**Institute of Engineering & Technology**
**I BE (ETC-B & MECH Engg.)**
**Test I - Applied Physics**

Time : 60 Min. Max.Marks : 20

**Note : Attempt any two questions.**

1. Differentiate between the Interference & Diffraction of light waves. 10
2. Explain Newton's Ring experiment with their applications. 10
3. Light of wavelength $6 \times 10^{-5}$ cm falls on a screen at a distance of 100 cm from a narrow slit. Find the width of the slit if the first minima lie 1.0 mm on either side of the central maxima. 10

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**I B.E. (ETC & MECH.)**
**Class Test I (Sept. 2016)**
**Sub: AMR2C1: Applied Mathematics-II**

**Time: 70 min** **Max Marks: 20**

**Note: Attempt any four questions. All questions carry equal marks. Questions must be solve at one place,**

**Q.1** Define linear dependence and independence of vectors. Examine for linear dependence $[1,0,2,1],[3,1,2,1],[4,6,2,-4],[-6,0,-3-4]$ and find the relation between them if it exists. 5

**Q.2** If $A=\begin{bmatrix}3 & -3 & 4\\ 2 & -3 & 4\\ 0 & -1 & 1\end{bmatrix}$ then find two non-singular matrices P and Q such that PAQ=I. If possible then find $A^{-1}$ otherwise give reason. 5

**Q.3** Define consistency and inconsistency of equations. And for what values of $\lambda$ and $\mu$ the given system of equations will have (i) unique solution ; (ii) no solution: $2x+3y+5z=9,\ 7x+3y-2z=8,\ 2x+3y+\lambda z=\mu$. 5

**Q.4** Solve $(e^y+1)cosxdx+e^y sinxdy.=0$ 5

**Q.5** Solve $(2y^2+4x^2y)dx+(4xy+3x^3)dy=0.$ 5

**I B.E (E&TC A&B)**
**Class Test I Sep-2016**
**COR2C5– Computer Programming**

**Time: 70 min** **Max Marks: 20**

**Note: Attempt any four questions. All questions carry equal marks.**

**Q1** What are keywords & Identifier? List the rules for naming a variable in C++? **5**

**Q2** Write a Program to calculate factorial of any number. **5**

**Q3** Write a Program to find out greatest integer no. among three integer number? **5**

**Q4** 7.481 gallons in a cubic foot, write a program that asks the user to enter a number of gallons, and then displays the equivalent in cubic feet. **5**

**Q5** Find the output of Following Code **5**

```
int j=0,i=1;
if (i & i-1)
 {
   j++;
 }
cout<<j;
```

```
int x=20,y=35;
x=y++ + x++;
y= ++y + ++x;
cout<<x<<y;
```

```
int i=5;
++i++;
cout<<i;
```

```
char i=66;
if( i = = B)
{
cout<< i ;
i--;
}
```

```
int i=0;
i++;
if(i=0)
cout<<"IET";
else
cout<<"DAVV"
```

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**I B.E (E&TC/EI/Mech.)**
**Class Test I: Sep.' 16**
**SSR2S2: Humanities**

**Time: 70 min** **Max Marks: 20**

**Note: Attempt any FOUR questions. All questions carry equal marks.**

Q.1 Societies have passed on from one stage to another – Discuss. **5**

Q.2 An individual belongs to temporary and permanent groups all through his life – Discuss. **5**

Q.3 How is Social Contract Theory different from Organismic Theory? **5**

Q.4 How is inequality penetrated into Society based on role and ethnicity? **5**

Q.5 What is the meaning of Social Institution? **5**

M202 (12)

**I B.E. (Elex. & Telecom. – (B)) (Full Time)**

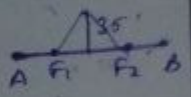
Class Test -I (September 2016)

MER2C3- ENGINEERING DRAWING

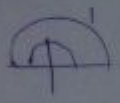
Time: 70 Min  Max. Marks: 20

Note: Attempt Any Four questions out of five. All questions carry equal marks.

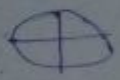
Q.1 Draw any five types of line and describe their application. Assume suitable data if necessary. *05*



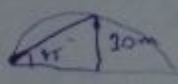

Q.2 Explain principle of diagonal scale. *05*



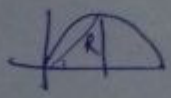
Q.3 Draw upper half of ellipse by arc of circle method and lower half by oblong method. Take Major axis as 100 mm and distance between foci is 70 mm. *05*



Q.4 A stone is thrown at an angle of $45^0$ to horizontal. It achieves a height of 30 meter. Find the maximum distance it travel by drawing the path it traces. Name the curve and method. *05*




Q.5 Draw scale of chord and measure the internal angle of a triangle of side 4 cm, 5cm and 7 cm. *05*



**I year B.E.**

**Class Test II Oct-2016**

**COR2C5– Computer Programming**

**(E&TC A / B)**

**Time: 70 Minutes** **Maximum Marks: 20**

**Note: Attempt any four questions. All questions carry equal marks.**

**Q1** Write a Program to calculate Addition of two 2-D Array (using 3*4 Matrix) **5**

**Q2** Write a Program to Find out Biggest and Smallest integer no in a given Array? **5**

**Q3** Write a Program to Calculate the value of Sum (x, n is given by user) **5**
Sum = $x + x^2/2! + x^4/4! + x^6/6! + \ldots x^n/n!$

**Q4** Write a program that calculates Sum of digit, No. of digit & Reverse a given integer no.? **5**
Find the output of Following Code

**Q5** Write a program for Call by value and call by reference **5**

I B.E. (ETC & MECH.)
Class Test II (Oct. 2016)
Sub: AMR2C1: Applied Mathematics-II

**Time: 70 min** **Max Marks: 20**

**Note: Attempt any four questions. All questions carry equal marks. Questions must be solve at one place.**

Q.1 Solve $\frac{d^2y}{dx^2} - 6\frac{dy}{dx} + 9y = 6e^{3x} + 7e^{-2x} - log2$. 5

Q.2 Solve $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$. 5

Q.3 Solve $r - 3s + 2t = e^{2x-y} + e^{x+y} + \cos(x+y)$. 5

Q.4 Solve $u_{xx} - 2u_x + u_y = 0$ by the method of separation of variables. 5

Q.5 Three urns contains 6 red, 4 black; 4 red, 6 black; 5 red, 5 black balls respectively. One of the urns is selected at random and a ball is drawn from it. If the ball drawn is red find the probability that it is drawn from the first urn. 5

B.E. I Yr. (Electronics and Telecommunication)

Mid Test-II

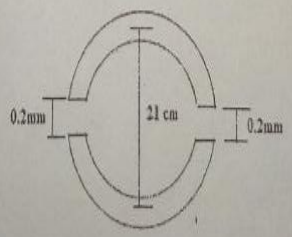
Sub: Electrical Engineering (EIR2C4)

Time: 70 min

Mark: 20

Note: All questions carry equal marks. Attempt any four questions.

1. Define the term half power bandwidth. Derive expression for half power bandwidth with respect to series RLC circuit.
2. Two identical 750 turns coils A and B lie in parallel planes. A current changing at the rate of 1500A/s in A induces an emf of 11.25V in B. Calculate the mutual inductance of the arrangement. If the self inductance of each coil is 15mH, calculate the flux produced in coil A per ampere and the percentage of this flux which links the turns of B.
3. Explain B-H or hysteresis loop in detail.
4. A total current of 10A flows through the parallel combination of three impedance: (2-j5) Ω, (6+j3) Ω, and (3+j4) Ω. Calculate the current flowing through each branch. Find also the power factor of the combination.
5. A ring has a diameter of 21cm and a cross sectional area of $10cm^2$. The ring is made up of semicircular sections of cast iron and cast steel, with each joint having reluctance equal to an air gap of 0.2mm. Find the ampere turns required to produce a flux of $8 \times 10^{-4}$ wb. The relative permeabilities of cast steel and cast iron are 800 and 166 respectively.



## Applied Physics APR2C2

**Time: 70 min** **Max. Marks: 20**

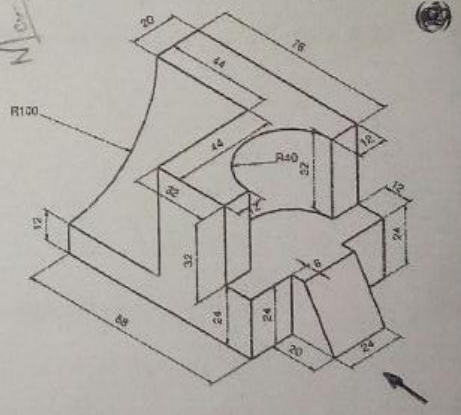
**Attempt any one part from each question.**

| | | | |
|---|---|---|---|
| Q1 | I (a) | Explain the construction, working and energy level diagram of $CO_2$ Laser. | 8 |
| | (b) | What is NA? If the refractive indices of core and cladding are 1.6 and 1.5 respectively than calculate the NA of fibre | 1 |
| | | **OR** | |
| | II(a) | Explain the construction, working and energy level diagram of He-Ne laser. | 8 |
| | (b) | What is critical angle if the refractive index of core is 1.53 and that of cladding is 2.5% less of the core? | 1 |
| Q2 | I(a) | State and explain the Maxwell's equation (i) $\nabla.\vec{E}=\frac{\rho}{\varepsilon_0}$ (ii) $\nabla.\vec{B}=0$ | 8 |
| | (b) | What is Ampere's law and its inconsistency? | 3 |
| | | **OR** | |
| | II(a) | Derive the wave equation of electric and magnetic field for free space. | 9 |
| | (b) | What is Poynting vector? | 2 |

**Devi Ahilya University, Indore, India**
**Institute of Engineering & Technology**
Class test II
MDR2C3 Engineering Drawing (ETC Sec A)

Attempt ANY 03 ~~ALL~~ questions: Each carries 05 Marks (Q4. 10 Marks is compulsory)

1. Compare First and Third Angle Projection. Draw the projections of a point in third quadrant,30 mm from HP and 50 mm from XY line
2. Draw the projections of a line AB in FIRST quadrant such that the VT is 20 mm above X-Y. Point B is 50 mm from HP and 70 mm from VP. Length of AB 70mm. Front view makes an angle of 55°. Also find HT, true length and all the inclinations
3. Draw the projections of a circle of diameter 50 mm placed with one of the points of the circumference on the ground. The plane of the circle makes an angle on 30° with ground and is perpendicular to the vertical plane.
4. Draw the orthographic projections (Elevation and plan) of the object showed in the figure



I B.E. (ETC & MECH.)
Class Test III (Nov. 2016)
Sub: AMR2C1: Applied Mathematics-II

**Time: 70 min** **Max Marks: 20**

**Note: Attempt any four questions. All questions carry equal marks. Questions must be solve at one place.**

**Q.1** Define Poisson distribution and prove that mean and the variance of the poisons distribution are each equal to the parameter $\lambda$. 5

**Q.2** In a class of 10 students marks obtained in Electronics & Statistics are given below: 5

| Roll. No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Marks(Electronics) | 78 | 36 | 98 | 25 | 75 | 82 | 90 | 62 | 65 | 39 |
| Marks(Statistics) | 84 | 81 | 91 | 60 | 68 | 62 | 86 | 58 | 53 | 47 |

Calculate Karl Pearson's Coefficient of Correlation.

**Q.3** If $\alpha, \beta, \gamma$ be the roots of the equation $x^3 + px + q = 0$ then find the value of (i) $\sum \alpha^2\beta$, (ii) $\sum \alpha^4$ (iii) $\sum \alpha^3\beta$. 5

**Q.4** Solve $x^3 - 15x^2 - 33x + 847 = 0$ by Cardan's method 5

**Q.5** Let $X = \{x_1, x_2, x_3, x_4,\}$ and two fuzzy sets $A$ and $B$ be 5
$A = \{(x_1, 0.2), (x_2, 0.5), (x_3, 0.7), (x_4, 1)\}$
$B = \{(x_1, 0.6), (x_2, 1), (x_3, 0.4), (x_4, 0.3)\}$ then find $A \cup B$ and $A \cap B$. Is $A$ is subset of $B$.

B.E (E&TC A &B )
Class Test III NOV-2016
COR2C5– Computer Programming

**Time: 70 min** **Max Marks: 20**

**Note: Attempt any four questions. All questions carry equal marks.**

Q.1 What is Inheritance; explain its types, write a program for Single Inheritance with public derivation ? 5

Q.2 What is Friend Function, Illustrate using the suitable Example? 5

Q.3 What are Object, Class, private Constructor, and Destructor? 5

Q.4 Write a program for Matrix Multiplication (using 3*3 matrix) 5

Q.5 Explain array of pointer with the help of suitable example ? 5

BE I Year (Electronics & Telecommunication)
Class Test III (NOV 2016)
Sub:EIR2C4:Electrical Engineering

Time: 70 min. Max Marks: 20

Note:- All questions carry equal marks. Attempt any four questions.

1. Derive a relation for 3 phase power measurement using two wattmeter method with phasor.
2. A 5KVA distribution transformer has a full load efficiency at unity power factor of 95%, the copper and iron losses are then being equal. Calculate its all day efficiency if it is loaded throughout the 24 hours as follows:

| | |
|---|---|
| No load | 10 hours |
| Half load | 5 hours |
| Quarter load | 7 hours |
| Full load | 2 hours. |

Assume load power factor of unity.

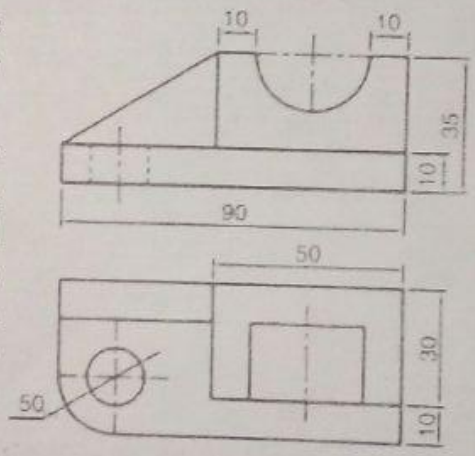
3. What is transformer? Draw the phasor diagram of transformer under capacitive load and explain it.
4. Why single phase induction motors are not self started. Name the different methods of starting and explain any one of them.
5. Explain in brief DC generator with suitable diagrams.

**Devi Ahilya University, Indore**
**Institute of Engineering and Technology**
**Class test III**
**MER2C3 Engineering Drawing. (ETC Section A)**
**Answer any FOUR questions. All carry 5 marks each**

1 A right circular cylinder, base **80 mm** diameter and height **80 mm** has a hexagonal hole of **40 mm** side drilled centrally through its bases. *Draw its projections* when it is resting on one of points on the circumference on the Horizontal Plane (HP) with its axis inclined at **60°** to Horizontal Plane (HP) and parallel to the Vertical Plane (VP).

2 Draw *development of the lateral surface* of a cone having **80 mm** diameter and **100 mm** height. The axis of the cone is cut by a plane inclined **45°** to Horizontal Plane (HP) and passing through a point on axis and **60 mm** above the base of cone.

3 *Draw isometric View* of the object whose orthographic view is shown here.




4 A cone, base **75 mm** diameter and axis **75 mm** long, has its axis parallel to the Vertical Plane (VP) and inclined 45° to Horizontal Plane (HP). A horizontal cutting plane passes through the mid-point of the axis. Draw the *front view, the sectional top view, true shape of cut- section* and *side view*.

5 Draw the Front View/ Top View of a single riveted butt joint with single cover strap.

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I B.E. (E&TC/E&I/Mech.)
Class Test III November 2016
SSR2S2: Humanities

Time: 70 min
Max Marks: 10

Note: Attempt any FOUR questions. All questions carry equal marks.

| | | |
|---|---|---|
| Q.1 | State any two features of India's party system. | 2.5 |
| Q.2 | Summarize theories of Socialism. | 2.5 |
| Q.3 | Adam Smith believed in a free market, Explain. | 2.5 |
| Q.4 | What is Human factor & why is it important? | 2.5 |
| Q.5 | What is Ethics & why do Engineers need to follow a code of Ethics? | 2.5 |

1ST Year BE (E&Tc A and E&I) 3rd Test Nov 2016

Applied Physics APR2C2

Time: 70 min

Max. Marks: 20

**Attempt any one part from each question.**

| | | | |
|---|---|---|---|
| Q1 | I(a) | What is lattice plane? Derive the expression for the inter planer distance for simple cube. | 4 |
| | (b) | Write short notes on Unite cell and Basis. | 2 |
| | | **OR** | |
| | II(a) | What is symmetry operation, explain for simple cube. | 4 |
| | (b) | What is Miller Indices? Draw the (110) plane. | 2 |
| Q2 | I(a) | What is Compton effect? Derive the expression for the maximum change in wavelength. | 10 |
| | (b) | What is phase velocity and group velocity? | 4 |
| | | **OR** | |
| | II(a) | What is wave function? Derive the time dependent Schrödinger wave equations for free particle? | 7 |
| | (b) | What are de-Broglie wave? Describe Davisson and Germer's experiment to show the existence of matter wave. Calculate the de-Broglie wavelength of an electron accelerated through a potential difference of 200V. | 7 |

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**Class Test: III, March- 2016**

**BE I year COR2C5– Computer Programming (IT A / B)**

**70 Minutes** **Maximum Marks: 20**

What is Inheritance; explain its types, write a program for Single Inheritance?

What is Friend Function, Illustrate using the suitable Example??

What are Object, Class, private Constructor, and Destructor?

What is Copy Constructor, Illustrate using the suitable Example?

IET, DAVV, INDORE

BE I yr (ETC/EI/Mech)

SSR282: HUMANITIES

Class Test- III

**SECTION-A – 10 Marks**

**(Each question carries equal marks.)**

Q. Write a short note on **any 2** of the following:

1. Theories of learning
2. Personality
3. Emotions
4. Life satisfaction

**SECTION B - 10 Marks**

(Attempt **any 1** question, each question carries equal marks.)

Q1). Write a short note on utilitarianism & socialism.

Q2). What do you mean by government? Explain any 4 types of governments.

INSTITUTE OF ENGINEERING AND TECHNOLOGY,
DAVV INDORE

Class Test-3 (BE I[st] Year)

Branch: IT-A, IT-B

EIR2C4: Electrical Engineering

Duration: 70 Min. Max. Marks: 20

Note: Attempt any four questions.

Q.1 Calculate the value of R which will absorb maximum power from the circuit of fig -1. Also, compute the value of maximum power. 05

Q.2 Define the following terms- 05
(i) R. M. S. value (ii) Average value (iii) Active power (iv) Reactive power (v) Power factor.

Q.3 It is desired to operate a 100-W, 120-V electric lamp at its current rating from a 240-V, 50-Hz supply. Give details of the simplest manner in which this could be done using- 05
(i) A resistor.
(ii) A capacitor
(iii) An inductor having resistance of 10 Ω
What power factor would be presented to the supply in each case and which method is the most economical of power.

Q.4 A 20 Ω resistor is connected in series with an inductor, a capacitor and an ammeter across a 25-V variable frequency supply as shown in fig.2. When the frequency is 400-Hz, the current is at its maximum value of 0.5 A and the potential difference across the capacitor is 150 V. calculate 05
(i) The capacitance of the capacitor.
(ii) The resistance and inductance of the inductor.

Q.5 Explain power measurement in 3-phase circuits using two wattmeter method 05

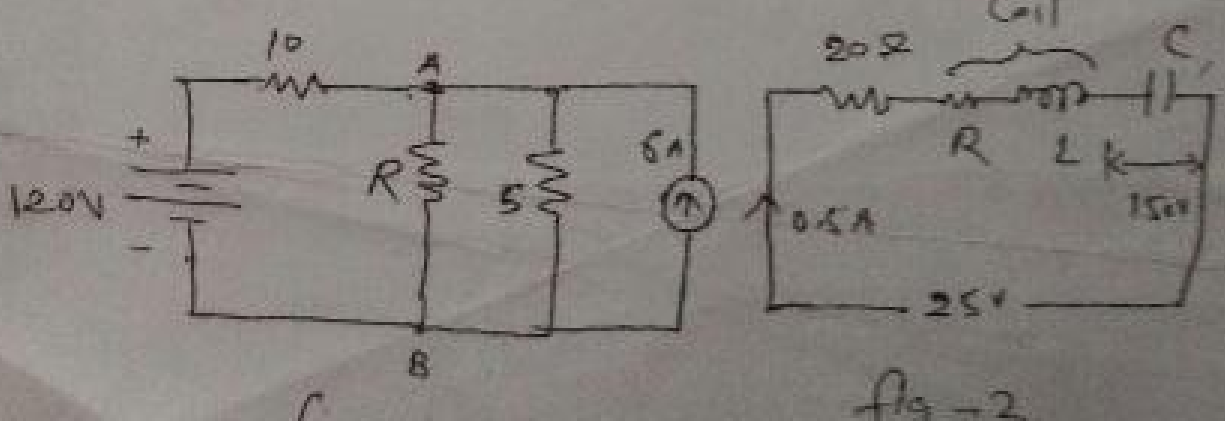


fig - 2

BE 1ST YEAR IT A (IET DAVV)

ENGINEERING DRAWING (MER2C3)

TEST THIRD MARCH 2016

MM.-20

MAX TIME- 70 MIN

Each question carries equal marks.

Q.1.Construct a vernier scale to read metres, decimetre and long enough to measure upto 6 metre.When 1 m is represented by 25 mm. Find R.F. and show the distances of 5.36 m on it.

Q.2.The major axis of an eclipse is 110 mm long and the foci are at a distance of 15mm from its ends. Draw the ellipse, one half of it by 'concentric circle' methods and the other half by 'Rectangle' method .determine the eccentricity of the ellipse.

Q.3.A cylinder, with a 65 mm base diameter and 75 mm long axis, is resting on ground with its axis vertical. A Section plane inclined at 45degree to H.P. cuts the cylinder such that the plane passes through the top of one of the generators and cuts all the remaining generators .draw the development of its lateral surface.

Q.4.A square prism, having base with a 45 mm side is resting on its base on the H.P. it is completely penetrated by another square prism having base with a 35 mm side such that the axes of both the prism intersect each other at right angles and faces of both the prisms are equally inclined to the V.P. Draw the projections of the combination and show the lines of intersection .

**Institute of Engineering & Technology**

**BE I Year (IT-A and IT-B Sections)**

**Test III - APR2C2 Applied Physics**

Time : 60 Min. Max. Marks : 20

**Any One**

1. Explain working of pnp transistor in common emitter mode with input & output characteristics. 10
2. Explain the principle of LASER light with the description of Ruby laser . 10

**Any one**

3. Copper has an f.c.c. structure with lattice constant a = 3.61 $A^0$. Calculate the radius of copper atom. 10
4. Compute the de Broglie's wavelength of $10^{11}$ keV neutrons. Given mass of neutron = $1.675 \times 10^{-27}$ Kg. 10

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Class Test -III (MAR. - 2016)

AMR2C1- Applied Mathematics –II

(IT A & B)

Time: 70 min.

Maximum Marks: 20

**Note:** Attempt any two questions. Questions must be solved at one place. Each step should be well defined.

Q.1 (i) Solve $x(y-z)p + y(z-x)q = z(x-y)$.

(ii) Solve $(D^2 + DD' - 2D'^2)z = \sqrt{2x+y}$. 10

Q.2 Solve the equations by Cardan's Method $x^3 - 6x^2 + 6x - 5 = 0$ 10

Q.3 Let $X = \{x_1, x_2, x_3, x_4,\}$ and two fuzzy sets $A$ and $B$ be 10

$A = \{(x_1, 0.2), (x_2, 0.5), (x_3, 0.7), (x_4, 1)\}$

$B = \{(x_1, 0.6), (x_2, 1), (x_3, 0.4), (x_4, 0.3)\}$ then find $A \cup B$ and $A \cap B$. Is $A$ is subset of $B$.