

BK  
Sem-II/2012  
Unit Test-I

Set-01



Symbol of Secularism  
& National Integration

ANJUMAN-I-ISLAM'S  
KALSEKAR TECHNICAL CAMPUS, NEW PANVEL  
School of Engineering & Technology

2011-12

Subject: Applied Physics – II

TEST - I

Marks:25

Date:15/3/2012

Duration: 1 Hr

Sem II

Class: FE-All

**Please Note:**

1. All questions are compulsory.
2. Draw next labelled diagrams wherever necessary.

Q.1. Attempt any three (3 \* 4 = 12)

- a) Explain Stimulated Emission.
- b) Define :
  - 1.Active medium
  2. Population Inversion
  - 3.Pumping and
  - 4.Metastable states.
- c) Draw the block diagram of an optical fibre communication system.
- d) Write a short note on "V -Number".

Q.2.a) Explain construction and working of Nd-YAG solid state laser. (7)

b) Discuss any three applications of optical fibres. (3)

OR

Q.3. a) Explain in detail Step Index Fibre. (7)

b) Discuss any five applications of Laser. (3)

Q.4. Calculate acceptance angle for an optical fibre whose core R.I. is 1.48 and cladding R.I. is 1.39.

OR (3)

Q.5. Find the ratio of population of the two energy states of the active medium producing laser transition between which has wavelength 694.3nm.

Assume temperature 27°C. (3)

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KALSEKAR TECHNICAL CAMPUS, NEW PANVEL  
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2011-12

Subject: Applied Maths

Date: 15/03/2012

Marks: 50

Duration: 2 Hr

Class: FE-All

Test-I

(Sem II)

Note: (i) Q I is compulsory

(ii) Out of remaining questions, attempt any two.

QI (a) Prove that  $\int_0^1 \sqrt{1-x^4} dx = \frac{\sqrt{\pi}}{6} \frac{\Gamma(1/4)}{\Gamma(3/4)}$  (5)

(b) Solve by Taylor's series method  $\frac{dy}{dx} = -xy$ , with  $x_0 = 0, y_0 = 1$  (5)

QII (a) Find  $y$  when  $x = 0.05$  by Euler's modified method, taking  $h = 0.05$ , given that  $\frac{dy}{dx} = x^2 + y$ ;  $y(0) = 1$  (6)

(b) Solve  $(xy^3 + y) dx + 2(x^2y^2 + x + y^4) dy = 0$  (6)

(c) Solve  $(x+2)^2 \frac{d^2y}{dx^2} - (x+2) \frac{dy}{dx} + y = 3x+4$  (8)

QIII (a) Solve  $\frac{dy}{dx} = x^3y^3 - xy$  (6)

(b) Solve  $(D^2 + 3D+2)y = e^{-2x} + e^x \cos 2x$  (6)

(c) Solve by Runge-Kutta method of fourth order,  $\frac{dy}{dx} = 3x + y^2, x_0 = 1, y_0 = 1.2$  at  $x = 1.1$  (8)

QIV (a) Solve  $\frac{d^2y}{dx^2} - 4 \frac{dy}{dx} + 4y = x^2 + e^x + \cos 2x$  (6)

(b) Prove that  $\int_0^\infty \frac{dx}{(e^x + e^{-x})^n} = \frac{1}{4} \beta(n/2, n/2)$  (6)

(c) Use method of variation of parameters to solve the equation,  $(D^2 - 2D+2)y = e^{2x} \sec^2 x$  (8)



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**ANJUMAN-I-ISLAM'S**  
**KALSEKAR TECHNICAL CAMPUS, NEW PANVEL**  
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2011-12

Subject: Computer Programming-II

Test I

Marks: 50

Date: 16/03/2012

Duration: 2 Hr

Class: FE-All

Note : 1. Question No 1 is compulsory  
2. Attempt any 3 out of remaining 4.

Q1. Attempt any Four of the following:

[20]

1. Features of Java
2. JVM & JDK
3. String Methods
4. Concept of OOP
5. Comparison between C++ and Java

Q2. a) Write a program that reads a four digit integer and breaks it in a sequence of individual digits e.g. 4752 should be displayed as 4 7 5 2. [5]

b) Write a Java Program to implement the following pattern [5]

```
ABCDE
 ABCD
  ABC
   AB
    A
```

Q3. a) Write a program to search an integer in an array of integers [5]

b) What are constructors? Explain different types of constructor with example. [5]

Q4. Write an object oriented program to arrange the names of students in descending order of their total marks, input data consists of student details such as name, ID, marks of Mathematics, Physics, and Chemistry. Use array of objects. [10]

Q5. a) How do you define a data type? Explain the data types available in Java. [5]

b) Write a program to evaluate the sum of series:  $1 - 1/2 + 1/3 - 1/4 + 1/5 \dots + 1/n$  [5]

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**ANJUMAN-I-ISLAM'S**  
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2011-12

Subject: Communication Skills - II  
Date: 16/3/2012

Test I

Marks: 25  
Duration: 1 Hr  
Class: FE-All

*Sem II*

**NOTE: All questions are compulsory.**

**Q.No.1 Attempt any Three of the following.**

12

- i) Define Kinesics. Explain the different methods of communication through it.
- ii) How does a speaker evaluate the audience before framing a message? Explain with example.
- iii) Define communication. Explain the factors involved in communication.
- vi) Define listening. Write different types of listening.

**Q.No.2**

a) Make sentences with the following phrasal verbs.

2

- i) taken aback
- ii) get through

b) Provide on one word substitution of the following.

2

- i) Human like characteristic
- ii) self centred person

**Q.3. Attempt any three of the following.**

9

- i) Write any three points regarding solving a mechanical barrier.
- ii) Write four different zones in Proxemics.
- iii) Explain in short the SQ3R reading technique.
- iv) Write different ways of communication in a Hierarchy.

-----All the best-----

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KALSEKAR TECHNICAL CAMPUS, NEW PANVEL

School of Engineering & Technology

2011-12

Subject: Applied Chemistry – II

Test I

Marks:25

Date: 17/03/12

Duration: 1 Hr

Sec II

Class: ALL FE

**Please Note:**

All questions are compulsory.

Draw neat and labelled diagram wherever necessary.

(a) what is cracking? Distinguish between thermal and catalytic cracking. (3)

(b) A fuel has the following composition by volume  $H_2 = 20\%$ ,  $CH_4 = 36\%$ ,  $C_2H_4 = 5\%$ ,  $C_2H_6 = 6\%$ ,  $C_4H_8 = 2\%$ ,  $O_2 = 7\%$ ,  $CO_2 = 6\%$ ,  $O_2 = 0.5\%$  and rest is  $N_2$ .

Calculate (1) The volume of  $O_2$  and air required for complete combustion of 1kg of fuel burnt .

(2) The weight of air required for the complete combustion of 1 kg of fuel. (5)

(a) Explain laminar composite and sandwich panel with suitable example. (5)

(b) By Kjeldahl's method, 1.5 gm of a sample of coal was analysed .The ammonia evolved was absorbed in 50ml of 0.1N  $H_2SO_4$  required 35ml of 0.1 N NaOH for neutralization. Calculate the percentage of nitrogen. (3)

(a) What is petroleum? Describe the refining of petroleum with reference to bubble tower diagram.? (6)

(b) What are the important applications of composite? (3)

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*School of Engineering & Technology*

2011-12

Subject: Engineering Drawing  
Date: Saturday, March 17, 2012.

Test I

Marks: 50  
Duration: 2 Hr  
Class: FE-Sem-II-All

Sem II

**1. Attempt any two of the following three questions (10 marks X 2 = 20 marks):**

- a. A line AB 85 mm long, has its end A 10 mm above the H.P. and 15 mm in front of the V.P. Its top view and front view measure 60 mm and 40 mm respectively. Draw the projections of the line and determine its inclinations with the H.P. and the V.P.
- b. Construct a rectangular hyperbola given the following data: A point P is 40 mm and 30 mm from the horizontal and vertical axes respectively. Draw a hyperbola passing through it.
- c. Construct an involute of a circle given the following data: A string is wound on a cylinder of diameter 25 mm. The length of the string is the same as the circumference of the cylinder.

**2. Attempt any two of the following three questions (15 marks X 2 = 30 marks):**

- a. A hexagonal pyramid has a height of 60 mm and the side of base 30 mm. The pyramid rests with one of the sides of a base on the H.P. such that the triangular face containing that side is perpendicular to the H.P. and makes an angle of  $30^\circ$  with the V.P. Draw its projections.
  - b. A cylinder of 45 mm base diameter and axis height 85 mm long is lying on the H.P. with the axis parallel to both the H.P. and the V.P. It is cut by an auxiliary vertical plane inclined to the V.P. at  $45^\circ$ , which bisects the axis. Draw its sectional F.V., T.V. and True Shape of the section.
  - c. A cone of diameter 60 mm and height 80 mm rests on H.P. on its base. A cutting plane perpendicular to the H.P. and inclined to V.P. at  $45^\circ$ , cuts the cone 10 mm in front of the axis. Draw the top view, sectional front view and true shape of the section.
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