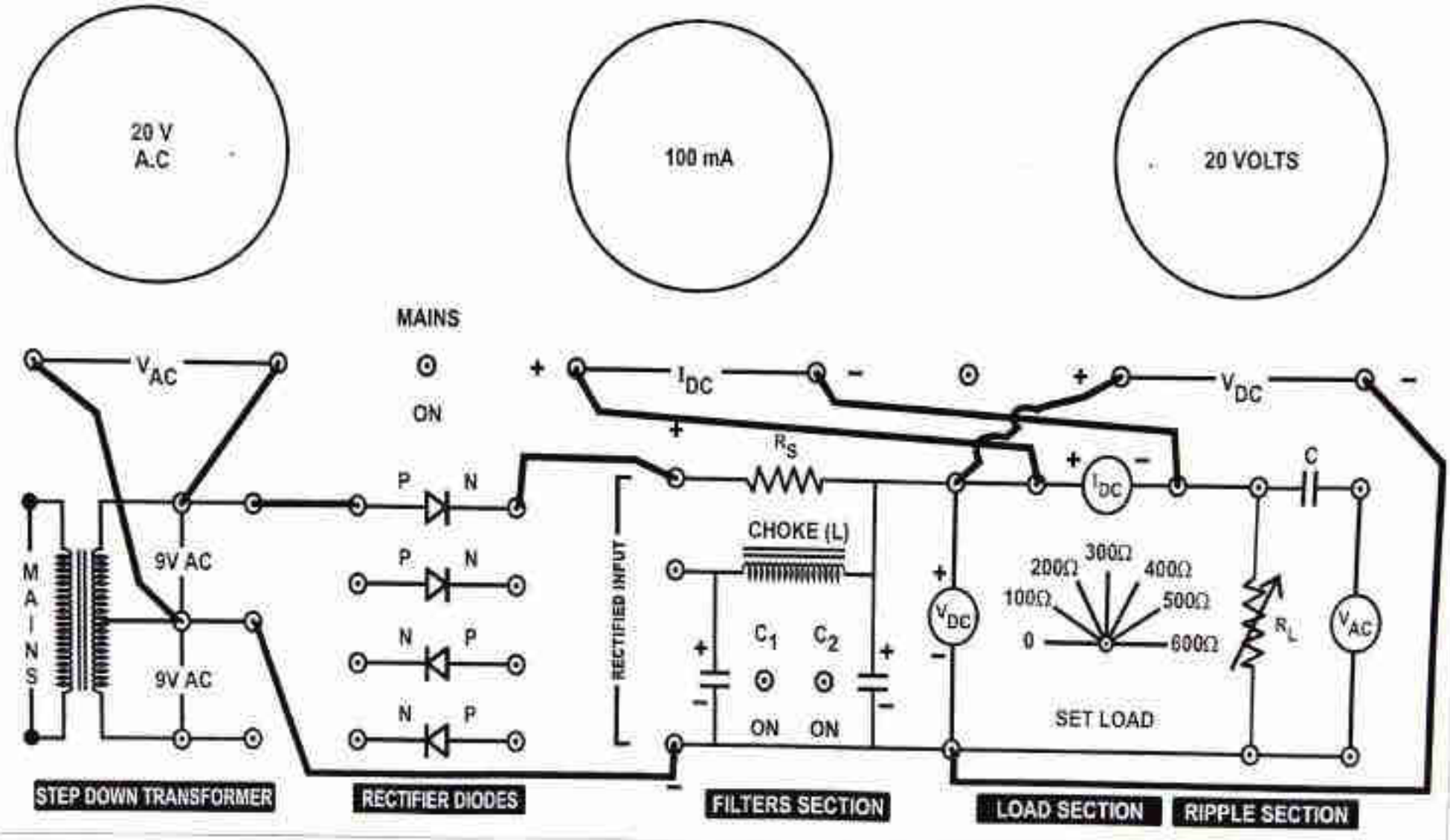
In a rectifier output,the ratio of r.m.s value of a.c component (or ripple) to th d.c component is known as ripple factor.

$$\text{i.e} \quad \text{ripple factor} = \frac{\text{r.m.s value of a.c component}}{\text{value of d.c component}}$$

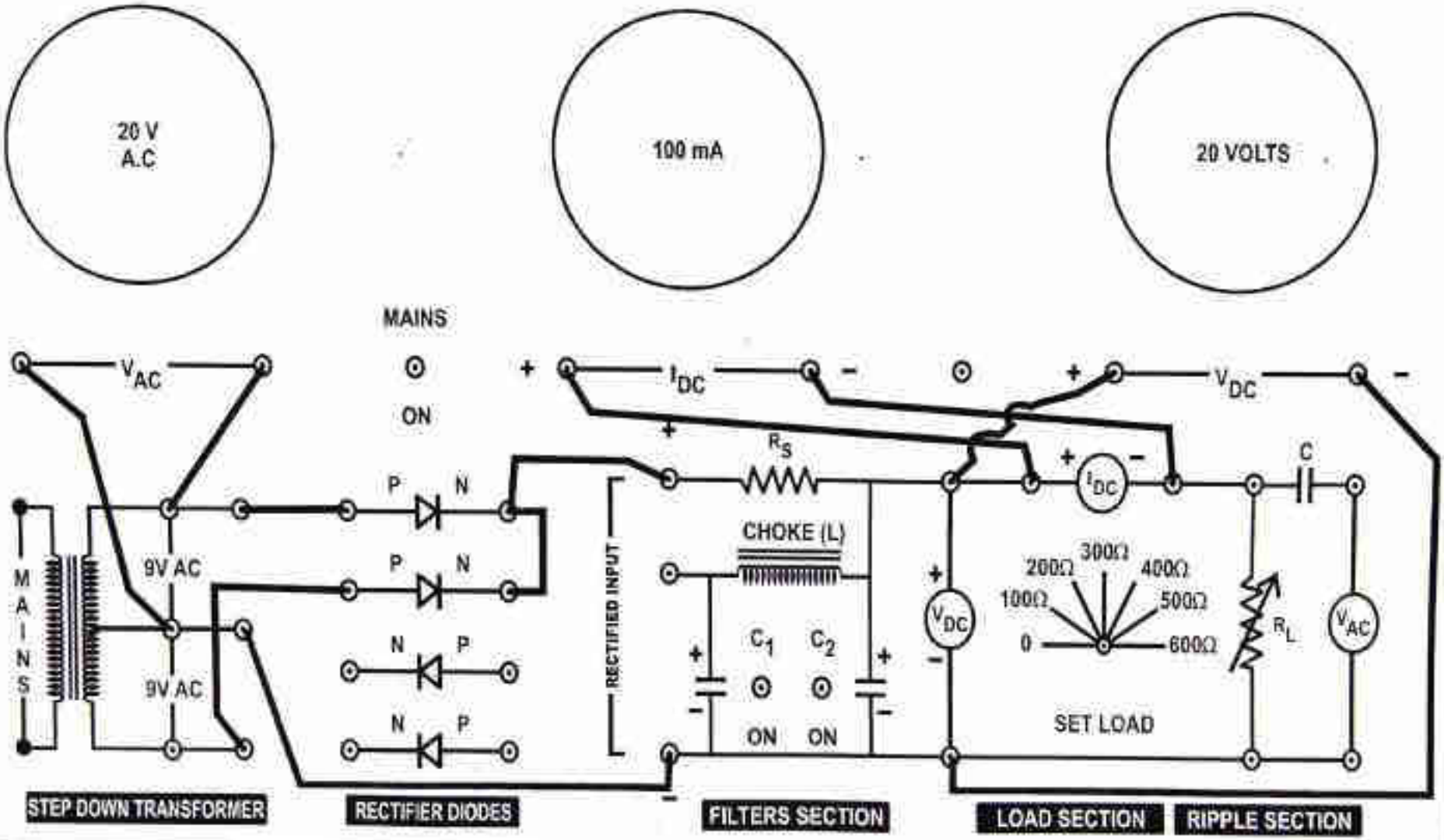
(1) Half-Wave Rectifier — ***Ripple factor = 1.21***

(2) Full-Wave Rectifier — ***Ripple factor = 0.482***

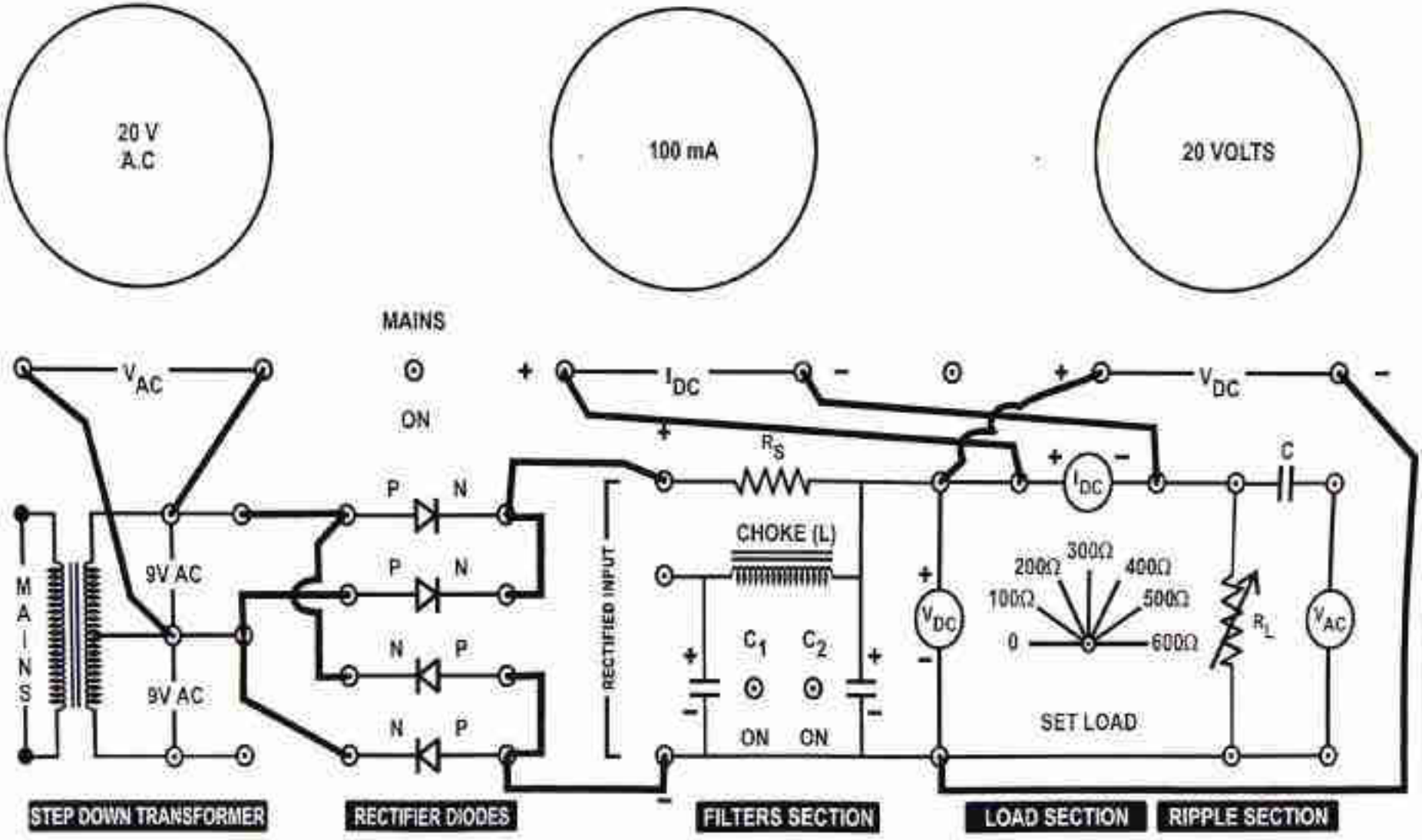
STUDY OF HALF WAVE RECTIFIER



STUDY OF FULL WAVE RECTIFIER



STUDY OF BRIDGE WAVE RECTIFIER



INSTRUCTION MANUAL
FOR
STUDY OF POWER SUPPLY USING
ZENER DIODE & TRANSISTOR

Transistorised Series and Shunt Regulator Apparatus has been designed to study the following :

A. Different sections of Regulated Power Supply.
B. Line Regulation.
C. Load Regulation.
D. Output Ripples.

The instrument comprises of the following built in parts:

1. Step down transformer with 10-0-10V AC secondary tapes.

2. Two Diodes (IN 4007) are provided on the front panel to make rectifier section.

3. Filter section consists two electrolytic capcitor of 1000μF/ 35V & one Air core inductance.

4. Regulator section consists of one zener diode with series resistance, Transistors connected in Darlington pair with shunt resistance (10Ω).

5. Load section having different values of load resistance selectable through Band switch provided on the front panel.

6. Voltmeter and current meter are mounted on front panel to measure DC output voltage Output current.

THEORY

A voltage regulator maintains the output voltage constant irrespective of AC mains fluctuations or load variation. The heart of a voltage regulator is a Zener Diode. Since Zener Diode maintains constant voltage irrespective of their current after breakdown, regulation of voltage can be made available.

In an ordinary power supply, the voltage regulation is poor i.e. DC output voltage changes appreciably with load current. Moreover, output voltage also changes due to variations in the

input AC voltage. A regulated power supply consists of an ordinary power supply and voltage regulating device as shown in block diagram. The output of ordinary power supply is fed to the voltage regulator which produces the final output the output voltage (VDC) remains constant whether the load current changes or there are fluctuations in the input AC.

SHUNT VOLTAGE REGULATOR:-

A shunt voltage regulator provides regulations by shunting current away from the load to regulate the output voltage. In shunt regulator, the regulating device is in shunt or parallel with the load. The Zener Diode is a regulating device, which is connected in parallel with the load. The variation in output may occur due to variation in the input or in the load. The regulation for the first condition is line regulation and for the second case is load regulation.

SERIES VOLTAGE REGULATOR:-

A series voltage regulator consists of following main block.

A. **Pass Block**
B. Comparator **Block**
C. **Feed-Back Block**

A) PASS BLOCK:

It is generally designed with a **power** transistor capable of handling higher current for voltage regulation purpose.

B) FEED-BACK BLOCK:

It is generally a simple voltage divider network, consisting of two resistors and the voltage is tapped at the centre of these two. Since it is connected at load side and is in parallel with the load resistance, it is capable of taking part of the output and feeding it to one of the input terminals of the comparator.

C) COMPARATOR BLOCK:

It is a simple comparator capable of comparing the Feed-Back signal from the load with respect to the standard Zener Diode (Reference Voltage).

PROCEDURE

1. Connect the dotted lines as shown in Fig. (1) through patchcords.
2. Switch ON the switches S_1 & S_2. Set the load resistance (RL) to 1kΩ.
3. Switch ON the instrument using ON/ OFF toggle switch provided on the front panel.
4. Note down the observations i.e. DC output voltage & DC current.
5. Switch OFF the toggle switches S_1 & S_2 and observe the corresponding effect on output voltage, current.
6. To check the load regulation, again switch ON toggle switch S_1 & S_2, very the value of load resistance & everytime note down the output voltage and current.
7. To check the Line Regulation, disconnect the load (RL) from output and connect the main lead (Two Pin Mains Cord) to variable AC voltage source. Vary the voltage of AC source from 200V AC to 240V AC and everytime note down the DC output voltage.

STANDERED ACCESSORIES

1. Fourteen Singlepoint & One Interconnectable Patchcords for Interconnections.
2. Instruction Manual.

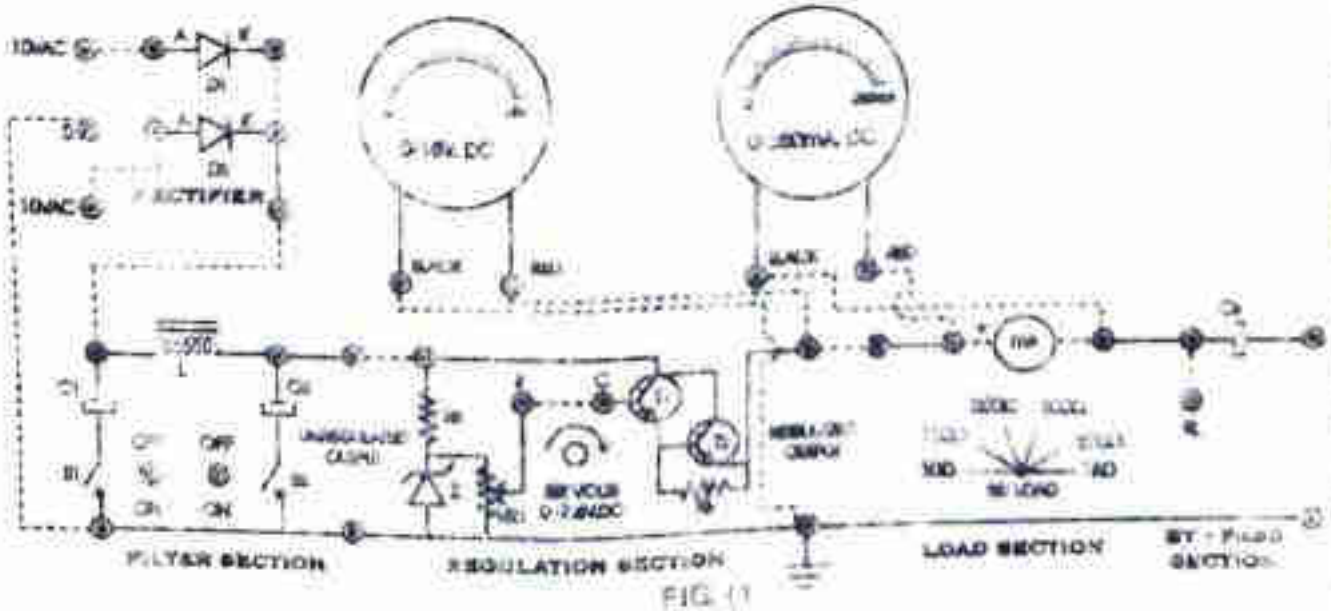


FIG. (1)

Class - **B.Sc. I Year**
Subject - **Chemistry**
Paper - **Practical**
Max. Marks : 50 **Time : 4 Hours**

Physical Chemistry

(A) Any one experiment **6 Marks**

(i) Determination of melting point
(ii) Determination of boiling point
(iii) Weighing and preparation of solution

(B) Any one experiment **6 Marks**

(i) Determination of surface tension/percentage composition of given liquid mixture using surface tension method.
(ii) Determination of viscosity/ percentage composition of given liquid mixture using viscosity method.
(iii) Determination of Strength of HCl with NaOH with help of volumetric titration.

Inorganic Chemistry **8+4 Marks**

(i) Inorganic mixture analysis
Mixture analysis for 2 cation and 2 anions
(ii) Separation of cations by paper chromatography

Inorganic Chemistry **8+4 Marks**

(i) Inorganic mixture analysis
Mixture analysis for 2 cation and 2 anions

(ii) Separation of cations by paper chromatography

Organic Chemistry (Any two) **12 Marks**

(i) Crystallization

(ii) Sublimation

(iii) Detection of elements

(iv) Identification of functional group.

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Viva – voce **6 Marks**

Record **8 Marks**

Dr. S. K Udaipura

Class - **B.Sc. II Year**
Subject - **Chemistry**
Paper - **Practical**
Max. Marks : 50 **Time : 6Hours**

Inorganic Chemistry **12 Marks**

(i) Analysis of inorganic mixture containing five radicals with at least on interfering radical
(ii) Determination of acetic acid in commercial vinegar using NaOH
(iii) Redox titrations
(iv) Estimation of hardness of water by EDTA.

Physical Chemistry **12 Marks**

(i) Determination of transition temperature of given substance by thermometric method.

(ii) To determine the enthalpy of neutralization of strong acid, strong base.

(iii) Verification of Beer's- Lambert law.
(iv) To study the phase diagram of two component system by cooling curve method.
(v) To determine the strength of HCl with NaOH using potentiometer.

Organic Chemistry (Any two) **12 Marks**

(i) Identification of an organic compound through the functional group analysis, determination of melting point and preparation of suitable derivatives.

(ii) Use of Paper chromatography / Thin layer chromatography: determination of R_f values, separation and identification of organic compounds.

a. Separation of green leaf pigments (spinach leave may be used)

b. Separation of dyes

Viva – voce **6 Marks**

Record **8 Marks**

Dr O.P. Gupta

Dr. Alok Saha

Dr Sadhna Goyal

Dr A. K. Chaubey

DR. K. GOPESWAR

DR C.M. AGRAWAL

Dr S. Kudaipure

Prof VK Agrawal

Class - **B.Sc. III Year**
Subject - **Chemistry**
Paper - **Practical**
Max. Marks : 50 **Time : 6 Hours**

Inorganic Chemistry **12 Marks**

(i) Gravimetric analysis :
Barium as Barium sulphate, Copper as cuprous-thiocynate.

(ii) Complex compound preparation
a. Potassium chlorochromate (IV)
b. Tetramine copper (II) sulphate monohydrate
c. Hexamminenickel (II) chloride

(iii) Effluent water analysis, Identification of cations and anions in different samples.

(iv) Water analysis, To determine dissolved oxygen in water samples in ppm.

Physical Chemistry **12 Marks**

(i) To determine the velocity constant (specific reaction rate) of hydrolysis of methyl acetate / ethyl acetate catalyzed by hydrogen ions at room temperature

(ii) Determination of partition coefficient of iodine between carbon tetra chloride and water.

(iii) Job's method

(iv) pH-metric titrations, conductometric titrations

Organic Chemistry **12 Marks**

1. Binary mixture analysis containing two solids:

   Separation, identification and preparation of derivatives

2. Preparation

(i) Acetylation, (ii) Benzolylation (iii) *Meta* dinitro benzene
(iv) Picric acid, P- Nitro Acetanilied , Dibenzylacetone

Viva – voce **6Marks**

Record **8 Marks**

PRACTICAL COURSES
M.Sc. SEMESTER I
LABORATORY COURSES MCH 106, MCH 107 and MCH 108
(Effective M.Sc. Chemistry, and Applied Chemistry: July 2018)

Emphasis should be placed on physical principles, reaction chemistry and the technique involved in experiments. Attention should be placed on stoichiometric calculations and statistical analysis of results. In regular classes, each student should perform all the experiments as selected by the Department from the list in the syllabus. In examination, students should be given different experiments or combination of experiments.

Course MCH 106: Inorganic Chemistry (6 hours; 1 day)		Max. Marks 34
	Viva voce	6
	Two or three Experiments based on the following:	28
(a)	Synthesis	
(b)	Quantitative analysis	
(c)	Qualitative	
(d)	Spectral analysis of known compounds	

(iii) **Course MCH 107: Organic Chemistry** (6 hours; 1 day)		Max. Marks 33
	Viva voce	5
	Two or three Experiments based on the following:	28
(a)	Qualitative analysis	
(b)	Quantitative analysis	
(c)	Qualitative analysis	
(d)	Spectral analysis of known compounds	

(iii) **Course MCH 108: Physical Chemistry** (6 hours; 1 day)		Max. Marks 33
	Viva voce	5
	Two Experiments based on the following:	28
(a)	Adsorption	
(b)	Phase Equilibria	
(c)	Solutions	

Course MCH 106: Inorganic Chemistry

Qualitative and Quantitative Analysis

a. Less common metal ions: Ti, Mo, w, Ti, Zr, Th, V, U (two metal ions in cationic/anionic forms).
b. Insoluble- Oxides, sulphates and halides.
c. Separation and determination of two metal ions Cu-Ni, Ni-Zn, Cu-Fe etc. Involving volumetric and gravimetric methods.

Chromatography

Separation of cations and anions by Paper Chromatography

Preparations

Preparation of selected inorganic compounds and their studies by measurements of decomposition temperature, molar conductance, IR and electronic spectra.

$[Zn(acac)_2(H_2O)]$
$[Ni(acac)_2(H_2O)_2]$
$[Co(Meacac)_2(H_2O)_2]$
$[Cu(Meacac)_2].H_2O$
$[Co(acac)_2(H_2O)_2]$
$[Cu(acac)_2].H_2O)$
$[Ni(NH_3)_6]Cl_2$
$cis\text{-}K[Cr(C_2O_4)_2(H_2O)_2]$

Interpretation of IR and Electronic Spectra of some known compounds

Course MCH 107: Organic Chemistry

Qualitative Analysis

Separation, purification and identification of compounds of binary mixture (one solid and one liquid/solid) using chemical separation and sublimation/distillation, etc. Their analysis by semi-micro chemical tests and spot tets. IR spectra to be used for functional group identification. Preparation of one derivative of each compound.

Emphasis should be placed on physical principles, reaction chemistry and the technique involved in analysis.

Organic Synthesis

Purification of compounds by TLC and column chromatography.

Aromatic electrophilic sustitutions:

- Synthesis of m-dinitrobenzene from nitrobenzene
- Synthesis of 2,4-dinitro-1-chlorobenzene from chlorobenzene
- Synthesis of 4-bromoaniline from acetanilide

Reduction reaction:

- Synthesis of m-nitroaniline from m-dinitrobenzene

Quantitative Analysis

Determination of the percentage or number of hydroxyl groups in an organic compound by acetylation method

Interpretation of IR and Electronic Spectra of some known compounds

Course MCH 206: Physical Chemistry

A list of experiments under different headings is given below. Typical experiments are to be selected from each type.

Adsorption

(i) To study surface tension -concentration relationship for solutions (Gibbs equation).

Phase Equilibria

(ii) To construct the phase diagram for three component system (e.g., chloroform-acetic acid-water).

Chemical Kinetics

(iii) Determination of the effect of (a) Change of temperature (b) Change of concentration of reactants and catalyst and (c) Ionic strength of the media on the velocity constant of hydrolysis of an ester/ionic reactions.

(iv) Determination of the primary salt effect on the kinetics of ionic reactions and testing of the Bronsted relationship (iodide ion is oxidised by persulphate ion)

Solutions

(v) Determination of molecular weight of non-volatile and non-electrolyte/electrolyte by cryoscopic method and to determine the activity coefficient of an electrolyte.

(vi) Enzyme kinetics, inversion of sucrose

M.Sc. SEMESTER II
LABORATORY COURSE MCH 206, MCH 207 and MCH 208
(Effective M.Sc. Chemistry, and Applied Chemistry: January 2019)

Emphasis should be placed on physical principles, reaction chemistry and the technique involved in experiments. Attention should be placed on stoichiometric calculations and statistical analysis of results. In regular classes, each student should perform all the experiments as selected by the Department from the list in the syllabus. In examination, students should be given different experiments or combination of experiments.

Course MCH 206: Inorganic Chemistry (6 hours; 1 day)		Max. Marks 34
	Viva voce	6
	Two or three Experiments based on the following:	28
(a)	Chromatographic separation	
(b)	Synthesis	
(c)	Spectral analysis of known compounds	

(iii) **Course MCH 207: Organic Chemistry** (6 hours; 1 day)		Max. Marks 33
	Viva voce	5
	Two or three Experiments based on the following:	28
(a)	Synthesis	
(b)	Quantitative analysis	
(c)	Spectral analysis of known compounds	

(iii) **Course MCH 208: Physical Chemistry** (6 hours; 1 day)		Max. Marks 33
	Viva voce	5
	Two Experiments based on the following:	28
(a)	Electrochemistry	
(b)	Potentiometry	
(c)	Polarimetry	

Course MCH 206: Inorganic Chemistry

Chromatography Separation of cations and anions by Column Chromatography ; Ion exchange.

Preparations

Preparation of selected inorganic compounds and their studies by measurements of decomposition temperature, molar conductance, I.R., electronic spectra, and magnetic susceptibility measurements.

1. $[Co(NH_3)_6]\ [Co(NO_2)_6]$
2. cis-$[Co(trien)\ (NO_2)_2]Cl.H_2O$
3. $Hg[Co(SCN)_4]$
4. $[Co(Py)_2Cl_2]$
5. $[Ni(NH_3)_6]Cl_2$
6. $[Ni(dmg)_2]$
7. $[Cu(NH_3)_4]SO_4\ H_2O$

Interpretation of TG and NMR spectra of some known compounds

Course MCH 207: Organic Chemistry

Organic Synthesis

Oxidation reaction:

Synthesis of 9,10-anthraquinone by oxidation of anthracene by chromium trioxide

Synthesis of 4-nitrobenzaldehyde by oxidation of 4-nitrotoluene by chromium trioxide

Cannizzaro reaction

Synthesis of benzyl alcohol from benzaldehyde

Claisen-Schmidt reaction:

Synthesis of dibenzylideneacetone (1,5-diphenylpenta-1,4-dien-3-one) from acetone and benzaldehyde

Sandmeyer reaction:

Course MCH 208: Physical Chemistry

A list of experiments under different headings is given below. Typical experiments are to be selected from eacl

Electrochemistry

A. Conductometry

(i) Determination of the velocity constant, order of the reaction and energy of activation for saponific ethyl acetate by sodium hydroxide conductometrically.

(ii) Determination of solubility and solubility product of sparingly soluble salts (e.g., $PbSO_4$, conductometrically.

(iii) Determination of the strength of strong and weak acids in a given mixtureconductometrically.

(iv) Determination of the activity coefficient of zinc ions in the solution of 0.002 M zinc sulphate usin Huckel's limiting law.

B. Potentiometry/pH merry

(i) Determination of strengths of halides in a mixture potentiometrically.

(ii) Determination of the valency of mercurous ions potentiometrically.

(iii) Determination of the strength of strong and weak acids in a given mixture usi potentiometer/pH meter

(iv) Determination of activity and activity coefficient of electrolytes.

Polarimetry

(i) Determination of rate constant for hydrolysis/inversion of sugar using a polarimeter.

(ii) Enzyme kinetics -inversion of sucrose

PRACTICAL COURSES
M.Sc. SEMESTER III
LABORATORY COURSES MCH 307, MCH 308, MCH 309
(Effective M.Sc. Chemistry, and Applied Chemistry: July 2019)

Emphasis should be placed on physical principles, reaction chemistry and the technique involved in experiments. Attention should be placed on stoichiometric calculations and statistical analysis of results. In regular classes, each student should perform all the experiments as selected by the Department from the list in the syllabus. In examination, students should be given different experiments or combination of experiments.

Course MCH 307: Inorganic Chemistry (6 hours; 1 day)		Max. Marks 34
	Viva voce	6
	Two or three Experiments based on the following:	28
(a)	Synthesis	
(b)	Quantitative analysis	
(c)	Qualitative	
(d)	Spectral analysis of known compounds	

(iii) **Course MCH 308: Organic Chemistry** (6 hours; 1 day)		Max. Marks 33
	Viva voce	5
	Two or three Experiments based on the following:	28
(a)	Synthesis	
(b)	Quantitative analysis	
(c)	Qualitative analysis	
(d)	Spectral analysis of known compounds	

(iii) **Course MCH 309: Physical Chemistry** (6 hours; 1 day)		Max. Marks 33
	Viva voce	5
	Two Experiments based on the following:	28
(a)	Electrochemistry	
(b)	Potentiometry	
(c)	Polarimetry	

Course MCH 307: Inorganic Chemistry

Synthesis

Synthesis of selected inorganic compounds and their studies by measurements of decomposition temperatures and molar conductance, magnetic and IR electronic spectra.

1. Aquabis(acetylacetonato)nitrosylchromium(I), $[Cr(NO)(acac)_2(H_2O)]$
2. cis-Bis(glycinato)copper(II) and trans-Bis(glycinato)copper(II)
3. Preparation of Zn, Cd and Hg thiocyanates from their respective chlorides
4. Bis(benzoylacetonato)copper(II)
5. Bis (acetylacetonato)oxovanadium(IV), $[VO(acac)_2]$
6. $[MoO_2(acac)_2]$
7. Hexaammminenickel(II)tetrafluoroborate, $[Ni(NH_3)_6](BF_4)_2$ and determination of nickel content gravimetrically.
8. Potassium tris(oxalato)ferrate, $K_3[Fe(C_2O_4)_3]$ and determination of oxalate using permanganate.
9. Preparation of N,N-bis(salicylaldehyde)ethylenediamine [salenH_2], Co(salen)

Qualitative test of suitable anion and determination of metal content gravimetrically in the above compounds.

Interpretation of ESR and mass spectra of some known coordination compounds.

Course MCH 308: Organic Chemistry

Qualitative Analysis

Separation, purification and systematic identification of the components of a mixture of three organic compounds (solids and liquids). Preparation of one derivative of each compound. Use of TLC for ascertainment of purity of compounds.

Multi-step Synthesis

This exercise should illustrate the use of organic reactions/ diverse conditions and principles for organic synthesis. Purification of compounds by chromatographic techniques.

Photochemical reaction

Benzophenone → benzpinacol → benzpinacolone

Rearrangement

Benzaldehyde → benzoin → benzil → benzilic acid

Phthalic anhydride → phthalimide → anthranilic acid → 2-chlorobenzoic acid

Benzophenone → benzophenone oxime → benzanilide

Spectral Analysis

Interpretation of pre-recorded UV-Vis, IR, NMR, Mass, Raman spectrum and characterisation of one organic compound.

Course MCH 309: Organic Chemistry

Potentiometry

1. Acid-base titration
2. Titration of mixture of acids
3. Redox titrations
4. Determination of redox potential of Fe(III)/Fe(II) system

Conductivity

5. Verification of Onsager equation for a strong electrolyte
6. Determination of dissociation constant of a weak acid
7. Acid-base titrations
8. Replacement titration
9. Solubility of sparingly a soluble salt
10. Basicity of an organic acid

Spectrophotometry

11. Verification of Beer-Lambert law
12. Determination of pKa of an acid-base indicator such as Methyl Red

M.Sc. SEMESTER IV
LABORATORY COURSE MCH 407
(Effective M.Sc. Chemistry, and Applied Chemistry: January 2020)

Emphasis should be placed on physical principles, reaction chemistry and the technique involved in experiments. Attention should be placed on stoichiometric calculations and statistical analysis of results. In regular classes, each student should perform all the experiments as selected by the Department from the list in the syllabus. In examination, students should be given different experiments or combination of experiments.

Course MCH 407: Inorganic Chemistry (6 hours; 1 day)		Max. Marks 34
	Viva voce	6
	Two or three Experiments based on the following:	28
(a)	Spectrophotometric	
(b)	Cyclic voltammetric	
(c)	Spectral analysis	

(iii) **Course MCH 408: Organic Chemistry** (6 hours; 1 day)		Max. Marks 33
	Viva voce	5
	Two or three Experiments based on the following:	28
(a)	Synthesis	
(b)	Quantitative	
(c)	Spectral analysis	

(iii) **Course MCH 409: Physical Chemistry** (6 hours; 1 day)		Max. Marks 33
	Viva voce	5
	Two Experiments based on the following:	28
(a)	Chemical Kinetics	
(b)	Spectrophotometric	
(c)	Electronics	

Course MCH 407: Inorganic Chemistry

Sectrophotometric Determination

1. Determination of molecular composition of ferric salicilate /iron-phenanthroline/iron-dipyridyl complex by Job's method of continuous variation
2. Stability constant of $FeSCN^{2+}$ complex
3. Determination of the pH of a given solution by spectrophotometry using methyl red indicator

Model Experiments on Cyclic Voltammetry

Acquaintance with cyclic voltammetry experiments involving use of $K_3[Fe(CN)_6]$

1. Cyclic voltammograms of $K_3[Fe(CN)_6]$ at different scan rates
2. Cyclic voltammograms of $K_3[Fe(CN)_6]$ at different concentrations

Interpretation of ESR, NMR and Thermogravimetric pre-recorded results of known compounds

Pre-recorded spectrum/data shall be provided for their interpretation leading to structure determination of metal ion complexes with organic ligands.

Course MCH 408: Organic Chemistry

Multi-step Synthesis

Heterocyclic compounds

Phenylhydrazine → acetophenone phenylhydrazone → 2-phenylindole
Quinoline from Skraup synthesis
Ethyl acetoacetate → 3-methyl-1-phenylpyrazol-5-one → antipyrin (phenazone)
Benzaldehyde → benzoin → benzil → 5,5-diphenylhydantoin
Benzaldehyde → benzoin → benzil → 2,3-diphenylquinoxaline

Mixed principles

Aniline → 2,4,6-tribromoaniline → 1,3,5-tribromobenzene

Quantitative Analysis

Determination of methoxy group
Determination of halogen by fusion or oxygen flask combustion method
Diol groups (ring size in carbohydrates) by periodate oxidation
Spectrophotometric (colorimetric) determination of glucose by Fehling reaction
Determination of acetone by iodoform reaction
Determination of vitamin C in drug formulations and in fruits

Spectral Analysis

Interpretation of pre-recorded UV-Vis, IR, NMR, Mass, Raman spectrum and characterisation of one organic compound.

Course MCH 409: Physical Chemistry

Spectrophotometry

1. Determination of stability constant of Fe(III)-salicyclic acid complex

Chemical Kinetics

2. Determination of order of $S_2O_8^{2-}$—I^- reaction
3. Determination of energy of activation of $S_2O_8^{2-}$—I^- reaction
4. Studies on the effect of variation of ionic strength on the rate of $S_2O_8^{2-}$—I^- reaction
5. Ester hydrolysis catalysed by a base
6. Kinetics of acid-catalysed reaction between acetone-iodine

Electronics

7. Voltage measurement with CRO
8. Measurement of e.m.f. with thermocouple
9. To plot the characteristic curve of a diode

In Accordance with the New Changed Unified Syllabus Prescribed by the Department of Higher Education, Government of Madhya Pradesh

Shivalal

PRACTICAL ZOOLOGY

B.Sc. : First Year

PRACTICAL EXAMINATION SCHEME

[Max. Marks : 50

Practical Work

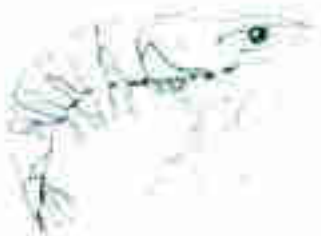
The practical work will be based on theory syllabus and the candidates will be required to show the knowledge of the following

1. Study of museum specimens and slides relevant to invertebrates studied in theory.
2. Mounting :
   (a) Prawn statocyst
   (b) *Pila*— Ctenidium/radula/osphradium
   (c) Earthworm—Septal nephridia
   (d) Mouthparts of insects.
3. Dissection/Demonstration :
   (a) Earthworm—Digestive System, Nervous System, Reproductive System
   (b) Prawn—Nervous System, Appendages
   (c) *Pila*—Nervous System.
4. Exercise related to frog and chick embryology.
5. Exercise related to cell biology :
   (a) Squash preparation of onion root tip
   (b) Stages of mitotic and meiotic cell division
   (c) Special types of chromosomes.

Distribution of Marks

S. No.	Particulars	Marks Allotted
1.	Dissection	08
2.	Spotting	16
3.	Mounting	04
4.	Exercise related to Embryology	04
5.	Exercise related to Cell Biology	04
6.	Viva-Voce	04
7.	Practical Record	05
8.	Collection	05
	Total Marks	50

CONTENTS



In Accordance with the Latest Syllabus Prescribed by the Department of Higher Education, Government of Madhya Pradesh

Shivalal

PRACTICAL ZOOLOGY

B.Sc. : Second Year

PRACTICAL EXAMINATION SCHEM

[Max. Marks : 50

Distribution of Marks

S. No.	Particulars	Marks Allotted
1.	Dissection	06
2.	Spot related to evolution	04
3.	Spotting (4 Specimens, 2 Bones, 2 Slides)	16
4.	Biochemical test / Enzyme activity	05
5.	Haematological Experiment	05
6.	Viva-voce	04
7.	Record	05
8.	Collection	05
	Total Marks	**50**

Practical Work

1. Dissections of commercially available species of locally available Fishes (Computer simulation technique).
2. Study of museum specimens (Vertebrates).
3. Study of specimens of evolutionary importance (*Limulus, Latimeria,* Dianosaurs, *Archeopteryx, Peripatus,* etc.).
4. Osteology : Limb bones and girdle bones of Frog, *Varanus*, Pigeon and Rabbit.
5. Detection of Protein, Carbohydrate and Lipid / Study of activity of Human salivary enzyme.
6. Haematological Experiment – RBC and WBC counting / Blood grouping / Estimation of Haemoglobin.
7. Histological study of various endocrine glands – T. S. of Thyroid, T. S. of Pituitary gland, T. S. of Adrenal gland, T. S. of Testis, T. S. of Ovary.
8. Histological study of Digestive and Visceral organs – T. S. of Stomach, T. S. of Intestine, T. S. of Pancreas, T. S. of Liver, T. S. of Lungs and L. S. of Kidney.

CONTENTS

शिवलाल

प्रायोगिक

जन्तु विज्ञान

बी. एस-सी. : तृतीय वर्ष

प्रायोगिक परीक्षा योजना

[अधिकतम अंक : 50

Practical Work

The Practical's work will be as per theory syllabus and the candidates will be required to the show the knowledge of the following :

1. Study of freshwater, marine and terrestrial fauna, Major carps, Common stored grain pest and vegetable pest.
2. Water analysis – Dissolve Oxygen, pH, Hardness, Turbidity.
3. Study of Ecosystems and maintenance of Aquarium.
4. Study of instrument related to Genetics – Centrifuge, PCR, Gel electrophoresis, DNA finger printing.
5. Wild Life – Endangered species.
6. Life cycle of Silkworm, Honey Bee, Lac insect.

Distribution of Marks

S. No.	Particulars	Marks Allotted
1.	Spotting	12
2.	Analysis of Water	04
3.	Exercise based on Wild life	05
4.	Ecosystem	04
5.	Study of Instruments	05
6.	Problems on Genetics	05
7.	Life Cycle	05
8.	Viva-voce	05
9.	Practical Record and Collection	05
	Total Marks	**50**

विषय-सूची

Name - Sweta Nandeo

Class - M.Sc. I Sem

Subject - Zoology practical (III)

Index

① Fishes

① Labeo Rohita
② Mystus seenghala
③ Rohu calva
④ Hetrophemuster fossilis
⑤ Clarias batrachus
⑥ Xenentodon cancila (Belone)
⑦ Bristis
⑧ Hippocampus Punctatus
⑨ Channa pudatus
⑩ Echeneis

B. MAMMALS

① Pteropus
② Rattus Rattus
③ Monkey
④ elephant
⑤ Rhinoceros
⑥ Tiger
⑦ Equatus caballus (Horse)
⑧ Camelus bramedarius (camel)
⑨ kangaroo
⑩ Rabit
⑪ Hystrix
⑫ Asciatic lion

② Experiments

① Chironomus larva के Polytene Chromosome की slide बनाना।

② Find the standard deviation of the given exam

③ Aceto-orcein technique से onion के root tip की squash preparation की slide बनाना और उसका अवलोकन करना।

GOVT. RAJA BHOJ COLLAGE KATANGI

Department Of Zoology

Name	:	Arvind Sahare
Fathers Name	:	Babulal Sahare
Year/Sem.	:	1 Sem.
Class	:	Zoology
Roll no.	:	
Enrollment no.	:	
Subject	:	1st
Acadmic Session	:	2020-21

INDEX

2. Fasciola hepatica.

Phylum - Arthropathera

1. Limulus.
2. Scolopendra or Eendipedes.
3. Prawn - palamon
4. Spider or Arcenea.
5. Grasshopper
6. Stick - Insect.

Phylum - Molousca.

1. Aplysia
2. Chiton
3. Loligo
4. Octopus.
5. Sepia.
6. Unio.

Phylum - Echinodermata

1. Ophiothrix
2. Starfish.
3. Antedon
4. Cucumaria.

Date Page

Name - Aayush Rangare

Class - M.Sc II sem Zoology

Subject - 1st Practical

Roll No. - 1194110034

INDEX

S/N	Experiment Name	Page No.	Date	
1.	Chromatography to speate the plant pingment	1-2	08/05/20	
2.	Hydrogen Alkohol ether Compand microscope.	2-3	08/09/20	
3.	पक्षी के blood की ~~हरिथ्रोसाइट~~ R.B.Cs (Red blood Corpscels) की गणना करना।	3-5	09/09/20	
4.	PH Mitter ~~का~~ Solution ~~का~~ PH ज्ञात कीजिए।	5-7	09/09/20	
5.	T.S. of pancreas of Rabbit	7-8	10/09/20	
	T.S. of liver of Rabbit Rabbit T.S. of parathpoid Island	8-12	10/09/20	

Name - [redacted] Esha Patle

Class - M.Sc II sem Zoology

Subject - Zoology practical II

Grant Rajaram Bhoj college Kankavli

Roll No - [redacted] 1194100410

* Index *

Name of the experiment :-

1. Problem of Based on Genetics.
2. Centrifuge
3. Microtomy
4. Spectrophotometer
5. Life table and Survival Curve
6. DNA Recombinent technology.
7. Numerical based on Hardy Weinberg law.

Name - Sujata Shende

Father Name - Devchand Shende

Class - M. Sc. III Sem [Zoology]

Subject - Practical I st

Roll No. - 119410072

Mo. No. - 9340164142

College - Govt. Raja Bhoj College Kalamgi

Index

Phylum ⇒ Chordata

Group ⇒ Protochordata

1. Balanoglossus
2. Herdmania
3. Pyrosoma
4. Doliolum
5. Salpa
6. Amphioxus

Pisces

1. Scoliodon
2. Chiloscyllium
3. Stegostoma
4. Torpedo
5. Protopterus
6. Labeo

Class ⇒ Cyclostomata

1. Petromyzon
2. Myxine
3. Bdellostoma
4. Ammocoete

Amphibia

1. Axolotl larva
2. Salamandra
3. Bufo
4. Hyla
5. Rhacophorus
6. Rana

Reptilia

Reptilia

1. Trionyx
2. Draco
3. Varanus
4. Naja

~~Aves~~ Aves

1. Columba livia
2. Bubo
3. Corvus [Crow]
4. Eudynamys [Koel]

Mammals

1. Macropus
2. Pteropus
3. Loris
4. Manis
5. Rat
6. Hystrix
7. Funambulus
8. Rattus

Slides

1. Placoid scale of Scoliodon.
2. V.S. of skin of frog.
3. V.S. of skin of Birds.
4. V.S. of skin of Mammals.

Name- Anjali Rahangdale

Class. M.Sc. II sem Zoology

Subject- Practical II

College name- Raja Bhoj Goverment college Katangi

Roll no- 11941 0033

Enrollment- R19203380601935

Index

1. Nostoc
2. Anabaena
3. Chamydomonas
4. Lamna
5. Cyclops
6. Typha
7. Salvinia
8. Pistia
9. Daphnia
10. Euglena
11. Valvox
12. Palemogelan
13. Unio malliginalis
14. Rana
15. Utricularia
16. Labeo
17. Pulgeman Malaysanil.

Miss

DIKSHA PATLE

Class. M.Sc 4th Sem Zoology

Practical IV paper

Govt. Arts Collage Kadeinji.

Paper I

INDEX

1] To Demonstrate the phenomenon of phatoxis in Earthworm.
2] To Dermashrate the phenomenon of gentoess in a annelid worm.
3] To demonstrate the rate of matinar phasis in a Canjested.
4] To demostrate the phenomenon of learing in an insect.
5] To demostrate the phenomenen of learing in on insect.
6] To dirmatate the phenomenon of condiones rafler fish.

Slides

1] Chick Embryo - 18 hours of incubation.
2] Chick Embryo - 24 hours.
3] Chick Embryo - 28 hours.
4] Chich Embryo - 72 hours.
5] V.S. of Early gastrula.
6] V.S. of Complete gastrula
7] T.S. of tadpole through eye region.
8] Tadpole trowo whale mouth.

Name - minakshee mahule

class - M.Sc 4th sem Zoology

Subject - practical II

Roll no - 11941005/

En no - R1920338060194 7

Index

[A] Musium Speciman of Fish

(1) Scoliodon
(2) Stegostoma
(3) Sphyrna Zygaena
(4) Rhinobatus
(5) Torpedo
(6) Pristis
(7) Raja
(8) Torpedo
(9) Chimaera
(10) Hilsa
(11) Notopterus
(12) Labeo
(13) Catla
(14) Cirrhina
(15) Heteropneustes
(16) Clarias
(17) Clarius
(18) Barbus
(19) Anius
(20) Lilallage

[B] Slide of Fishes

(A) V.S of Skin of shank
(B) T.S of scoliodon through the stomach and liver
(C) Cycloid Scale
(D) Ctenoid Scale
(E) T.S. of Gills
(F) T.S. of ovary
(G) T.S of Intestine.

Shivalal

PRACTICAL BOTANY

B.Sc. : First Year

PRACTICAL EXAMINATION SCHEME

Time : 3 Hours] [Max. Marks: 50

Distribution of Marks

1.	Algae/Fungi	05
2.	Bryophyta/Pteridophyta	05
3.	Gymnosperms	10
4.	Anatomy and Morphology	10
5.	Spotting (01–05)	10
6.	Viva-Voce	05
7.	Sessionals	05
	Total Marks	**50**

CONTENTS

Pteridophyta

Gymnosperms

Anatomy of Roots, Stems and Leaves of Angiospermic Plants

पाठ्यक्रम

प्रायोगिक वनस्पति विज्ञान (म. प्र.)

बी.एस-सी. द्वितीय वर्ष

Marks : 50

EXPERIMENTS

1. An Introduction to Laboratory
2. Study of Different Types of Tissues

Tissue, Types of cells, Vascular tissue, Position of the components of the vascular bundles, Types of vascular bundles.

3. Angiosperms : Study of Internal Structures of Root, Stem and Leaf
   1. Preparation and study of double stained temporary slide of the T. S. of young root of Sunflower.
   2. Preparation and study of double stained temporary slide of the T. S. of *Asparagus* root.
   3. Preparation and study of double stained temporary slide of the T. S. of stem of Sunflower.
   4. Preparation and study of double stained temporary slide of the T. S. of *Cucurbita* stem.
   5. Preparation and study of double stained temporary slide of the T. S. of Maize stem.
   6. Preparation and study of double stained temporary slide of the T. S. of Wheat stem.
   7. Preparation and study of double stained temporary slide of the T. S. of *Asparagus* stem.
   8. Preparation and study of double stained temporary slide of the V. S. of *Nerium* leaf.
   9. Preparation and study of double stained temporary slide of the V. S. of Maize leaf.
   10. Preparation and study of temporary slide showing anomalous growth in *Nyctanthes* stem.
   11. Preparation and study of temporary slide showing anomalous growth in *Boerhavia* stem.
   12. Preparation and study of temporary slide showing anomalous growth in *Bignonia* stem.
   13. Preparation and study of temporary slide showing anomalous growth in *Salvadora* stem.
   14. Preparation and study of temporary slide showing anomalous growth in *Achyranthes* stem.
   15. Preparation and study of temporary slide showing anomalous growth in *Leptadenia* stem.
   16. Preparation and study of temporary slide showing anomalous growth in *Dracaena* stem.
4. Plant Embryology
   1. Study of young anther.
   2. Study of internal structure of a matrue anther.
   3. Study of different types of anther.
   4. Study of the structure of a typical ovule.
   5. Study of the structure of different types of angiospermic ovule.
   6. Study of the structure of a mature embryo sac.
   7. Study of structure of differeen types of placentation.
5. Ecology, Phytogeography and National Park
   1. Study of an aquatic (Pond) ecosystem.
   2. Study of a grassland ecosystem in the college campus.
   3. Determination of minimum size of quadrat by sp. area curve method.
   4. Determination of frequency of plant sp. in the plant community by quadrat method.
   5. Determination of density of different plant sp. in the plant community by quadrat method.
   6. Determination of abundance of plant sp. in the plant community by quadrat method.
   7. Determination of biomass of plant community.
   8. To study of the composition of field soil.
   9. Measurement of soil temperature.
   10. To test the presence of nitrate in soil.
   11. To test the presence of chloride in soil.
   12. To test presence of sulphate in soil.
   13. To test the presence of phosphate in soil.
   14. Measurement of pH of the soil by pH paper.
   15. To study phytogeographical region of India.
   16. To study by National parks of India.
   17. To study by National parks of M.P.
6. Spotting
7. Viva-Voce

SCHEME OF PRACTICAL EXAMINATION

S.No.	Particular	Marks
1.	Section cutting-Root / Stem / Leaf	10
2.	Embryology-Anther / Ovule / Placentation	05
3.	Excercise based on Ecology	10
4.	Exercise based on Phytogeography / National parks	05
5.	Spotting (01-05)	10
6.	Viva-Voce	05
7.	Sessional	05
	Total	50

In Accordance with the Latest Syllabus Prescribed by the Department of Higher Education, Government of Madhya Pradesh

Shivalal

PRACTICAL BOTANY

B.Sc. : Third Year

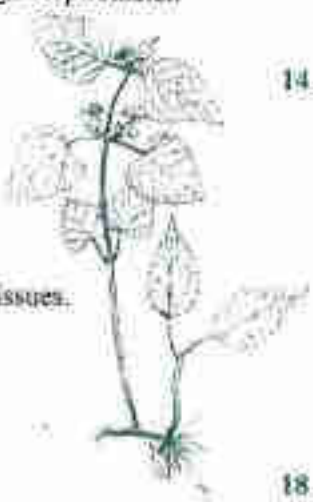
PRACTICAL EXAMINATION SCHEME

[Max. Marks : 50

Distribution of Marks

S. No.	Particulars	Marks Allotted
1.	Exercise based on Physiology	10
2.	Biochemical Test	05
3.	Exercise based on Cytology	10
4.	Exercise based on Genetic Problems	05
5.	Spotting (01 – 05)	10
6.	Viva-voce	05
7.	Sessionals	05
	Total	50

CONTENTS



Department of Higher Education, Govt. of M.P.

Syllabus for Under Graduate Classes

As recommended by Central Board of Studies and approved by the Governor of M.P.

उच्च शिक्षा विभाग, म.प्र. शासन

स्नातक कक्षाओं के लिये पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म.प्र. के राजपाल द्वारा अनुमोदित

प्रथम प्रश्न-पत्र

Session / सत्र	2017-18
Class / कक्षा	B.A., B.Sc. I^st^ Year / बी.ए., बी.एस-सी. प्रथम वर्ष
Subject / विषय	Geography / भूगोल
Title of Subject Group / विषय समूह का शीर्षक	Physical Geography (Lithosphere) भौतिक भूगोल (स्थल मण्डल)
Max. Marks / अधिकतम अंक	40

Particulars / विवरण

इकाई 1. भूगोल का परिचय : परिभाषा, प्रकृति, विषय क्षेत्र, भौतिक भूगोल का अन्य विज्ञानों से संबंध। सौरमण्डल, पृथ्वी एवं उसके ग्रहीय संबंध। पृथ्वी की उत्पत्ति, पृथ्वी की आयु। भू-वैज्ञानिक समय-मापनी, पृथ्वी की उत्पत्ति, संबंधी परिकल्पनाएँ : लाप्लासिका, ज्वारीय, ग्रहाणु, ओटोश्मिड एवं नवतारा परिकल्पना।

इकाई 2. भू-गर्भ की संरचना, वेगनर का महाद्वीपीय विस्थापन सिद्धांत, प्लेट-विवर्तनिकी। भूसंचलन-वलन तथा भ्रंशन।

इकाई 3. समस्थितिकी सिद्धान्त, भूकम्प तथा ज्वालामुखी। पर्वतन- उत्पत्ति, प्रकार तथा संरचना। अपक्षय।

इकाई 4. भूआकृतिक प्रक्रम तथा प्रक्रिया, वृहद क्षरण। स्थलरूपों का उद्भव, अपरदन चक्र की संकल्पना : डेविस तथा पेंक के विचार।

इकाई 5. नदी, वायु, हिमानी, शुष्क प्रदेश तथा समुद्र तटीय भू-आकृतियाँ। मानवीय क्रियाकलापों पर भूआकृतियों का अनुप्रयोग।

द्वितीय प्रश्न-पत्र

Session / सत्र	2017-18
Class / कक्षा	B.A., B.Sc. I^st^ Year / बी.ए., बी.एस-सी. प्रथम वर्ष
Subject / विषय	Geography / भूगोल
Title of Subject Group / विषय समूह का शीर्षक	Introduction to Geography & Human Geography भूगोल का परिचय एवं मानव भूगोल
Max. Marks / अधिकतम अंक	40

Particulars / विवरण

इकाई 1. मानव भूगोल की परिभाषा, प्रकृति, उद्देश्य और विषय क्षेत्र। मानव भूगोल की शाखाएँ। मानव भूगोल का विकास। मानव भूगोल का अन्य सामाजिक विज्ञानों से अंतर्संबन्ध।

इकाई 2. मानव और पर्यावरण सबंध– निश्चयवाद, संभववाद, नवनिश्चयवाद। भूगोल में द्वैतवाद, समवट्ट बनाम प्रादेशिक भूगोल, भौतिक भूगोल बनाम मानव भूगोल, सैद्धान्तिक बनाम व्यावहारिक भूगोल।

इकाई 3. मानव का पर्यावरण से अनुकूलन – 1. शीत प्रदेश– एस्किमो, 2. उष्ण प्रदेश– बुशमैन 3. पठारी प्रदेश – मसाई एवं गोण्ड, 4. मैदानी प्रदेश – मंचाल।

इकाई 4. जनसंख्या विश्व में जनसंख्या वृद्धि, घनत्व एवं वितरण। जनसंख्या के स्थानिक वितरण को प्रभावित करने वाले भौतिक एवं सामाजिक कारक। जनसंख्या का प्रवजन एवं आप्रवजन। जनसंख्या विस्फोट एवं अनुकूलतम जनसंख्या की संकल्पना।

इकाई 5. मानव बस्तियाँ ग्रामीण एवं नगरीय। बस्तियों के प्रकार। बस्तियों के प्रतिरूप : रेखीय, आयताकार, अरीय, गौंक-पट्टी प्रतिरूप।

तृतीय प्रश्न-पत्र

Session / सत्र : 2017-18

Class / कक्षा : B.A., B.Sc. I^st^ Year / बी ए , बी एस-सी प्रथम वर्ष

Subject / विषय : Geography / भूगोल

Title of Paper/ प्रश्न-पत्र का शीर्षक : Practical / प्रायोगिक

Max. Marks / अधिकतम अंक : 50

Particulars / विवरण

इकाई 1. मापनी : कथनात्मक, प्रदर्शक भिन्न। रेखीय मापक : साधारण, तुलनात्मक एवं विकर्ण मापनी। मानचित्र का विकर्षन एवं लघुकरण।

इकाई 2. उच्चावच को प्रदर्शित करने की विधियाँ : हैश्यूर, स्तरवर्ण विधि। समोच्च रेखाओं द्वारा विभिन्न ढालों एवं भू-आकारों का प्रदर्शन।

इकाई 3. भौगोलिक आँकड़ों का आरेखीय प्रदर्शन, आरेखों के प्रकार- दण्डारेख, रेखीय आरेख, वृत्तारेख एवं चक्रारेख।

इकाई 4. सर्वेक्षण : सर्वेक्षण के आधारभूत सिद्धान्त एवं प्रकार।

इकाई 5. अंगेज एवं चैला सर्वेक्षण।

उच्च शिक्षा विभाग, म.प्र. शासन

स्नातक कक्षाओं के लिये वार्षिक पद्धति अनुसार पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म.प्र. के राज्यपाल द्वारा अनुमोदित

B.A. IInd year Geography Syllabus

प्रथम प्रश्न-पत्र

Session / सत्र	:	2018-19
Class / कक्षा	:	B.A./B.Sc.II^nd Year/बी.ए./बी.एस.सी. द्वितीय वर्ष
Paper / प्रश्न-पत्र	:	First Paper / प्रथम प्रश्न-पत्र
Subject / विषय	:	Geography / भूगोल
Title of Paper /	:	Physical Geography (Atmosphere and Hydrosphere)
विषय समूह का शीर्षक	:	भौतिक भूगोल (वायुमण्डल एवं जल मण्डल)
Max. Marks / अधिकतम अंक	:	40

Particulars / विवरण

इकाई 1. मौसम एवं जलवायु: जलवायु विज्ञान की परिभाषा एवं महत्व। मौसम एवं जलवायु के तत्व। वायु मण्डल का संघटन, वायु मण्डल की परतें एवं उनकी विशेषतायें। सौर्यातप एवं इसके वितरण को प्रभावित करने वाले कारक । उष्मा संतुलन,तापमान का क्षैतिज एवं उर्ध्वाधर वितरण, तापमान की विलोमता।

इकाई 2. वायुमण्डलीय दाब: वायुदाब पेटियाँ, वायुदाब पेटियों का विस्थापन। वायुमण्डलीय परिसंचरण, ग्रहीय पवनें, मौसमी पवनें, स्थानीय पवनें। वायुमण्डलीय आर्द्रता, निरपेक्ष, सापेक्ष एवं विशिष्ट आर्द्रता। संघनन एवं उसके रूप, वाष्पीकरण, वृष्टि। वर्षा- प्रकार एवं वितरण।

इकाई 3. वायुराशियाँ, वाताग्र: उत्पत्ति एवं वर्गीकरण। उष्ण कटिबंधीय एवं शीतोष्ण कटिबंधीय चक्रवात एवं संबंधित मौसमी दशायें। विश्व की जलवायु का वर्गीकरण-कोपेन एवं थार्नथ्वेट।

इकाई 4. जलमण्डल: उच्चतादर्शी वक्र, प्रशांत महासागर, अंध महासागर एवं हिन्द महासागर का उच्चावच। महासागरीय निक्षेप, प्रवाल भित्तियाँ एवं उनकी उत्पत्ति से संबंधित सिद्धांत।

इकाई 5. समुद्री तापमान, लवणता, समुद्री जल का संचरण: लहरें, धाराये एवं ज्वार भाटा। ज्वार भाटा संबंधित सिद्धांत। महासागर भावी संसाधन के स्रोत के रूप में।

द्वितीय प्रश्न-पत्र

Session / सत्र	:	2018-19
Class / कक्षा	:	B.A./B.Sc.II^nd Year/बी.ए./बी.एस.सी. द्वितीय वर्ष
Paper / प्रश्न-पत्र	:	Second Paper / द्वितीय प्रश्न-पत्र
Subject / विषय	:	Geography / भूगोल
Title of Paper /	:	Economic Geography
विषय समूह का शीर्षक	:	आर्थिक भूगोल
Max. Marks / अधिकतम अंक	:	40

Particulars / विवरण

इकाई-1 आर्थिक भूगोल की परिभाषा, क्षेत्र एवं विषयवस्तु। अर्थव्यवस्था के खण्ड: प्राथमिक द्वितीयक एवं तृतीयक । प्राथमिक उत्पादन का भूगोल कृषि उत्पादन एवं व्यापार-निर्

चावल, गन्ना, चाय, कहवा, कपास, जूट, ऊन, रबर एवं मत्स्य।

इकाई-2 खनन-खनिजों के उत्खनन को प्रभावित करने वाले कारक. लौह अयस्क, मैगनीज, टिन, ताँबा, बाक्साइट का विश्व उत्पादन, संचित भण्डार तथा व्यापार।

इकाई-3 शक्ति संसाधन: कोयला, पेट्रोलियम एवं प्राकृतिक गैस का विश्व वितरण एवं उत्पादन। जल विद्युत एवं आणविक ऊर्जा तथा ऊर्जा के अपरम्परागत स्रोत।

इकाई-4 विनिर्माण उद्योग: स्थानीयकरण को प्रभावित करने वाले कारक। लोहा इस्पात उद्योग का संयुक्त राज्य अमेरिका, रूस, ग्रेट ब्रिटेन, जर्मनी तथा भारत में स्थानीयकरण, वृद्धि एवं वितरण। विश्व में एल्युमीनियम उद्योग का स्थानीयकरण एवं वितरण। सूती वस्त्रोद्योग का संयुक्त राज्य अमेरिका, ग्रेट ब्रिटेन, चीन, जापान तथा भारत में वृद्धि एवं वितरण। विश्व में ऊनी वस्त्रोद्योग का स्थानीयकरण एवं वितरण। विश्व में पेट्रो रसायन उद्योग का वितरण, विश्व में उर्वरक उद्योग का वितरण।

इकाई-5 परिवहन: परिवहन के विभिन्न साधनों का सापेक्षिक महत्व, स्थल, जल एवं वायु परिवहन को प्रभावित करने वाले कारक। विश्व में महासागरीय मार्ग, महत्वपूर्ण नहर एवं रेलमार्ग। वैश्वीकरण के संदर्भ में विश्व अर्थ व्यवस्था में परिवर्तन।

B.A. IInd year Geography practical Syllabus.

तृतीय प्रश्न-पत्र

Session / सत्र	:	2018-19
Class / कक्षा	:	B.A./B.Sc IInd Year/बी ए, बी एस सी द्वितीय वर्ष
Subject / विषय	:	Geography / भूगोल
Title of Paper / प्रश्न पत्र का शीर्षक	:	Practical / प्रायोगिक
Max. Marks / अधिकतम अंक	:	50

Particulars / विवरण

इकाई-1 मौसम मानचित्र: भारत में मौसम मानचित्रों की रचना। मौसम मानचित्रों में प्रयुक्त मौसम प्रतीक। भारतीय मौसम विभाग द्वारा प्रकाशित मौसम मानचित्रों की व्याख्या।

इकाई-2 मौसम संबंधी उपकरणों का उपयोग: अधिकतम न्यूनतम तापमापी, शुष्क एवं आर्द्र बल्ब तापमापी, निद्रव वायुदाबमापी, एवं वर्षामापी। पवन दिक्सूचक, पवन वेगमापी, फोर्टिन का वायुदाबमापी।

इकाई-3 भारतीय मौसम वेधशालाओं का वर्गीकरण एवं मौसम संबंधी आंकड़ों के एकत्रीकरण की विधियाँ।

इकाई-4 जलवायिक आंकड़ों का आरेखीय प्रदर्शन: रेखा आरेख, बहुरैखिक आरेख, क्लाइमोग्राफ एवं हीदरग्राफ।

इकाई-5 प्रिज्मीय कम्पास सर्वेक्षण: खुला एवं बंद मार्गमापन, दिक्मानों के प्रकार, दिक्मानों का संशोधन, बाउडिच विधि द्वारा संवृत चक्रमण त्रुटि समायन।

Syllabus

उच्च शिक्षा विभाग, मध्य प्रदेश शासन

स्नातक कक्षाओं के लिए पाठ्यक्रम

केन्द्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा मध्य प्रदेश के राज्यपाल द्वारा अनुमोदित

सत्र 2017-2018

कक्षा : बी.ए./बी.एस-सी. तृतीय वर्ष

विषय : **भूगोल**

प्रश्न-पत्र का शीर्षक : प्रथम प्रश्न-पत्र : **भारत का भूगोल**

अधिकतम अंक : सैद्धांतिक 42.5

उद्देश्य : इस प्रश्न-पत्र का उद्देश्य विद्यार्थियों को भारतवर्ष एवं मध्य प्रदेश राज्य के भौतिक सांस्कृतिक संसाधनों का समुचित ज्ञान प्रदान करना है और भारतवर्ष की स्थितिजन्य विशेषताओं के साथ क्षेत्रीय भिन्नताओं एवं पर्यावरणीय प्रभाव के सन्दर्भ में वैश्वीकरण की जानकारी से अवगत कराना है।

विवरण

इकाई 1 : स्थितिजन्य विशेषताएँ : भौतिक स्वरूप, संरचना, धरातलीय बनावट, अपवाह-तन्त्र एवं जलवायु।

इकाई 2 : प्राकृतिक संसाधन : जल संसाधन, खनिज संसाधन—ताँबा, लोहा एवं बाक्साइट। वन संसाधन—प्रकार एवं वितरण। शक्ति संसाधन—कोयला, पेट्रोलियम, प्राकृतिक गैस, अपरम्परागत ऊर्जा स्रोत।

इकाई 3 : भारत का सांस्कृतिक भू—दृश्य : जनसंख्या एवं इसकी विशेषताएँ, भारतीय अर्थव्यवस्था—कृषि विशेषता, प्रमुख फसलें, गेंहूँ, चावल, कपास, रबड़ तथा गन्ना। औद्योगिक विकास—लोहा इस्पात एवं सूती वस्त्र उद्योग—अवस्थिति एवं उत्पादन। अन्तर्राष्ट्रीय व्यापार।

इकाई 4 : मध्य प्रदेश : स्थिति, संरचना, भौतिक विभाग, अपवाह, जलवायु, मृदा, प्राकृतिक वनस्पति, कृषि, खनिज, उद्योग एवं व्यापार।

इकाई 5 : मध्य प्रदेश : जनसंख्या संरचना, वितरण, घनत्व, वृद्धि, लिंगानुपात, साक्षरता, ग्रामीण एवं नगरीय प्रवास, जनजातियाँ एवं पर्यटन।

कक्षा : बी.ए./बी.एस-सी. तृतीय वर्ष

विषय : **भूगोल**

प्रश्न-पत्र का शीर्षक : द्वितीय प्रश्न-पत्र : **पर्यावरण एवं संसाधन प्रबन्ध**

अधिकतम अंक : सैद्धांतिक 42.5

उद्देश्य : इस प्रश्न-पत्र के अध्यापन का मूल उद्देश्य विद्यार्थियों को संसाधनों एवं पर्यावरणीय अन्तर्सम्बन्धों की जानकारी एवं उनके सम्पोषणीय विकास से अवगत कराना तथा पर्यावरणीय समस्याओं के निराकरण हेतु संरक्षण एवं प्रबन्धन के उपायों की जानकारी देना।

विवरण

इकाई 1 : पर्यावरण : अर्थ, परिभाषा एवं प्रकृति। पर्यावरण के तत्व। पर्यावरण का वर्गीकरण, प्राकृतिक एवं मानवीय पर्यावरण का अन्तर्सम्बन्ध, पर्यावरण एवं पारिस्थितिकी

इकाई 2 : पर्यावरण अवनयन एवं प्रदूषण। प्राकृतिक एवं मानवकृत प्रकोप, आपदा प्रबन्धन। निर्वनीकरण, कारण एवं प्रभाव।

इकाई 3 : सम्पोषित विकास : अर्थ, आवश्यकता एवं संकल्पनाएँ। पर्यावरण एवं मानव जीवन की गुणवत्ता। पर्यावरण विधि एवं नीतियाँ।

इकाई 4 : समसामयिक पर्यावरणीय मुद्दे : जनसंख्या विस्फोट, जनसंख्या एवं खाद्य सुरक्षा, वैश्विक भू-तापन, हरित गृह प्रभाव, नगरीयकरण, खनन एवं औद्योगीकरण।

इकाई 5 : पर्यावरण संरक्षण एवं प्रबन्धन : अर्थ, परिभाषा, उद्देश्य एवं संकल्पनाएँ, भारत के संसाधन प्रदेश, संसाधन संरक्षण तकनीक—भूमि, जल, वायु, खनिज एवं वन। पर्यावरण के विशेष सन्दर्भ में संसाधन प्रबन्धन एवं योजना।

कक्षा	:	बी.ए./बी.एस-सी. तृतीय वर्ष
विषय	:	भूगोल
प्रश्न-पत्र का शीर्षक	:	प्रायोगिक
अधिकतम अंक	:	50

विवरण

इकाई 1 : सांख्यिकी के आधारभूत सिद्धान्त : आँकड़ों के प्रकार एवं स्रोत, आवृत्ति एवं वर्गान्तराल का निर्धारण। माध्य, माध्यिका, बहुलक एवं मानक विचलन।

इकाई 2 : मानचित्र प्रक्षेप : वर्गीकरण एवं आलेखीय विधि द्वारा विभिन्न प्रक्षेपों की रचना—शंक्वाकार प्रक्षेप—एक प्रधान एवं दो प्रधान आक्षांश, बॉन प्रक्षेप, बहुशंकुक प्रक्षेप। साधारण एवं समक्षेत्र बेलनाकार प्रक्षेप। केन्द्ररेखीय, सान्द्ररेखीय एवं अनन्तरेखीय प्रक्षेप की ध्रुवीय स्थितियाँ।

इकाई 3 : वायु फोटोचित्र और सुदूर संवेदन तकनीक का परिचय। उपग्रहीय छविचित्रों का विश्लेषण। भागोलिक सूचना प्रणाली (जीआईएस) एवं कम्प्यूटर मानचित्रण, भौगोलिक अवस्थिति प्रणाली (जीपीएस)।

इकाई 4 : धरातल पत्रक : प्रकार एवं क्रम व्यवस्था विश्लेषण। भौगोलिक भ्रमण/ग्राम सर्वेक्षण एवं प्रतिवेदन।

इकाई 5 : समपटल सर्वेक्षण : विकिरण, प्रतिच्छेदन और स्थिति निर्धारण।