Roll No. ⎕⎕⎕⎕⎕⎕⎕⎕⎕⎕⎕   Total No. of Pages : 02

Total No. of Questions : 18

B.Tech.(CSE) (2011 Batch)   (Sem.–4)

MATHEMATICS – III
Subject Code : BTCS-402
Paper ID : [A1184]

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION–A

Answer briefly :

1. Define periodic functions.

2. Find Laplace transform of $te^{-t}\sin 3t$.

3. Examine whether $f(x) = \sin \dfrac{1}{x}$ can be expanded in Fourier series in $[-\pi, \pi]$.

4. Solve $(D^2 + 4DD' - 5D'^2)z = \sin(2x + 3y)$

5. Define conjugate functions.

6. What is null hypothesis?

7. What do you mean by degree of freedom?

8. A coin is tossed 400 times and head turned up 216 times. Test the hypothesis that coin is unbiased. http://www.punjabpapers.com

9. What is the mean and variance of poisson distribution?

10. What do you mean by critical region?

SECTION-B

11. Obtain fourier series for the function

$$f(x) = \begin{cases} x, & -\pi < x < 0 \\ -x, & 0 < x < \pi \end{cases}$$

and show that $\dfrac{1}{1^2} + \dfrac{1}{3^2} + \dfrac{1}{5^2} + \cdots = \dfrac{\pi^2}{8}$.

12. Define second shifting theorem and find the laplace transform of $\sin t u(t - \pi)$.

13. Solve $r - 4s + At + p - 2q = e^{x+y}$.

14. Solve by using guass Jordan method

$$x + 2y + z\text{-}w = \text{-}2,$$

$$2x + 3y - z + 2w = 7,$$

$$x + y + 3z - 2w = \text{-}6,$$

$$x + y + z + w = 2.$$

15. Given $y' = x^2 + y^2$, $y(0) = 1$. Determine $y(0.1)$, $y(0.2)$ by using modified Euler Method.

SECTION-C

16. Find the mean and variance of Normal distribution.

17. Show that the function $u = e^{-2xy}\sin(x^2 - y^2)$ is harmonic. Find conjugate function v and express $u+iv$ as analytic function of z. http://www.punjabpapers.com

18. Solve

a) $z(x + y)p + z(x - y)q = x^2 + y^2$

b) $4r\text{-}4s + t = 16\log(x + 2y)$