

FOR TEST No. 503 - M.S. COMPUTER SCIENCE & INFORMATION TECHNOLOGY; M.S. SOFTWARE ENGINEERING; M.S. CIVIL ENGINEERING; M.S. MECHANICAL ENGINEERING; AND M.S. ELECTRICAL & ELECTRONICS ENGINEERING

Time: 75 Min

Max. marks: 90

The test paper consists of 3 Parts. Each part contains 30 multiple choice questions. Answer all questions in each part.

Part - A: Mathematics (30 Marks)

1. If $P = (1, 1)$ and PA, PB are tangents to a circle where A, B are points of contact and if $A = (2, 0)$, $B = (0, 0)$ then the centre of the circle is
(a) $(1, -1)$ (b) $(4/3, 4/3)$ (c) $(1/3, 1/3)$ (d) $(2, -2)$

Part - B: Physics (30 marks)

31. The horizontal range of a projectile is twice the maximum height reached by it for the given angle of projection. Then the ratio of potential energy to kinetic energy of this projectile at the highest point of its path is
(a) 4:1 (b) 1:4 (c) 1:2 (d) 2:1

Part - C: Chemistry (30 Marks)

61. The total number of structural isomers that are possible with the formula $C_3H_5Cl_3$ is
(a) 2 (b) 3 (c) 4 (d) 5
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FOR TEST No. 511 - B.Engg. AIRCRAFT ENGINEERING.

Time: 75 Min

Max. marks: 90

The test paper consists of 4 parts. Part-A consists of 15 multiple choice questions; Parts B, C & D consists of 25 multiple choice questions each. Answer all questions in each part.

Part - A: English (15 Marks)

1. Last time, we met _____ a birthday party in Bombay.
(a) At (b) On (c) In (d) Through

Part - B: Mathematics (25 Marks)

16. If the line $lx + my = 1$ is a tangent to the parabola $y^2 = 2(x + 1)$ then the locus of (l, m) is
(a) $2x^2 + y^2 + 2x = 0$ (b) $x^2 + 2y^2 = 2x$ (c) $x^2 + y^2 = 2x$ (d) $x^2 - y^2 = 2x$

Part - C: Physics (25 marks)

41. Two point masses of 2 kg and 3 kg are placed at positions $(1 \text{ m}, 2 \text{ m}, 4 \text{ m})$ and $(2 \text{ m}, 3 \text{ m}, 0)$ respectively. The moment of inertia of the system about z - axis is
(a) 41 kg m^2 (b) 81 kg m^2 (c) $5 \times 10^{10} \text{ N/m}^2$ (d) $5 \times 10^{12} \text{ n/m}^2$

Part - D: Chemistry (25 Marks)

66. The temperature at which the RMS velocity of O_2 be equal to the most probable velocity of SO_2 at 27°C is
(a) 100°C (b) 100°K (c) 150°K (d) 600°K
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FOR TEST No.512 M.S. MOLECULAR BIOLOGY AND BIOTECHNOLOGY

Time: 75 Min.

Max. marks 90

1. Which amino acid among the following is not basic
(1) Tryptophan (2) Lysine (3) Histidine (4) Arginine
2. On treatment with mineral acid, sugars give a characteristic colour reaction due to the formation of furfurals. The furfural is formed by
(1) Oxidation of sugar (2) Isomerisation of sugar
(3) Dehydration of sugar (4) Degradation of sugar
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TEST No. 521 DOUBLE DEGREE M.S. DIGITAL SIGNAL PROCESSING

Time: 75 Min

Max. marks: 90

1. A vector A with initial point P $(3, 1, 4)$ and terminal point Q $(1, -2, 4)$ has a length equal to
(1) "14 (2) "15 (3) "13 (4) "11
2. FIR filter offers
(1) constant amplitude response (2) constant phase response
(3) linear phase response (4) linear amplitude response
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FOR TEST No. 522 DOUBLE DEGREE M.S. SOFTWARE ENGINEERING

Time: 75 Min

Max. marks: 90

1. The generating function of the sequence $0, 1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \dots$ is given by
(1) $\log(1-X)$ (2) $\log X$ (3) $-\log(1-X)$ (4) $-\log X$
2. How many 5 digit number are there composed only of 6's and 7's ?
(1) 32 (2) 35 (3) 30 (4) 36
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FOR TEST No. 523 M.S. TELECOMMUNICATION SYSTEMS

Time: 75 Min

Max. marks: 90

1. Over modulation may arise in
(1) Amplitude modulation (2) Frequency modulation
(3) Phase modulation (4) Both in frequency and phase modulation
2. In L section filter ripple
(1) Increase with increasing load resistance (2) Decreases with increasing load resistance
(3) Independent of load resistance (4) Does not depend on the value of L
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