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SPEED e- NEWSLETTER

INSIDE THIS ISSUE

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Glare

The phenomenon called 'Glare' has been a matter of great interest in lighting from many years. Glare is the light which is very harmful to human being. It comes from oblique sources and enters the periphery of the eye thus increasing the background illumination and decreasing contrast. It causes visual fatigue and strain. The glare mainly depends on the background illumination and type of light source. As the luminance of the light source increases, the sensation of glare increases. As the background luminance increases, the sensation of glare decreases. Glare also depends on the size of the light source and even the age of the viewer. As the size of light source increases, the glare sensation increases until the source itself significantly influences the background luminance. The glare can be caused due to various types of luminaires such as High Mounted Headlamps, High Intensity Discharge Headlamps, HID Look-alike Bulbs, halogen lamps, Headlamps of the vehicles at night and LED lights.

Nowadays, to save energy, most of the traditional lamps were replaced by the LED lamps. The potential for glare from any light source increases with greater lumen output and smaller source size, so as manufacturers strive for higher light output from smaller LED sources, the potential for glare to occur increases. Adoption of LEDs can be further harmful by increased glare potential. Linear fluorescent lamps are relatively large, diffuse light sources that are often used in locations which can be very sensitive to glare concerns. In some locations even the switching from old T8 to newer T5 fluorescent lamps created glare issues because of the smaller surface area of the tubes.

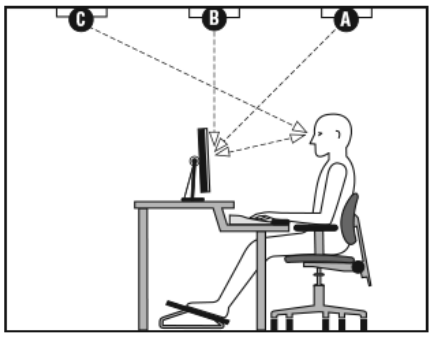


Figure 1 Glare due to illumination system and reflection from computer screen

The computer monitor itself is a source of light and can cause glare if the brightness and contrast controls are not properly adjusted. As shown in figure 1, light from the head mounted light sources (A and B) falls on the computer monitor and the reflection from it enters into eyes. If the orientation angle of the light source is not properly adjusted (light source C as shown in figure 1) then light can directly enters into the eyes. So, in the office workspace, glare due to computer screens and illumination systems must be addressed to increase the efficiency of the working people.

Excessive daylight levels in interiors could produce excessive luminance range in the visual field with high risk of unwanted glare effects as shown in **figure 2.** Sunlight falling directly onto the working desk can cause glare.

Glare…

Figure 2 Glare due to excess daylight

The glare is experienced in different spaces such as in auditorium, buildings, office workspaces, laboratories, control rooms etc. Commonly glare is used in the context with automotive head lamps, street lights and tunnel lighting. However, glare caused due to indoor illumination systems and also due to daylight entering from windows should be taken care and further reduced by using available techniques.

Figure 3 Glare due to head lamps of vehicles

Figure 4 Glare due to illumination system of auditorium and due to street lights

Figure 5 Glare due to big screens/displays/monitors in control rooms

Definition of 'Glare':

Glare is defined as "the sensation produced by luminance within the visual field that is sufficiently greater than the luminance to which eyes are adapted to cause annoyance, discomfort or loss in visual performance and visibility" [1].

Glare is also defined as visual condition under which a feeling of discomfort and/or reduction of perceptive abilities takes place [2]. Other definitions of glare are "a course of visual process accompanied by sensation of discomfort or reducing ability to recognize object [3] or as "a sensation caused by bright areas in the field of view". But despite the definitional differences, these are always the same factors and dependencies which affect the occurrence of glare.

There are two basic types of glare: 1. Disability glare 2. Discomfort glare

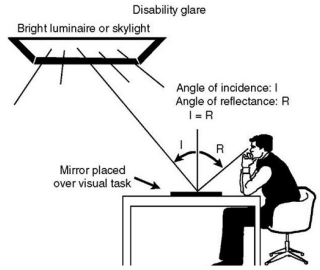


Figure 6 Disability Glare

Disability glare is caused by the light scattered in the eye. This scattered light in the eye lays a luminous veil over the retinal image which reduces the contrasts in retinal image. It is not necessarily associated with physical comfort, but it is related to reduction in visibility. The effect of disability glare depends on the ambient light. Disability glare may be well accounted for in terms of scattering of light that result in a veiling luminance. Disability glare can be really troublesome in patients of cataract or after Lasik correction. Disability glare can be caused due to old age. Cataract. Posterior

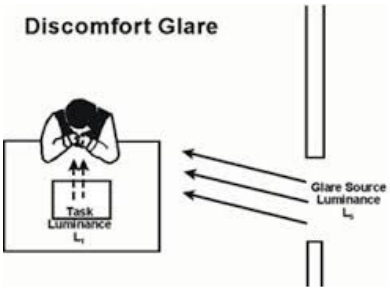


Figure 7 Discomfort Glare

Discomfort glare often referred as "psychological" because it constitutes a serious source of hazards for psychophysical health of the person. Discomfort glare is a sensation of annoyance or distraction caused by high luminance in the field of view.

Discomfort glare occurs when the illumination in visual field is much greater than the level of illumination for which retina is adapted. There is no standard method to evaluate discomfort glare as it is subjective and can vary from person to person. Furthermore, the same person will sometimes report different amount of discomfort glare for the same light source.

Glare…

Available Measuring techniques:

There is a growing consensus for the need of evaluating glare due to indoor illumination systems and day lit commercial buildings. Disability glare can be measured using a conventional visual function test, usually acuity or contrast-sensitivity, is administered in the presence of a glare source. Nowadays, there are various evaluation methods of discomfort glare are available, however, there remains a lack of practical tools to measure discomfort glare in the field.

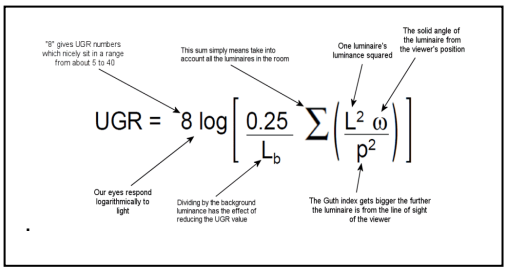
Discomfort glare is often measured based on a subjective rating scale. A nine-point, De Boer scale is most widely used in the field of automotive and public lighting [4]. De Boer and his colleagues developed a multi-label scale consisting of nine points with five verbal descriptors. In 1975, the scale introduced by De Boer is as follows:

De Boer Value	Perceived Glare
1	Unbearable
2	
3	Disturbing
4	
5	Just Permissible
6	
7	Satisfactory
8	
9	Barely noticeable

Dr. Jayashree Bangali ,Head Electronics Department, Kaveri college of Arts, commerce and science , Pune-411038

A de Boer-like scale has been used in many studies of interior lighting. However, there is a possibility of getting false alarm of glare because this rating forces the user to give opinion within the scale as it does not include a 'No Glare' option. Further, many other researchers suggested various scales to measure discomfort glare.

Today, for indoor environment, discomfort glare is mostly evaluated using Unified Glare Rating (UGR) system which was recommended internationally by CIE [5]. UGR is the luminance from the lamps divided by the background visible light luminance from the room background.



Unified Glare Rating

Nowadays, other glare measurement system is also used to evaluate discomfort glare such as Visual Comfort Probability (VCP). The Visual Comfort Probability (VCP) of a lighting system is a rating that indicates the percentages of people that will find a given discomfort glare acceptable. Some of the other commonly referred glare indices are BRS glare equation (BRS or BGI), Cornell equation or daylight glare index (DGI) and CIE Glare Index (CGI).

Researchers have attempted to quantify the amount of discomfort glare ever since the beginning of the previous century [6] but even now, the physiological and psychophysical mechanisms are not fully understood.

Recommendations to reduce glare:

The glare mainly depends on the type of light source, its position in the space, its orientation/fixture and background luminance. As the disability glare is related to aspects of Visual system , there is very little scope for its reduction. However, discomfort glare Can be evaluated and further reduced by available techniques.

Some of the common recommendations to reduce glare are:

1. Control light source - place the light source at a position so that the light will not shine directly into the eyes or reflect into them from any surface.

2. Diffuse the light - diffuse the lights with the help of diffuser/lens, however, it can reduce light intensity.

3. Change the surface – As glare can occur because of reflecting light from shiny surface, change the type of surface.

Increase the brightness of the area around the glare source.

4. Place light fixture higher from the target area and more on overhead to reduce glare.

5. Use several small low-intensity light fixtures rather than one large high-intensity fixture.

6. Use adjustable local lighting with brightness controls.

The glare can directly affect the human health, so it is very important to evaluate and reduce the glare factor. The disability glare can lead to decreasing visibility, increasing reaction and recovery time. The discomfort glare usually does not interfere with normal vision but can exacerbate visual impairments causing discomfort and fatigue. People spend most of the time in the offices and they prefer to live and work with good quality of light distribution. So, for any indoor workspace, glare has to be considered in the lighting design, as it is directly related to the work efficiency.

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8..Holladay, Glare and Visibility. Transactions of the Illuminating Engineering Society,1925(20):p. 221-252.

NEWS and EVENTS at COLLEGES

A One Day State Level Symposium on

"Emerging Trends in Electronics and Computer Science Technology",

organized by Department of Electronics & Computer Science,

Rayat Shikshan Sanstha's Yashwantrao Chavan Institute of Science, Satara.

Department of Electronics &Computer Science had organised "A one day state level symposium on Emerging Trends in Electronics and Computer Science Technology – **Tech ++ 2016 A Step to Success**" on Saturday, 02th January 2016. The key concept of this Symposium is to exchange the knowledge & technical skills in the emerging areas of computer science and Electronics among students. The symposium began with a welcome speech by Mr. J. A. Wagh, Coordinator of Tech++ 2016 and he has explained the theme of the symposum. The symposium was inaugurated by Chief Guest & key note speaker Hon. Prof.Deepak Tatpuje, (Satara Polytechnic,Satara). He expresses his views on different new technologies and guide students on different apects of technology and said "Think Local but Act Global". The Chairperson of inaugural function Hon. Dr. K. G. Kanade, Principal, Y. C. I. S, Satara pointed out the key aspects of the symposium and newer technologies.He had appealed to the students to explore their innovative ideas in the new era's of technology and be Tech- Smart.

A one day state level symposium includes Quiz Competition, Paper presentation, Poster Presentation & Online programming skills sessions. Overall 450 students & faculty from different colleges and universities (Solapur, Kolhapur, Pune) had participated in the symposium. The 60 students had been participated in Quiz Competition, 40 students in Paper Presentation which covers the area E-waste, Network based , Mobile technologies and Robotics etc. The 100 students had been participated in Poster Presentation which is focused on Cloud Computing, Microcontroller Application, Mobile technologies, Networking technologies and Operating system etc. 40 students had been participated in online programming.

The Valedictory function of this one day state level symposium had began with welcome speech by Mr. J. A. Wagh, Coordinator of Tech++2016. The Chief Guest of valedictory function Hon.Vice.Prin.Dr.H.V.Deshmukh (Vice Principal Y. C. I. S, Satara) had delivered valedictory speech and shared his ideas related with current techonology and congratulated to prize winners. Hon.Vice. Prin. Dr. N.A. Ghanvat (Vice Principal, Y. C. I. S, Satara) delivered the presidential address. Mr. A. J. Pawar proposed vote of thanks.

Two Days National Workshop on 'MEMS & Microsystems', by MAEER's Arts, Commerce and Science College (MIT- MACS, Kothrud), Pune

Department of Electronic Science of MAEER's Arts, Commerce and Science College, has organized Two-Days National level workshop on "MEMS & Microsystems" in association with MAEER's Maharashtra Institute of Technology, Pune, and ISSS Institute of Smart Structures and Systems Pune Chapter. This workshop was held on 12th and 13th February 2016.

Dr. Guruprasad, Director, R & D Engineers, Pune, was the Guest for the inauguration function. Principal MAEER's MIT Pune Dr. L. K. Khirsagar presided over the inauguration and motivated the students with his inspiring speech. Principal of MACS College, Dr. T. N. More addressed the audience. During the inauguration Prof. (Ms) S A Gangal- Professor (Retd), Dept. of Electronic Science, SPPU, Pune & Dr Girish Phatak- Scientist, C-MET, Pune has given a brief Introduction of MEMS & what is the need of of Workshop on MEMS. They explained different applications such as mobile phone Mobile-gyroscope sensor, Aerospace pathology, and accelerometer sensor. They said there is no limit in development of mems technology. How this MEMS came to India? It was a thought of Dr. V K Aatre. who proposed the MEMS in India.

Dr. P B Joshi, Founder Managing Trustee, & Head department of Mechanical Engineering, MIT Pune, also talked on Emerging areas nowadays materials-is extremely important. Still we in India import many material from other countries. They are very important because everything requires material. Example: 1. the titanium used in knee replacement is imported from Germany. 2. energy- security is very important for a country.in the field of automation. 3. Automation GE is established global center for material in Bangalore.

The workshop ended with valedictory program where Dr. Girish J. Phatak gave the overview of the two days' workshop & prof. S.A.Gangal spoke about future need of MEMS. Prof. Sunil Chaudhari gave vote of thanks. The workshop was partially sponsored by by Entuple (ANSYS). Overall 45 Teachers and 30 student have participated in the workshop.

SPEED ACTIVITIES

** Workshop for students on "Learning Through Demonstration"

One day workshop titled "Learning Through Demonstrations" was organized for T.Y.B.Sc.(Electronic Science) students on Saturday 16th January 2016 by Department of Electronic Science, Abasaheb Garware College, Karve Road, Pune in association with SPEED and IEEE India Chapter. The purpose of workshop was making students aware of the different techniques available for easy learning process. About 95 students attended the workshop. The workshop was inaugurated at the hands of **Dr. A. D. Shaligram,** Chairman, SPEED and Head, Department of Electronic Science, Savitribai Phule Pune University, Pune. **Dr. Shrikant Gupta, Principal**, Abasaheb Garware College, Pune, **Dr. P. B. Buchade, Secretary, SPEED and Head**, Department of Electronic Science, Abasaheb Garware College, Pune and **Dr. Supriya S. Patil, Co-coordinator** of Workshop were also present at the occasion.

The first session was on demonstration of "Applications of MATLAB and Simulink" by Mr. Ankur Divekar from CloudMoyo, Pune. He demonstrated different aspects of MATLAB right from Plotting equations to System modeling in simulink to Image Processing to wireless data acquisition via wifi. In the next session Dr. A.D.Shaligram clarifies the doubts of the students on "Project: Thinking to Research".

In post lunch session Prof. D. B. Gaikwad demonstrated the design flow for system building using CPLD's and FPGA's. Next session by Dr.N. M. Kulkarni on "Sensors in Smart Phones" was completely interactive and consisted of a number of demonstrations based on the Calibration and Utilization of sensors in his own Smart Phone. In the next session by Mr. Henry and Mr. Ankush Shingade, representing Jam pot Photonics was on "Present and Future of Optics".

"Circuit Design and Simulation" was the topic of last session presented by Prof. Diwate. The session included a number of demonstrations right from Practical level circuits to Project level circuits using Proteus software. The workshop ended with the lecture on "Opportunities after B.Sc. Electronics" by Dr. P.B.Buchade, wherein he explored all the career possibilities and opportunities available for graduates in Electronics.

"VIA_NE_Mation!15" Competition

The world of 3D is rapidly expanding, and career opportunities exist in a wide range of fields – including architecture, games, product and industrial design, civil engineering, and short video films, films and television animation. Considering this, the VIA_NE_MATION!15 competition was organised. This was the second year of this competition. The purpose of this competition is to help the students to step into a real world production environment where the skills like creativity, imaginative visualization capability, good understanding of the subject concepts are very important and the output must be accomplished within specific time frames, resources and design constraints.

The "VIA_NE_Mation!15" Competition for the year 2015-16 was organized in February 2016. There was good response from the students across a wide cross-section. Students from different streams and from Under graduate as well as Post graduate sections participated in this competition.
The judges' panel comprised of eminent teachers from different renowned colleges. The judges kindly agreed to spare their valuable time and enthusiastically evaluated the submissions.

The Judges panel:

1. Dr. V. S. Kale (Principal, Arts, Commerce and Science College, Trimbakeshwar, Dist. Nasik)
2. Mr. R. K. Nerakar (Associate Professor, Dept. of Electronic Sc., Wadia College, Pune)
3. Mrs. Shubhangi Katti (Associate Professor, Dept. of Electronic Sc., Fergusson College, Pune)
4. Mr. P. S. Varade (Associate Professor, Dept. of Electronic Sc., Modern College, Pune)

First Prize

Name: Ojal Arun Shetty
College: Modern college of Arts Science & Commerce, Shivaji Nagar, Pune.
Topic: "BE THE CHANGE"

Consolation Prize

1. Name: Tejas Prasad Ghate
College: M.E.S.'s Abasaheb Garware College, Pune
Topic: Intelligent Water Supply Monitoring & control system

2. Name: Trupti Ravindra Gaikwad
College: Modern College, Shivajinagar, Pune.
Topic: How Does Rain fall

Heartiest Congratulations to All the Winners and Participants.

Report of EEE SPEED examination 2015- 2016

SPEED EEE Examination was conducted in January and February 2016 at different colleges in and around Puneand was coordinated by Dr. Supriya S. Patil. It was conducted at six different centers viz. Abasaheb Garware college, Pune, Fergusson college, Pune, Modern College, Shivajinagar Pune, T. C. College, Baramati, Sinhgad College, Pune and Kaveri College. In all 188 students attended this examination. 100 marks examination consists of 50 multiple choice questions carrying 2 marks each. Students are awarded grades as O, A, B and C. Out of the **188 students, 182 students were qualified i.e result in 96%.**

EEE SPEED exam Centre wise Toppers

Centre: Abasaheb Garware College, Karve Road, Pune

1. Namrata Kulkarni (S. Y. B. Sc.) & Kshitija Deshpande (S. Y. B. Sc.)
2. Prayusha Mishra (F. Y. B. Sc.) & Sukanya Deo (F. Y. B. Sc.)

Centre: Kaveri College, Pune

1. Prachi Dabi (S. Y. B. Sc. Comp Sci.)
2. Ashwini Kulkarni (S. Y. B. Sc. Comp Sci.)

Centre: Modern College, Shivajinagar, Pune

1. Madhu Bharati (F. Y. B. Sc. Comp Sci.)
2. Seema Chaskar (S. Y. B. Sc.)

Centre: Sinhgad College of Science, Pune

1. Swati Sharma (F. Y. B. Sc. Comp Sci.)
2. Sharvari Wagh (F. Y. B. Sc. Comp Sci.)

Centre: T. C. College, Baramati

1. Supriya Moholkar (S. Y. B. Sc.)
2. Reshma Hambire (F. Y. B. Sc.)

Centre: Fergusson College, Pune

1. Swarnim Shirke (F. Y. B. Sc.)
2. Saurabh Patil (F. Y. B. Sc.)

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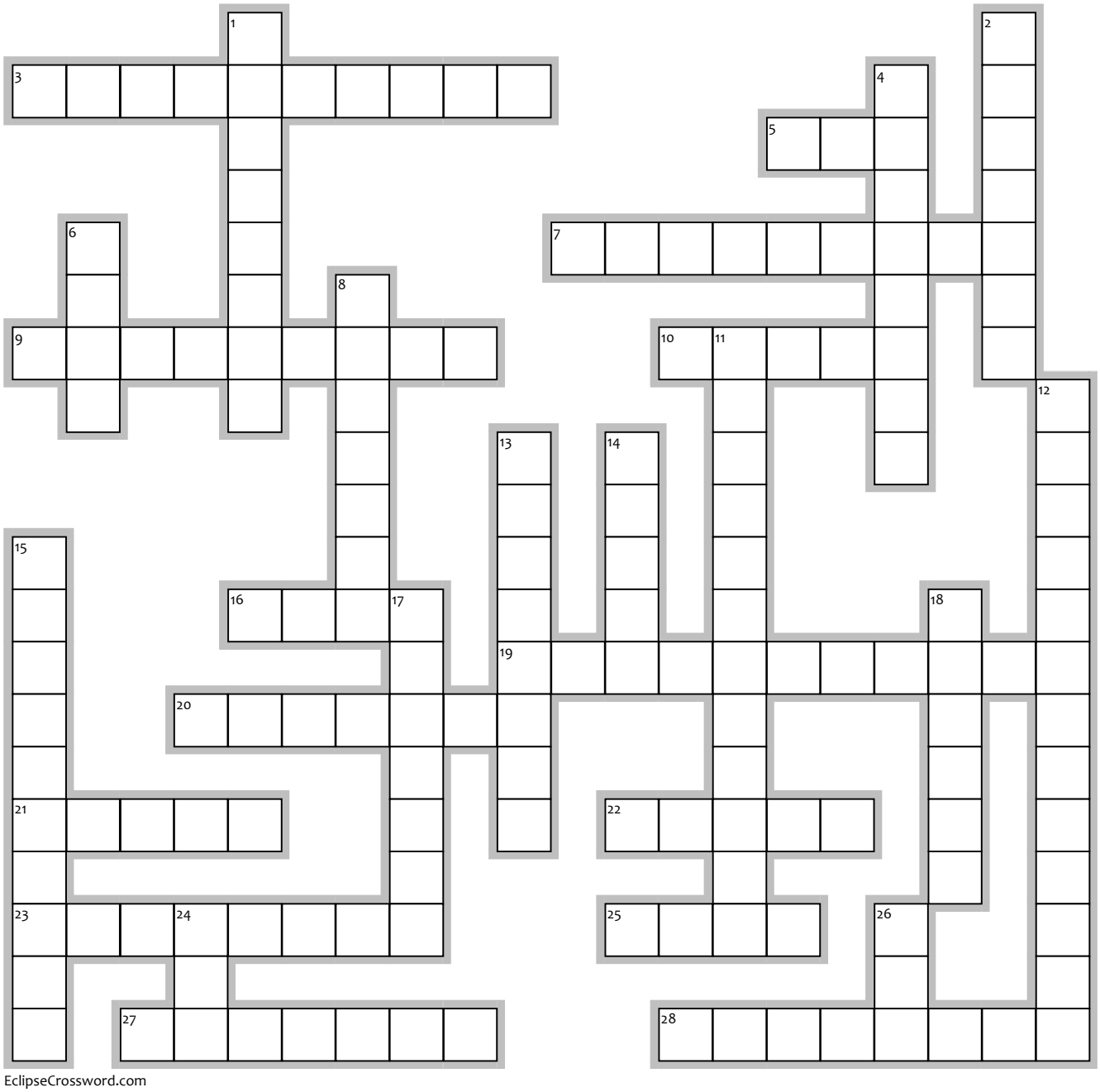


EclipseCrossword.com

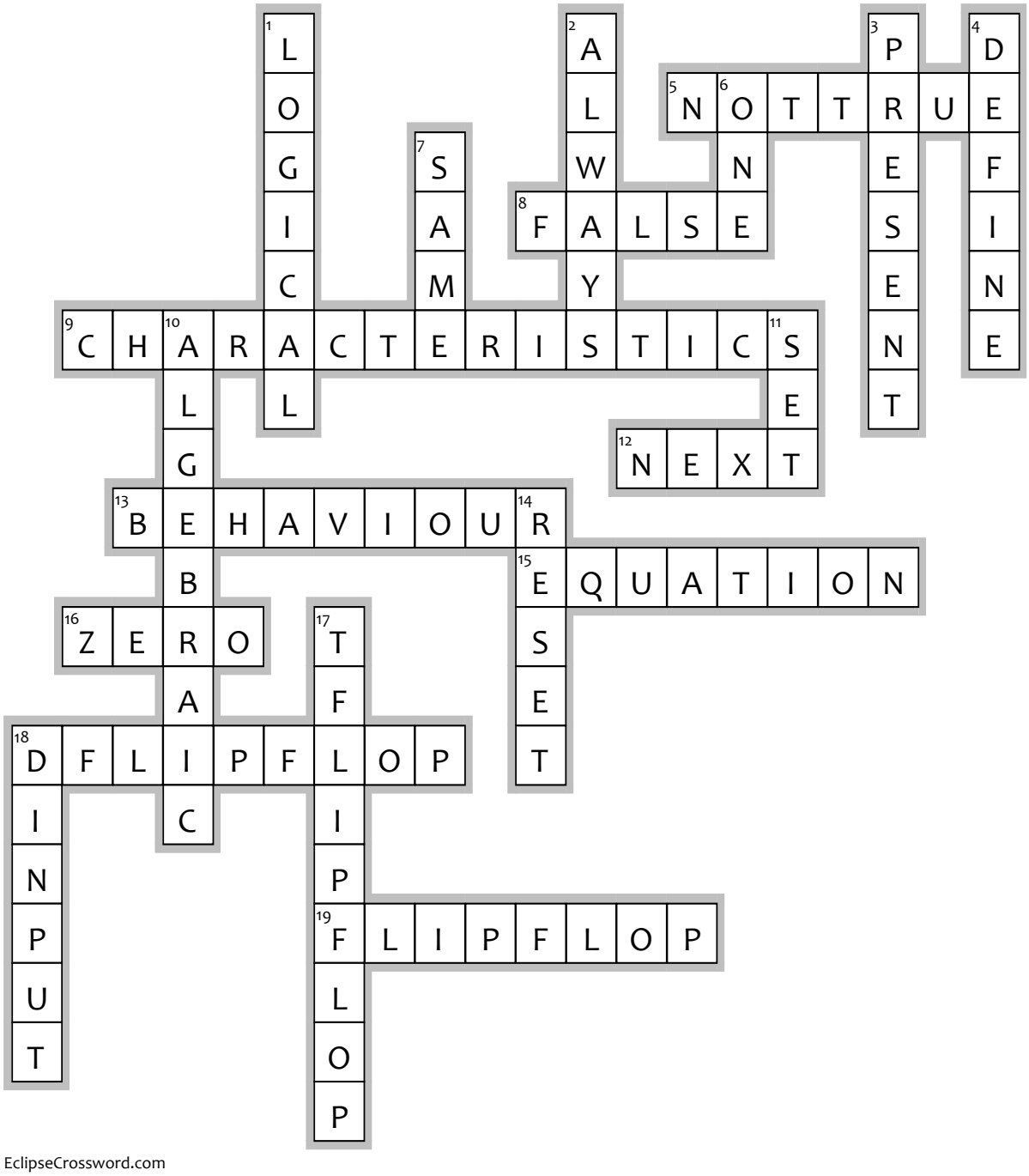
Across

3. A counter is a ..... circuit. (10)
5. With most Monostable Multivibrators, when no inputs trigger occurred, the Q output is in..... state. (3)
7. The 74121 nonretriggerable Multivibrator can have the output pulse set by a single external component. This component is a (n)..... (9)
9. The ..... of a 555 timer configured as a basic Astable Multivibrator is controlled by a resistor and a capacitor. (9)
10. A ..... circuit is not suitable in the synchronous circuit design because of its transparency nature. (5)
16. The normal ..... inputs to a Flip-flop are referred to as sequential inputs. (4)
19. Astable Multivibrator is also known as..... Multivibrator. (11)
20. A Multivibrator is a circuit that changes between two ..... levels on a continuous, free-running basis or on demand. (7)
21. The 555 ..... can be used in either the Astable or Monostable modes. (5)
22. An Astable Multivibrator is sometimes referred to as a..... (5)
23. What type of Multivibrator is a latch? (8)
25. In sequential circuits, the output depends not only on the current inputs but also on the ..... input values. (4)
27. ..... is a sequential circuit those cycles through a sequence of states. (7)
28. A counter cycles through a ..... of states. (8)

Down

1. All Multivibrators require a..... (8)
2. "The Bistable Multivibrator is an RC Flip-flop" - This statement is..... (7)
4. The output of the Astable circuit constantly ..... between two states. (8)
6. There are..... Basic types of Flip-flop based on clock trigger. (4)
8. Astable Multivibrator: Free running oscillator::..... trigger : Square wave generator (7)
11. Ripple counters are also known as ..... counters. (12)
12. Active HIGH reset pin is not a characteristic of a..... Monostable Multivibrator. (13)
13. A Bistable Multivibrator is also known as a..... (8)
14. "A single Schmitt trigger inverter is all that is needed to build a simple Astable Multivibrator" - This statement is..... (5)
15. Bistable Multivibrator: Two stable states: ..... Multivibrator: One stable state (10)
17. an..... Multivibrator requires no input signal. (7)
18. Asynchronous counters are often called ..... counters. (6)
24. Astable Multivibrator: Free running oscillator: Bistable Multivibrator: ..... Stable states (3)
26. A Monostable 555 timer has ..... stable state(s). (3)

Answer key for Volume 4, Issue1



PUZZLE

By - Hemant Yashwant Satpute