OPENNET – VI : Entrance Test for
Diploma in Nautical Science leading to B.Sc. (Nautical Science)
June, 2007

Total No. of Questions = 100   *Time : 3 Hours*

— All questions are compulsory.

— Use of calculator is **not** allowed. Rough work may be done in the space provided at the back of the Test booklet.

— The Test booklet has the following 5 tests :

Tests	No. of Questions	Marks
I – Reasoning Aptitude	20	20
II – General Knowledge	20	20
III – Mathematics	20	20
IV – English	20	20
V – General Science	20	20

Read the instructions given on the OMR Answer Sheet carefully before you start.

HOW TO FILL UP THE INFORMATION ON THE ENTRANCE TEST OMR ANSWER SHEET

While filling up the OMR Answer Sheet, you should follow the following guidelines :

1. Write your complete Roll Number. This should correspond to the roll number already supplied to you. Also write your correct name, address with pin code in the space provided, in ink. Put your signatures on the Answer Sheet with date, in ink. Ensure that the Invigilator in your examination hall also puts his signatures with date on the OMR Answer Sheet at the space provided. You should use HB pencil to mark the answers of the questions on the OMR Answer Sheet.

2. Do not make any stray marks on the OMR Answer Sheet.

3. Write correct information in numerical digits in Roll No., Programme Code, Date and Month and Examination Centre Code Columns. **The column of Course Code should be left blank**. The corresponding rectangle should be dark enough and should be filled in completely.

4. Each question is followed by four probable answers which are numbered 1, 2, 3 and 4. You should select and show only one answer to each question considered by you as the most appropriate or the correct answer. Select the most appropriate answer. Then by using HB pencil, blacken the rectangle bearing the correct answer number against the serial number of the question. **If you find that answer to any question is none of the four alternatives given under the question you should darken the rectangle '0'.**

5. If you wish to change your answer, ERASE completely the already darkened rectangle by using a good quality eraser and then blacken the rectangle bearing your revised answer number. If incorrect answer is not erased completely, smudges will be left on the erased rectangle and the question will be read as having two answers by the Optical Mark Reader (OMR) and will be ignored for giving any credit.

6. No credit will be given if more than one answer is given for one question. Therefore, you should select the most appropriate answer.

7. You should not spend too much time on any one question. If you find any particular question difficult, leave it and go to the next. If you have time left after answering all the questions, you may go back to the unanswered ones.

8. There is no negative marking for wrong answers.

GENERAL INSTRUCTIONS

1. Mobile Phones, calculators, books, slide-rules, foot rulers, note-books or written notes, etc. are not allowed inside the examination hall.

2. You should follow the instructions given by the Centre Superintendent, observers and by the Invigilators at the examination venue. If you violate the instructions you will be disqualified.

3. Any candidate found copying or receiving or giving assistance in the examination will be disqualified.

4. The Test Booklet and the OMR Answer Sheet would be supplied to you by the Invigilators. **After the exam is over, you should hand over the Test Booklet and the OMR Answer Sheet to the Invigilator before leaving the examination hall.** Any candidate who does not return the Question Booklet and the OMR Answer Sheet will be disqualified.

5. Candidates arriving late will not be permitted to enter the examination hall. The reporting time is 9.15 A.M. The examination will start at 10.00 A.M. and will be over at 1.00 P.M.

6. All rough work is to be done on the test booklet itself and not on any other paper. Scrap paper is not permitted. For arriving at answers you may work in the margins, make some markings or underline in the test booklet itself.

7. The University reserves the right to cancel scores of any candidate who impersonates or uses malpractices. The examination is conducted under uniform conditions. The University would also follow a procedure to verify the validity of scores of all examinees uniformly. If there is substantial indication that your performance is not genuine, the University may cancel your score.

TEST III
MATHEMATICS

41. If the mean of the data

    5, 7, 9, 11, x, 12, 6, 9,

    is 8, then the value of x is
    (1) 5   (2) 6
    (3) 9   (4) 8

42. The perimeter of a rectangle is 70 m. If its width is three-fourth of its length, then its area is
    (1) 300 m^2 (2) 150 m^2
    (3) 400 m^2 (4) None of these

43. The difference between the least perfect square number of four digits and the next perfect square number is
    (1) 64   (2) 65
    (3) 81   (4) 100

44. If $x^p = y$ and $y^q = z$, then x is equal to
    (1) z^{pq} (2) $(z^p)^{1/q}$

    (3) $(z^q)^{1/p}$ (4) $z^{\frac{1}{pq}}$

45. If the sides of two squares are in the ratio 3 : 2, their perimeters are in the ratio
    (1) 3 : 2   (2) 2 : 3
    (3) 9 : 4   (4) 4 : 9

46. If $2x + \dfrac{1}{2x} = 5$, then $4x^2 + \dfrac{1}{4x^2} = \ldots$
    (1) 25   (2) 23
    (3) 27   (4) None of these

47. $\sqrt{0.000025} =$
    (1) 0·05   (2) 0·005
    (3) 0·0005   (4) 0·00005

48. A purse contains 4 copper coins and 3 silver coins, the second purse contains 6 copper coins and 2 silver coins. A coin is taken out of any purse. The probability that it is a copper coin is
    (1) 4/7   (2) 3/4
    (3) 3/7   (4) 37/56

49. If $25 \times (\sqrt{5})^k \times (\sqrt{5})^3 = 5\sqrt{5}$, then the value of k is

(1) -4

(2) 3

(3) 4

(4) 5

50. In the following figure $\bar{l} \parallel \overline{m}$. Then y is equal to
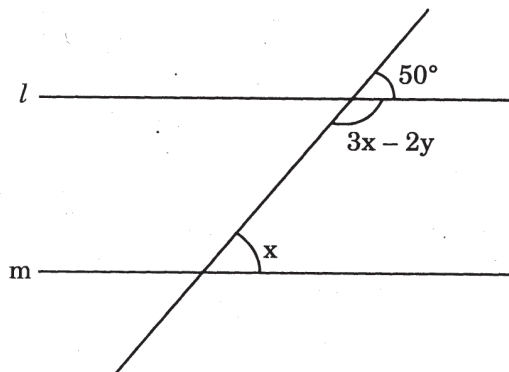
(1) $5°$

(2) $10°$

(3) $190°$

(4) $60°$

51. The value of $\left(27^{-2/3}\right)^{1/2}$ is equal to

(1) 3

(2) 1/3

(3) $3^{-1/3}$

(4) 9

52. If $\begin{vmatrix} a & b \\ c & d \end{vmatrix} = a \times d - b \times c$, then $\begin{vmatrix} -3 & 5 \\ 6 & 7 \end{vmatrix}$ is equal to
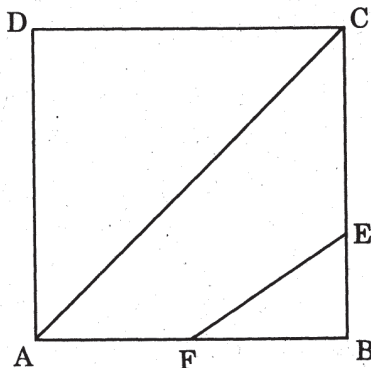
(1) $+51$

(2) -51

(3) -9

(4) $+9$

53. If two sides of a right-angled triangle are 2n, 2n − 1, then for n = 2, its hypotenuse is

(1) $\dfrac{2n+1}{2}$

(2) $n^2 + 1$

(3) $\dfrac{n^2+1}{2}$

(4) $\dfrac{n^2-1}{2}$

54. In the following figure, $AF = \frac{1}{2} AB$, $BE = \frac{1}{3} BC$, $AC = 36\sqrt{2}$. Then area of $\triangle$ BEF is

(1) 72 cm^2 (2) 144 cm^2

(3) 108 cm^2 (4) $216\sqrt{2}$ cm^2

55. What percent of 6·25 is 1·25 ?

(1) 10%   (2) 15%

(3) 20%   (4) 25%

56. How many terms are there in the AP,

   7, 11, 15, ..., 139 ?

(1) 16   (2) 17

(3) 34   (4) 35

57. The value of $\cos^2\theta + \dfrac{1}{(1+\cot^2\theta)}$ is

(1) $\sin^2\theta$ (2) $\cos^2\theta$

(3) 1 (4) $\tan^2\theta$

58. The value of

   $2\sin^2 30° - 3\cos^2 45° + \tan^2 60°$ is

(1) 1   (2) 2

(3) 3   (4) 4

59. A vertical pole stands on level ground. From a point on the ground, 25 m away from the foot of the pole, the angle of elevation of its top is found to be 60°. Then the height of the pole is

(1) $\dfrac{25}{\sqrt{3}}$ m   (2) 25 m

(3) $25\sqrt{2}$ m   (4) $25\sqrt{3}$ m

60. If the distance between the points A (k, − 5) and B (2, 7) is 13 units, then the value of k will be

(1) 3 or −7   (2) −3 or 7

(3) 3 or 7   (4) −3 or −7